



THE PRESIDENT'S
RECOVERY
PRIORITIES

Education

Ministry of
Education,
Science and
Technology

Lesson plans for
PRIMARY
Mathematics

2
CLASS

1
TERM

Foreword

Our country's future lies in the education of our children. The Government of Sierra Leone is committed to doing whatever it takes to secure this future.

As Minister of Education, Science and Technology since 2007, I have worked every day to improve our country's education. We have faced challenges, not least the Ebola epidemic which as we all know hit our sector hard. The Government's response to this crisis – led by our President – showed first-hand how we acted decisively in the face of those challenges, to make things better than they were in the first place.

One great success in our response was the publication of the Accelerated Teaching Syllabi in August 2015. This gave teachers the tools they needed to make up for lost time whilst ensuring pupils received an adequate level of knowledge across each part of the curriculum. The Accelerated Teaching syllabi also provided the pedagogical resource and impetus for the successful national radio and TV teaching programs during the Ebola epidemic.

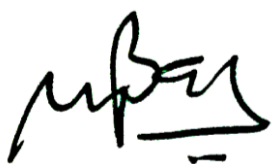
It is now time to build on this success. I am pleased to issue new lesson plans across all primary and JSS school grades in Language Arts and Mathematics. These plans give teachers the support they need to cover each element of the national curriculum. In total, we are producing 2,700 lesson plans – one for each lesson, in each term, in each year for each class. This is a remarkable achievement in a matter of months.

These plans have been written by experienced Sierra Leonean educators together with international experts. They have been reviewed by officials of my Ministry to ensure they meet the specific needs of the Sierra Leonean population. They provide step-by-step guidance for each learning outcome, using a range of recognised techniques to deliver the best teaching.

I call on all teachers and heads of schools across the country to make best use of these materials. We are supporting our teachers through a detailed training programme designed specifically for these new plans. It is really important that these Lesson Plans are used, together with any other materials you may have.

This is just the start of education transformation in Sierra Leone. I am committed to continue to strive for the changes that will make our country stronger.

I want to thank our partners for their continued support. Finally, I also want to thank you – the teachers of our country – for your hard work in securing our future.



Dr. Minkailu Bah

Minister of Education, Science and Technology

Table of Contents














Lesson 1: Counting forward from 10 to 100	2
Lesson 2: Counting from 100 to 10 backwards	4
Lesson 3: Counting in multiples of 2 to 100	6
Lesson 4: Counting in multiples of 5 to 100	8
Lesson 5: Counting in multiples of 10 to 100	10
Lesson 6: Reading and writing numerals in words 10 to 100	12
Lesson 7: Writing numbers in words as numerals 10 to 100 using place value	14
Lesson 8: Order whole numbers from 10 to 100	16
Lesson 9: Locate numbers from 0 to 100 on a number line	18
Lesson 10: Compare numbers up to 100 using a number line	20
Lesson 11: Revising addition and subtraction of numbers 0 to 10 using the number line and fingers	22
Lesson 12: Using the commutative law of addition	24
Lesson 13: Using mental strategies for addition up to 100	26
Lesson 14: Using the number line for addition of numbers up to 100	28
Lesson 15: Using the number line for subtraction of numbers up to 100	30
Lesson 16: Subtraction as the inverse of addition	32
Lesson 17: One step word problems in addition up to 100 using pictures	34
Lesson 18: One step word problems in subtraction up to 100 using pictures	36
Lesson 19: Using doubling to multiply by two	38
Lesson 20: Commutative law of multiplication	40
Lesson 21: Expressing and comparing length in everyday language (review)	42
Lesson 22: Measuring large lengths with non-standard units	44
Lesson 23: Estimation of large lengths using non-standard units of measure	46
Lesson 24: Measuring the perimeter of large objects and spaces using non-standard units	48

Lesson 25: Word problems involving large lengths using non-standard units	50
Lesson 26: Using appropriate non-standard units of length to measure different objects and spaces	52
Lesson 27: Measuring lengths of small objects	54
Lesson 28: Estimation of small lengths using non-standard units of measurement	56
Lesson 29: Compare and order lengths using non-standard units	58
Lesson 30: Word problems involving small lengths using non-standard units	60
Lesson 31: Circles, triangles and their properties	62
Lesson 32: Squares and their properties	64
Lesson 33: Rectangles and their properties	66
Lesson 34: Rectangles, Squares and their properties	68
Lesson 35: Making patterns using triangles, squares, rectangles and circles	70
Lesson 36: Using pictures to make up word problems using addition up to 100	72
Lesson 37: Using longer stories to make up short word problems using addition up to 100	74
Lesson 38: Using songs and rhymes to make up word problems using addition up to 100	76
Lesson 39: Representing word problems using addition in pictures	78
Lesson 40: Solving simple word problems using addition	80
Lesson 41: Using pictures to make up word problems using subtraction up to 100	82
Lesson 42: Using longer stories to make up short word problems using subtraction up to 100	84
Lesson 43: Using songs and rhymes to make up word problems using subtraction up to 100	86
Lesson 44: Representing word problems using subtraction in pictures	88
Lesson 45: Solving simple word problems using subtraction	90
Lesson 46: Recognising and making repeated patterns in pictures	92




Lesson 47: Recognising and making repeated patterns in pictures involving addition	94
Lesson 48: Recognising and making repeated patterns using sound	96
Lesson 49: Recognising and making repeated patterns that involve addition using sound	98
Lesson 50: Drawing patterns for number sequences that involve addition	100
Lesson 51: Making up a plan for data collection – Lesson 1	102
Lesson 52: Making up a plan for data collection piloting – Lesson 2	104
Lesson 53: Putting the data collection plan into action – Lesson 1	106
Lesson 54: Putting the data collection plan into action – Lesson 2	108
Lesson 55: Creating tally charts	110
Lesson 56: Developing tally charts based on answers to questions	112
Lesson 57: Creating bar charts	114
Lesson 58: Writing the report to the Minister with the survey findings	116
Lesson 59: Presenting a statistical report – Lesson 1	117
Lesson 60: Presenting a statistical report – Lesson 2	118

Introduction to the Lesson Plan Manual

These lesson plans are based on the National Curriculum and meet the requirements established by the Ministry of Education, Science and Technology.

- 1  The lesson plans will not take the whole term, so use spare time to review material or prepare for exams
 - 2  Teachers can use other textbooks alongside or instead of these lesson plans.
 - 3  Read the lesson plan before you start the lesson. Look ahead to the next lesson, and see if you need to tell pupils to bring materials for next time.
 - 4  Make sure you understand the learning outcomes, and have teaching aids and other preparation ready – each lesson plan shows these using the symbols on the right.
 - 5  Quickly review what you taught last time before starting each lesson.
 - 6  Follow the suggested time allocations for each part of the lesson. If time permits, extend practice with additional work.
 - 7  Lesson plans have a mix of activities for the whole class and for individuals or in pairs.
 - 8  Use the board and other visual aids as you teach.
 - 9  Interact with all students in the class – including the quiet ones.
 - 10  Congratulate pupils when they get questions right! Offer solutions when they don't, and thank them for trying.
-  Learning outcomes
 Teaching aids
 Preparation

Lesson Title: Counting forward from 10 to 100	Theme: Numbers and Numeration – Counting up to 100	
Lesson Number: M-02-001	Class/Level: Class 2	Time: 35 minutes

 <p>Learning Outcomes By the end of this lesson, pupils will be able to:</p> <ol style="list-style-type: none"> 1. Count forward from 10 to 100 from any number. 2. Recognise numbers to 100. 	 <p>Teaching Aids 100 chart (at the end of the lesson).</p>	 <p>Preparation Create a large 100 chart on the board.</p>
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Opening (2 minutes)

1. **Say:** Let's count! Lead pupils in counting from 1 to 10.
2. **Say:** Today we will learn to count from 10 to 100.
3. Write the number 10 and the number 100 on the board. Draw an arrow from the number 10 to the number 100. Point to the 100 chart on the board.
4. **Say:** We will learn the names of numbers up to 100.

Introduction to the New Material (7 minutes)

1. Point to the 100 chart. **Say:** Each number has a name.
2. **Say:** Numbers go in order and have a pattern.
3. Point to all the numbers that have 0s at the end.
4. Point to all the numbers that have 3s at the end.
5. Point to all the numbers that have 7s at the end.
6. Point to number 11. **Say:** 11.
7. **Say:** Now repeat after me.
8. Point to number 12. **Say:** 12.
9. Continue to point to numbers and read them out loud. Ask pupils to say the numbers out loud until you have reached the number 100.

Guided Practice (10 minutes)

1. Divide pupils into 2 large groups. Try to make the groups equal in numbers.
2. Point to the left group and ask them to stand. Point to the second row of the 100 chart (numbers 11-20). Ask them to say each number as you point to it. Ask them to sit.
3. Point to the right group and ask them to stand. Point to the third row of the 100 chart (numbers 21-30). Ask them to say each number as you point to it. Ask them to sit.
4. Continue pointing to each row and alternate between groups saying the numbers in groups of 10.
5. **Say:** You will now work on your own.

Independent Practice (13 minutes)

1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
2. Write this list of numbers in a line on the board:
2
23
44
63
81
3. **Say:** Write each number in your book as I have done. Repeat after me.
4. Read each number out loud and wait for the pupils to repeat. Point to the number 2.
5. Write all the numbers in the line after 2 on the board:
2, 3, 4, 5, 6, 7, 8, 9, 10
6. **Say:** Use the 100 chart and write the numbers in the same line like I have. Stop when you get to the last number on the right. Give pupils 8 minutes to write.
7. Walk around and check on pupils to make sure they write the numbers correctly.
8. Point to numbers written by the pupils. Ask the pupils to name the number.
9. Ask all pupils to hold up their work for you to see.




Closing (3 minutes)

1. Using the 100 chart, point to a number.
2. **Say:** Raise your hand and name the number.
3. Continue pointing to several numbers alternating between boy and girl volunteers.
4. Ask the pupils to recite the numbers 1 to 100 as you point to each number.
5. **Say:** Well done, today we counted to 100. Thank you, class. Pupils say: Thank you.

[100 CHART]

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Lesson Title: Counting from 100 to 10 backwards	Theme: Numbers and Numeration – Counting up to 100	
Lesson Number: M-02-002	Class/Level: Class 2	Time: 35 minutes

	<p>Learning Outcomes By the end of the lesson, pupils will be able to count backwards from 100 to 10 from any number.</p>		<p>Teaching Aids 100 chart (at the end of the lesson).</p>		<p>Preparation Create a large 100 chart on the board.</p>
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Opening (3 minutes)

1. **Say:** Let's count together using the 100 chart. Count with the pupils, pointing to the numbers as you count.
2. Point to the number 56 on the chart. Then point to the number before it. **Say:** 55.
3. Point to the number 78 on the chart. Then point to the number before it. **Say:** 77.
4. Point to a number.
5. **Say:** Raise your hand if you can name the number before this number.
6. Repeat this process 3 more times alternating between boy and girl volunteers.
7. **Say:** Today we will learn to count backwards from 100 to 10.

Introduction to the New Material (5 minutes)

1. Begin by pointing to the number 10 on the 100 chart.
2. **Say:** We will count backwards from 10 to 1 together.
3. Lead pupils in counting backwards from 10 to 1.
4. **Say:** We can count backwards from anywhere on the 100 chart.
5. Point to 50 on the 100 chart. **Say:** Repeat after me.
6. Lead pupils in counting backwards from 50 to 40.
7. Point to 80 on the 100 chart. **Say:** Repeat after me.
8. Lead pupils in counting backwards from 80 to 70.

Guided Practice (15 minutes)

1. Divide pupils into 2 large groups. Try to make the groups equal in numbers.
2. Point to the left group and ask them to stand. Point to the last row of the 100 chart (numbers 91-100). Point to 100 and ask them to say each number as you point to it. Ask them to sit.
3. Point to the right group and ask them to stand. Point to the ninth row of the 100 chart (numbers 81-90). Ask them to say each number as you point to it. Ask them to sit.
4. Continue pointing to each row and alternate between groups saying the numbers in groups of 10.
5. Rub out the numbers 21-30 on the 100 chart.
6. **Ask:** Who can say the numbers from 30 to 20 backwards?
7. Choose a volunteer to stand up and say the numbers. Correct any mistakes the pupil makes. Prompt the pupil if they have forgotten.

8. Write the numbers on the chart as the pupil counts.
9. Rub out the numbers 43-63 on the 100 chart.
10. **Ask:** Who can say the numbers from 63 to 43 backwards?
11. Choose a volunteer (alternating between boys and girls) to stand up and say the numbers
12. Correct any mistakes the pupil makes as they go along. Prompt the pupil if they have forgotten.
13. Write the numbers on the chart as the pupil counts.
14. **Say:** You will now work independently.

Independent Practice (10 minutes)

1. Ask pupils to find a partner sitting near-by.
2. **Say:** You will say numbers backwards with your partner without help from the 100 chart.
3. **Say:** You will need to decide who will go first. If you are not saying the numbers first, you will choose a number for your partner start from.
4. **Say:** If you are saying the numbers, turn away from the 100 chart so you cannot see it. Your partner will face the chart.
5. **Say:** Take turns saying numbers backwards from the number your partner chooses. Your partner will use the 100 chart to help you if you make a mistake or forget a number.
6. Walk around the room and assist pupils that may be having trouble.




Closing (2 minutes)

1. **Say:** We will say the 100 chart backwards from 100 to 1.
2. Lead pupils in saying the numbers, pointing to them as you count.
3. **Say:** Well done. You are very good at counting backwards! Thank you, class. Pupils say: Thank you.

[100 CHART]

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Lesson Title: Counting in multiples of 2 to 100	Theme: Numbers and Numeration – Counting up to 100	
Lesson Number: M-02-003	Class/Level: Class 2	Time: 35 minutes

	<p>Learning Outcomes By the end of the lesson, pupils will be able to count in multiples of 2 up to 100.</p>		<p>Teaching Aids 1. 100 chart (at the end of the lesson). 2. Small stones, beads or counters.</p>		<p>Preparation Create two 100 charts on the board, one with all numbers and one with only the even numbers.</p>
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Opening (5 minutes)

1. **Say:** The head teacher wants to know how many pupils are in class today.
2. **Ask:** Who will volunteer to count the number of pupils in the class?

Introduction to the New Material (4 minutes)

1. **Say:** Is there is a faster way to count pupils? (Answer: count by 2s)
2. If they do not suggest 'count by 2s', **say:** Would it be faster to count by 2s?
3. Show the pupils the number chart. **Say:** The numbers increase by 2 over the previous number.
4. **Say:** Together we will practise counting numbers by 2s. Say the number as I point to it.
5. Point to a number. Wait for the pupils to say the number.

Guided Practice (15 minutes)

1. **Say:** Find a partner and link arms.
2. If 1 pupil is alone, tell the pupil it is okay that they do not have a partner and they will soon find out why.
3. Point to a pair of pupils. **Say:** Raise your hands over your head.
4. **Say:** 2.
5. Ask the pupil to lower their hands.
6. Point to the next set of children. **Say:** Raise your hands over your head.
7. **Say:** 4.
8. Continue in this manner until all children in the class are counted using the numbers on the number chart.
9. If there are an odd number of children, explain that you cannot add 2; you can only add 1. Ask the lone pupil to raise both hands.
10. **Say:** Counting large numbers of items or people is faster when counting by 2s.
11. Point to the completed 100 chart.
12. **Say:** We are going to do a clapping activity. Clap on every other number. We will start with 0.
13. Clap and **say:** 0
14. Recite all the numbers up to 100. Clap along with the pupils on even numbers.
15. **Say:** You will now work with your partner.

Independent Practice (10 minutes)

1. Give each pair of pupils a small handful of stones/beads/counters.
2. **Say:** Count the items by 2s, using the 100 chart as to help you.

3. Assist groups of pupils that may be having trouble.
4. If pupils finish before others, ask them the number of items they counted. Have them count again to see if they get a different number.




Closing (2 minutes)

1. **Say:** Now we will count from 0 to 100 by 2s. Count with me.
2. Lead the pupils in counting from 0 to 100 by 2s, pointing to the numbers as you count.
3. **Say:** Well done. Thank you class you can count by 2s! Pupils say: Thank you.

[100 CHART]

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Lesson Title: Counting in multiples of 5 to 100	Theme: Numbers and Numeration – Counting up to 100	
Lesson Number: M-02-004	Class/Level: Class 2	Time: 35 minutes

	Learning Outcomes By the end of the lesson, pupils will be able to count in multiples of 5 up to 100.		Teaching Aids 1. 100 chart (at the end of the lesson). 2. Small stones, beads or counters.		Preparation 1. Create a 100 chart on the board. 2. Gather small stones, beads or counters.
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Opening (5 minutes)

1. **Ask:** Where around us do we see the number 5, or 5 things? (Possible answers: fingers, toes, family members)
2. Write the pupils' answers on the board.
3. **Say:** Today we will learn to count by 5s.

Introduction to the New Material (6 minutes)

1. Using the 100 chart, starting at 1, point and count up to the number 5.
2. **Ask:** Do you see that all the numbers in this column end in 5?
3. Point at the number 5 and run your finger down to 95 and back up.
4. Count up from 5 to 10. **Say:** I counted 5 spaces to get to 10.
5. Run your finger from 10 down the column to 100 and back up.
6. Point out to the pupils that every number ends in 0.
7. **Say:** Numbers ending in 5 or 0 are multiples of 5 and you can get to them by adding 5s.
8. Using the number chart, tell the pupils to clap every time you point to a number ending in 5 or 0. Start at 1 and point to each number up to 100.

Guided Practice (12 minutes)

1. **Say:** Form a circle around the room. If there is not enough room inside, then you will need to go outside.
2. **Say:** Each of your hands has 5 fingers on it.
3. Tell pupils to start with hands at their sides.
4. Demonstrate the activity by giving the pupil to your left 'five' by touching hands palm to palm with the pupil. **Say:** 5.
5. Have that pupil give the pupil to their left 'five' by touching hands palm to palm. Ask the pupils to say the number 10 out loud.
6. Ask the next pupil to give the pupil to their left 'five' and say the number 15 out loud.
7. Continue having pupils give the person to their left 'five' and saying the numbers until you reach 100 and have the next pupil start over with the number 5.
8. The activity is finished when the last pupil gives you (the teacher) 'five' and says their number.
9. Depending on the number of pupils in your class, you may go through the cycle of 5 to 100 two to five times.

Independent Practice (10 minutes)

1. **Say:** Find a partner and sit down with them.

2. Give each pair of pupils a medium-sized handful of stones, beads or counters.
3. Tell the pupils to count the items by 5s using the 100 chart as a guide.
4. Walk around the room and informally assess the pupils through observation.
5. Assist groups of pupils that may be struggling.
6. If pupils finish before others, ask the pupils to tell you the number of items they counted.
7. Tell them to count again to see if they get a different number.




Closing (2 minutes)

1. **Say:** We are going to use the 100 chart to count together from 0 to 100 by 5s.
2. Lead the pupils in counting from 0 to 100 by 5s pointing to the numbers as you count.
3. **Say:** Well done, we counted by 5s today! Thank you class. Pupils say: Thank you.

[100 CHART]

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Lesson Title: Counting in multiples of 10 to 100	Theme: Numbers and Numeration – Counting up to 100	
Lesson Number: M-02-005	Class/Level: Class 2	Time: 35 minutes

	<p>Learning Outcomes By the end of the lesson, pupils will be able to count in multiples of 10 up to 100.</p>		<p>Teaching Aids 100 chart (at the end of the lesson).</p>		<p>Preparation 1. Create a 100 chart on the board. 2. Write numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 and 100 randomly on the board.</p>
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Opening (3 minutes)

1. **Ask:** Where around us do we see the number 10 or 10 things? (Possible answers: 10 fingers, 10 toes)
2. Write pupils answers on the board.
3. **Say:** Today we will learn to count by 10s.

Introduction to the New Material (5 minutes)

1. Using the 100 chart, starting at 1, count each number out loud up to the number 10.
2. **Say:** This is the number 10.
3. Point to the column of numbers ending in 0.
4. Run your finger from 10 down to 100 and back up.
5. **Say:** Numbers ending in 0 are multiples of 10. You can get to them by adding 10.
6. Using the number chart, ask the pupils to clap every time you point to a number ending in 0. Start at 1 and say the numbers up to 100, point to them as you count.

Guided Practice (10 minutes)

1. **Say:** Repeat after me.
2. **Say:** 10.
3. Ask a volunteer to come and point to the 10 on the board.
4. **Say:** 20.
5. Ask a volunteer to come and point to the 20 on the board.
6. Continue asking for volunteers (alternating between boys and girls) to point to the correct number as you count by 10s to 100.
7. Point to a multiple of 10 on the 100 chart. Ask the pupil to raise their hand and name the number.
8. Repeat this process in random order until all multiples of 10 have been named.

Independent Practice (15 minutes)

1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
2. Rub out the multiples of 10 on the 100 chart.
3. **Say:** Write multiples of 10 in the correct order in your book. Give pupils 8 minutes to write.

4. **Say:** Let's read our numbers and check they are in the correct order. (Answer: 10, 20, 30, 40, 50, 60, 70, 80, 90, 100)
5. Have pupils show their work to a friend. **Say:** Let's read our friend's numbers and check they are in the correct order.
6. Ask pupils to hold up their work for you to see.




Closing (2 minutes)

1. **Say:** We are going to use the 100 chart to count together from 0 to 100 by 10s.
2. Lead the pupils in counting from 0 to 100 by 10s pointing to the numbers as you count.
3. **Say:** Well done. Thank you, class. Pupils say: Thank you.

[100 CHART]

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Lesson Title: Reading and writing numerals in words 10 to 100	Theme: Numbers and Numeration – Reading/Writing/Ordering up to 100	
Lesson Number: M-02-006	Class/Level: Class 2	Time: 35 minutes

	<p>Learning Outcomes By the end of the lesson, pupils will be able to read and write numbers up to 100 in words.</p>		<p>Teaching Aids 100 chart (at the end of the lesson).</p>		<p>Preparation 1. Create a 100 chart on the board. 2. Write the words for 10-20 on the board. 1. Write the words for multiples of 10 up to 100 on the board.</p>
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Opening (3 minutes)

1. Ask a few pupils to say their name out loud.
2. Point to objects around the room. Ask pupils to name the object.
3. **Say:** Numbers have names as well. They are written with words.
4. **Ask:** What numbers do you know?

Introduction to the New Material (10 minutes)

1. Point to the word ten. Write the number '10' to the left of it. **Say:** Read this word with me.
2. **Say:** 10.
3. Point to the word eleven. Write the number '11' to the left of it. **Say:** Read this word with me.
4. **Say:** 11.
5. Continue writing the numbers next to the words up to twenty and have pupils read the words.

Guided Practice (12 minutes)

1. **Say:** Numbers are made up of 'digits'. Each digit has a word that goes along with it.
2. Write the number '21' on the board.
3. Underline the digit '2'. Write the word 'twenty' under it.
4. Underline the digit '1'. Write the word 'one' under it.
5. Place a dash/hyphen between the two words.
6. **Say:** Twenty-one.
7. **Say:** Please repeat.
8. Write '22' on the board.
9. Underline the digit '2'. Write the word 'twenty' under it.
10. Underline the digit '2'. Write the word 'two' under it.
11. Place a dash/hyphen between the two words.
12. **Say:** When there are two words, they must be separated by a dash/hyphen.
13. **Say:** Twenty-two.
14. **Say:** Please repeat.
15. **Say:** Raise your hand if you know what number comes next. (Answer: 23)
16. Once they answer '23', ask a pupil to raise their hand and share what two words make up '23'.
17. Once a pupil answers, 'twenty' and 'three', write 'twenty-three' on the board.
18. Ask for volunteers until you reach 25.
19. **Say:** The rest of the numbers continue with the same pattern. Let's count by 10s.
20. Write '40' and 'forty' on the board. Ask the pupils to repeat the word.

21. Write '50' and 'fifty' on the board. Ask the pupils to repeat the word.
22. Continue this process to '90'.
23. When you get to 100, write the number and the word. **Say:** We will stop there today.

Independent Practice (8 minutes)

1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
2. Write the following on the board:

30 thirty
 31 thirty-one
 32
 33
 34
 35
 36
 37
 38
 39
 40

3. Tell pupils to write the names of the numbers next to the number.
4. Remind them to include the dash/hyphen.
5. Walk around and observe the pupils. Support those who are struggling.




Closing (2 minutes)

1. Write a numeral on the board. Ask a pupil to raise their hand and name it with words.
2. Say: Well done. Thank you, class. Pupils say: Thank you.

[100 CHART]

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Lesson Title: Writing numbers in words as numerals 10 to 100 using place value	Theme: Numbers and Numeration – Reading/Writing/Ordering up to 100	
Lesson Number: M-02-007	Class/Level: Class 2	Time: 35 minutes

	<p>Learning Outcomes By the end of the lesson, pupils will be able to write numbers in words as numerals 10 to 100 using place value.</p>		<p>Teaching Aids 100 chart (at the end of the lesson).</p>		<p>Preparation Write the words for multiples of ten, up to one hundred on the board.</p>
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Opening (2 minutes)

1. **Ask:** What did we do in the previous lesson?
2. Choose 2 volunteers (1 boy and 1 girl) to answer. (Answer: We learned how to write numbers using words.)
3. **Say:** Today we will learn how to use words to write numerals.

Introduction to the New Material (12 minutes)

1. Point to the word 'ten' on the board. **Say:** Please repeat after me. **Say:** Ten.
2. Ask a pupil to come to the board and write the numeral that corresponds to the word. (Answer: 10)
3. Point to the word 'twenty' on the board. **Say:** Please repeat after me. **Say:** Twenty.
4. Ask a pupil to come to the board and write the numeral that corresponds to the word. (Answer: 20)
5. Point to the word 'thirty' on the board. **Say:** Please repeat after me. **Say:** Thirty.
6. Ask a pupil to come to the board and write the numeral that corresponds to the word. (Answer: 30)
7. Continue asking for volunteers (alternating between boys and girls) to write the numeral for the words 'one hundred'.
8. Now write 'twenty-five' on the board.
9. Point to the word 'twenty' and the word 'five'.
10. **Say:** The first word tells you what digit to write first.
11. Write the number '2' on the board.
12. **Say:** The second word tells you what digit to write next.
13. Write the number '5' on the board.
14. **Say:** The two numbers together make 25.

Guided Practice (9 minutes)

1. Write the word 'sixty-three' on the board.
2. Write two spaces next to the word sixty-three: _____ .
3. **Ask:** What do I write in the first space?
4. Ask a volunteer to answer. (Answer: 6)
5. **Ask:** Why? (Possible answer: Because the first word is 'sixty'.)
6. **Say:** The first word is 'sixty', so we write a '6'.
7. Remind the pupils that the first word tells them what goes in the first space.
8. **Say:** What do I write in the second space?
9. Ask a volunteer to answer. (Answer: 3)

10. **Ask:** Why? (Possible answer: Because the second word is three.)

11. Write the following on the board:

twenty five = _____

seventy eight = _____

eighty three = _____

ninety four = _____

12. Ask volunteers to say the correct digits for each number. Alternate between boys and girls.

Independent Practice (10 minutes)

1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
2. Write the following words on the board: 'fifty six', 'thirty nine', 'eighty one', 'forty four', 'sixty eight'.
3. Tell pupils to choose a partner and use the words to write the numerals to match the words.
4. Ask pupils to write the words and the numbers in their exercise books.
5. Walk around the room. Assist pupils that need help.




Closing (2 minutes)

1. **Ask:** What are the two ways that numbers can be written? (Answer: Using words and as numerals.)
2. **Say:** Well done. Thank you, class. Pupils say: Thank you.

[100 CHART]

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Lesson Title: Order whole numbers from 10 to 100	Theme: Numbers and Numeration – Reading/Writing/Ordering up to 100	
Lesson Number: M-02-008	Class/Level: Class 2	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to order numbers 10 to 100 by their magnitude.	 Teaching Aids 100 chart (at the end of the lesson).	 Preparation Create a 100 chart on the board.
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Opening (2 minutes)

1. **Say:** Raise your hand and tell me how many people live in your home.
2. As the pupils answer, write their answers in numerals on the board.
3. **Say:** Today we will learn how to tell which numbers are bigger and which numbers are smaller.

Introduction to the New Material (18 minutes)

1. Choose 3 volunteers (a mixture of boys and girls). Ask them to stand together in a group.
2. Point to each pupil while counting. **Say:** 1, 2, 3.
3. Write the number '3' on the board.
4. Choose 5 volunteers (a mixture of boys and girls). Ask them to stand together in a group.
5. Point to each pupil while counting. **Say:** 1, 2, 3, 4, 5.
6. Write the number '5' on the board.
7. Choose 8 volunteers (a mixture of boys and girls). Ask them to stand together in a group.
8. Point to each pupil while counting. **Say:** 1, 2, 3, 4, 5, 6, 7, 8.
9. Write the number '8' on the board.
10. Point to the groups. **Ask:** Which group is the largest? (Answer: the group of 8)
11. **Ask:** Why? (Example answer: Because there are more people in the group.)
12. Ask the groups of pupils to sit down.
13. Point to the 3 on the 100 chart. Then point to the 5 and to the 8.
14. **Say:** As the numbers go from left to right, the numbers become larger.
15. Choose 2 volunteers (1 boy and 1 girl). Ask them to stand in a group at the front of the room.
16. Point to the number 2 on the 100 chart. **Say:** Here is the number 2.
17. Choose 10 more volunteers (5 boys and 5 girls). Ask them to join the group.
18. Point to the number 12 on the 100 chart. **Say:** Here is the number 12.
19. Choose 10 more volunteers (5 boys and 5 girls). Ask them to join the group.
20. Point to the number 22 on the 100 chart. **Say:** Here is the number 22.
21. **Say:** As you go down the 100 chart, the numbers also become larger.
22. Ask pupils to return to their seats.

Guided Practice (7 minutes)

1. Write on the board:
47 46 42
2. Using the 100 chart, point to the number 46. **Say:** 46 is to the left of the number 47. Therefore, it is smaller.
3. Erase the 46. Rewrite the numbers to look like this:
46 47 42

- Point to the 42 on the 100 chart. **Say:** 42 is to the left of the 46 and the 47.
- Erase the 42. Rewrite the numbers to look like this:
42 46 47
- Say:** Numbers are ordered with the smallest to the left and the largest at the right.

Independent Practice (7 minutes)

- Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
- Write the following sets of numbers on the board:
43 49 48 (Answer: 43, 48, 49)
87 34 62 (Answer: 34, 62, 87)
24 64 33 (Answer: 24, 33, 64)
61 38 40 (Answer: 40, 38, 61)
50 12 9 (Answer: 9, 12, 50)
- Say:** Work on your own. Copy down the sets of three numbers and write them in the correct order.
- Walk around the room. Support pupils that need help.




Closing (1 minute)

- Point to the 100 chart. **Ask:** Do the numbers become larger or smaller as you go from left to right? (Answer: larger)
- Point to the 100 chart. **Ask:** Do the numbers become larger or smaller as you go from top to bottom? (Answer: larger)
- Say:** Well done. Thank you, class. Pupils say: Thank you.

[100 CHART]

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Lesson Title: Locate numbers from 0 to 100 on a number line	Theme: Numbers and Numeration – Reading/Writing/Ordering up to 100	
Lesson Number: M-02-009	Class/Level: Class 2	Time: 35 minutes

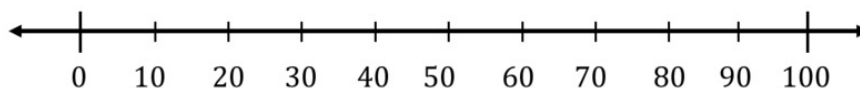
 Learning Outcomes By the end of the lesson, pupils will be able to locate numbers up to 100 on a number line.	 Teaching Aids None	 Preparation Draw a line across the board with arrows on each end.
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Opening (2 minutes)

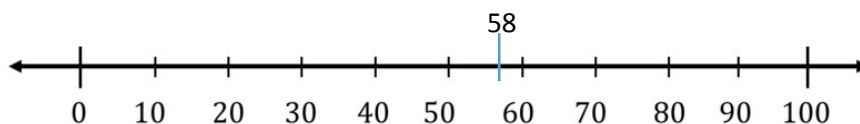
1. Point to the line on the board. **Ask:** What is this?
2. Once they have said 'a line', **Say:** A line can go on forever in both directions which is why there are arrows at both ends.
3. **Say:** Today we will learn how to locate numbers on a number line.

Introduction to the New Material (8 minutes)

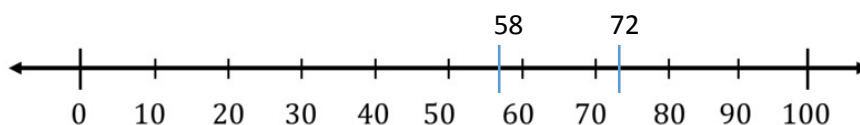
1. On the line across the board, divide the line into 10 sections with horizontal lines.



2. **Say:** Like the 100 chart, the smaller numbers are on the left and become larger as you move right.
3. Write the number 58 on the number line (see example):

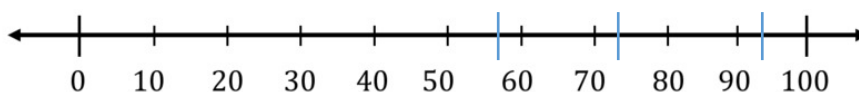


4. **Say:** I have placed the number 58 just to the left of the 60 because 58 on the 100 chart is less than 60 and smaller numbers go to the left.



5. Write the number 72 on the number line. **Say:** I have placed the 72 to the right of the 70 because 72 is 2 more than 70 and larger numbers go to the right.

58 72 93



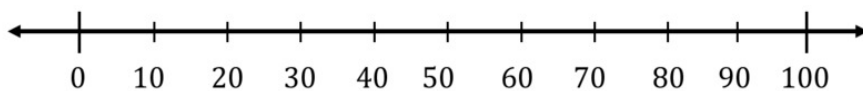
6. Write the number 93 on the number line. **Say:** I have placed the 93 to the right of the 90 because it is 3 more than 90 and larger numbers go to the right.

Guided Practice (15 minutes)

1. Ask 10 volunteers (5 girls and 5 boys) to the front of the classroom.
2. Ask each volunteer to stand in front of a multiple of 10.
3. **Say:** Let's count in 10s. If you are standing in front of a number put your hands up when we say it.
4. Ask 5 more volunteers (a mixture of boys and girls) to come to the front of the class.
5. **Say:** If a number has a 1, 2 or 3 at the end, it will need to be closer to the multiple of 10 that is less than the number.
6. **Say:** If a number has a 4, 5 or 6 at the end, it will need to be in the middle between the multiple of 10.
7. **Say:** If a number has a 7, 8 or 9 at the end, it will need to be closer to the multiple of 10 that is more than the number.
8. Quietly tell the first volunteer a random number between 10 and 100. Ask the first volunteer to tell the class their number.
9. Help the pupil find their spot on the number line. Explain to the class why the pupil is in that spot in relation to the multiple of 10.
10. Quietly tell the other volunteers a random number and have them tell the class. Encourage the class to guide the pupil to stand in the correct position in the number line. **Say:** Check with the person next to you to make sure you are in the correct spot.
11. Once all pupils are on the number line, have pupils say their number out loud to ensure everyone is in the correct place.
12. Rearrange pupils if they are in the incorrect spot. Explain to the class why you are moving them.

Independent Practice (8 minutes)

1. Point to the number line on the board. **Say:** Create the same line in your book.






2. Give the pupils the following numbers. **Say:** Mark the numbers on your number line: 5, 18, 42, 79, 95
3. Walk around the class. Assist pupils who are unable to place the numbers in the correct spot on the number line.


Closing (2 minutes)

1. Point to your number line on the board. **Ask:** Are the lower numbers on the right side or on the left side of the line? (Answer: On the left.)
2. **Ask:** Do the numbers go up or down as you go from left to right? (Answer: They go up.)
3. **Say:** Well done. Thank you, class. Pupils say: Thank you.

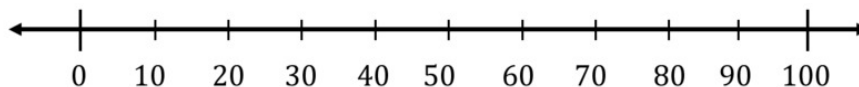
Lesson Title: Compare numbers up to 100 using a number line	Theme: Numbers and Numeration – Reading/Writing/Ordering up to 100	
Lesson Number: M-02-010	Class/Level: Class 2	Time: 35 minutes

 <p>Learning Outcomes By the end of the lesson, pupils will be able to compare numbers on the number line.</p>	 <p>Teaching Aids None</p>	 <p>Preparation Draw a number line on the board from 0 to 100.</p>
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Opening (2 minutes)

1. **Say:** Think back to the previous lesson.
2. Draw a line on the board. 
3. **Ask:** What did you learn yesterday about numbers and the number line? (Example answers: numbers on the right are higher, numbers on the left are lower, lines go on forever)
4. Record the pupils' answers on the board.
5. **Say:** Today we will learn how to compare numbers using the number line.

Introduction to the New Material (8 minutes)



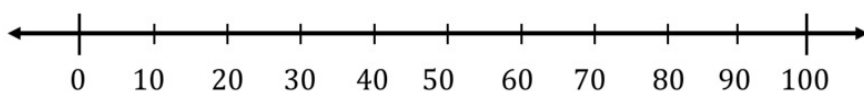
1. Using the prepared number line from 0 to 100, write the numbers 35 and 12 on the board and leave a space between them. Like this: 35 12
2. **Ask:** How can the number line be used to compare the numbers? (Example answer: The numbers can be placed on the number line, and those to the right are greater and those to the left are lower.)
3. **Say:** The higher numbers are on the right and the lower numbers are on the left.
4. Using the number line, place the numbers '35' and '12' on the number line.
5. **Ask:** Are the numbers placed correctly?
6. **Say:** By placing numbers on a number line, you can compare the numbers and use symbols to show which numbers are greater and which numbers are lower.
7. Write the greater than/less than and equal symbols on the board: $>$ $<$ $=$
8. **Say:** The symbols are used to show which numbers are larger, which numbers are smaller, and which numbers are equal, or the same.
9. **Say:** The arrow always points to the smaller number.
10. **Say:** You can also remember which direction the symbol goes in because the hippopotamus always eats the larger number.
11. Point to the opening and show how it looks like a mouth.
12. Tell the pupils to look back at the numbers on the number line.
13. **Ask:** Which number is smaller? (Answer: 12)
14. Once a pupil answers correctly, place the correct symbol between the numerals:
35 > 12
15. Remind pupils that the arrow points to the smaller number and the hippopotamus eats the larger number.

Guided Practice (15 minutes)

1. Write the numerals 42 and 67 on the board and leave a space between:
42 67
2. Ask a volunteer to come to the board and locate the 2 numbers on the number line. Have the class help guide the pupil to find the numbers.
3. Ask another volunteer to come to the board and write the correct symbol between the numbers.
4. Remind the pupil that the arrow points to the smaller number and the hippopotamus eats the larger number. (Answer: $42 < 67$)
5. **Ask:** Why did you use that symbol? (Example answers: because 42 is smaller; because 67 is larger)
6. **Say:** Put your hands on your head if you agree?
7. If they have used the wrong symbol, ask another pupil to approach the board and write the correct symbol. Ask the pupil to explain why they used the symbol they did.
8. Write the numerals 84 and 53 on the board and leave a space between:
84 53
9. Ask a volunteer to come to the board and locate the 2 numbers on the number line. Have the class help guide the pupil to find the numbers.
10. Ask another volunteer to come to the board and write the correct symbol between the numbers. (Answer: $84 > 53$)
11. **Ask:** Why did you use that symbol? (Answer: because 53 is smaller; because 84 is larger.)
12. **Say:** Put your hands on your head if you agree?

Independent Practice (8 minutes)

1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
2. Tell the pupils to create a number line from 0 to 100 in their exercise books.






3. Write the following sets of numbers on the board:
41 49
87 34
24 64
34 38
50 12
4. Tell the pupils to locate the numbers on the number line and write the correct symbols between them as demonstrated in the guided practise. (Answers: $41 < 49$, $87 > 34$, $24 < 64$, $34 < 38$, $50 > 12$)
5. Ask pupils to hold up their work for you to see.

Closing (2 minutes)

1. **Ask:** Does the arrow point to the larger number or the smaller number? (Answer: the smaller number)
2. **Ask:** Does the hippopotamus eat the larger number or the smaller number? (Answer: the larger number)
3. **Say:** Well done. Thank you, class. Pupils say: Thank you.

Lesson Title: Revising addition and subtraction of numbers 0 to 10 using the number line and fingers	Theme: Everyday Arithmetic – Addition/Subtraction up to 100	
Lesson Number: M-02-011	Class/Level: Class 2	Time: 35 minutes

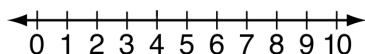
 <p>Learning Outcomes By the end of the lesson, pupils will be able to:</p> <ol style="list-style-type: none"> 1. Add one digit numbers to 10. 2. Subtract one digit numbers to 10. 	 <p>Teaching Aids None</p>	 <p>Preparation Draw a number line 1-10 on the board.</p>
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Opening (2 minutes)

1. Hold 3 fingers up in front of the class.
2. **Ask:** How many fingers am I holding up? (Answer: 3)
3. **Say:** I am going to add 3 more fingers.
4. **Ask:** Now how many fingers am I holding up? (Answer: 6)
5. **Say:** I am going to take 2 fingers away.
6. **Ask:** Now how many fingers am I holding up? (Answer: 4)
7. Explain that pupils can learn to add and subtract using their fingers and the number line.

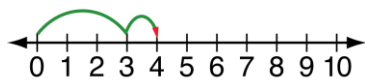
Introduction to the New Material (13 minutes)

1. Point to the number line from 0 to 10 on the board.

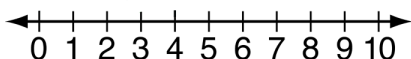


2. Write $3 + 1 =$ on the board.
3. Place a dot on the 0.
4. Starting at 0, move the dot 3 spaces.
5. **Say:** I have moved the dot 3 spaces because my first number is 3.
6. Move the dot 1 more space to the number 4.
7. **Say:** I have moved the dot 1 more space because I added 1 to my number.

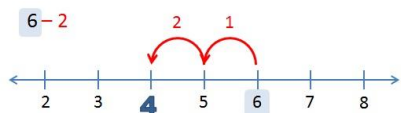
$$3 + 1 = 4$$



8. **Say:** Using the number line, we found out that 3 plus 1 equals 4.
9. **Say:** Count along with me.
10. Raise 3 fingers. **Say:** 1, 2, 3.
11. **Say:** Count as I add one more finger: 1, 2, 3, 4.
12. **Say:** 3 plus 1 equals 4.
13. Draw a new number line from 0 to 10.



14. Write $6 - 2 =$ on the board.
15. Place a dot on the number 6. **Say:** We start on 6 because the first number is 6.
16. Starting at 6, move the dot back 2 spaces to the number 4.
17. **Say:** I moved the dot back 2 spaces because I subtracted 2 from my number.



18. **Say:** Using the number line we found out that 6 minus 2 equals 4.
19. Ask the pupils to count along with you as you raise 6 fingers.
20. **Say:** 1, 2, 3, 4, 5, 6.
21. Ask the pupils to count backwards with you as you take away 2 fingers.
22. **Say:** 5, 4.
23. Tell the pupils you will now count all the fingers left.
24. **Say:** 1, 2, 3, 4. 6 take away 2 equals 4.

Guided Practice (6 minutes)

1. Ask the pupils to get into pairs.
2. Write $7 + 2 =$ on the board.
3. Tell the pupils to solve the equation with their partner.
4. Once all pupils have an answer, ask a group to share their answer. (Answer: 9)
5. Write $5 - 4 =$ on the board.
6. Tell the pupils to solve the equation with their partner.
7. Once all pupils have an answer, ask a group to share their answer. (Answer: 1)

Independent Practice (12 minutes)




1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
2. Ask the pupils to write down the following equations in their exercise books:

$5 + 1 =$ (Answer: 6)	$4 + 3 =$ (Answer: 7)	$6 + 3 =$ (Answer: 9)	$2 + 5 =$ (Answer: 7)
$9 - 1 =$ (Answer: 8)	$8 - 2 =$ (Answer: 6)	$5 - 3 =$ (Answer: 2)	$7 - 6 =$ (Answer: 1)
3. **Say:** Work alone. Use the number line or your fingers to answer to the equations.
4. Ask the pupils to hold up their work for you to see.

Closing (2 minutes)

1. **Ask:** What two tools can you use add and subtract numbers up to 10? (Answer: Number line and fingers.)
2. **Say:** Well done. Thank you, class. Pupils say: Thank you.

Lesson Title: Using the commutative law of addition	Theme: Everyday Arithmetic – Addition/Subtraction up to 100	
Lesson Number: M-02-012	Class/Level: Class 2	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to reverse the position of numbers in addition to get the same answer.	 Teaching Aids None	 Preparation None
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Opening (5 minutes)

1. Ask two volunteers (1 boy and 1 girl) to stand together at the front of the class on one side of the room.
2. Ask four volunteers (2 boys and 2 girls) to stand together at the front of the class on the other side of the room.
3. **Say:** Count aloud with me: 1, 2, 3, 4, 5, 6.
4. Ask the two groups of pupils to switch places
5. **Say:** Count aloud with me again: 1, 2, 3, 4, 5, 6.
6. **Ask:** Has the number of pupils changed? (Answer: No)
7. Tell the pupils that today we will learn that we can change the order of numbers when we add them together.

Introduction to the New Material (8 minutes)

1. Write the equation $3 + 4 =$ on the board.
2. Point to the number 3. Tell pupils to hold up 3 fingers.
3. Point to the number 4. Tell pupils to add 4 more fingers.
4. **Say:** Count aloud with me as I count all the fingers: 1, 2, 3, 4, 5, 6, 7.
5. Complete the equation on the board $3 + 4 = 7$
6. Have pupils put their hands down.
7. Write the equation $4 + 3 =$ on the board.
8. Point to the number 4. Tell pupils to hold up 4 fingers.
9. Point to the number 3. Tell pupils to hold up 3 fingers.
10. **Say:** Count aloud with me as I count all the fingers: 1, 2, 3, 4, 5, 6, 7.
11. Complete the equation on the board $4 + 3 = 7$
12. **Say:** When adding 2 numbers, it does not matter what order the numbers are in; the answer will always be the same.

Guided Practice (9 minutes)

1. Ask the pupils to get into pairs. Tell the pupils to choose who will be partner 1 and who will be partner 2.
2. Write $7 + 3 =$ on the board.
3. Point to the number 7. **Say:** Partner 1 hold up 7 fingers.
4. Point to the number 3 and **Say:** Partner 2 hold up 3 fingers.
5. **Say:** Work with your partner to count the total number of fingers.
6. Ask a pair of pupils to share their answer. (Answer: 10)

7. Write $3 + 7 =$ on the board
8. Point to the number 3. **Say:** Partner 1 hold up 3 fingers.
9. Point to the number 7. **Say:** Partner 2 hold up 7 fingers.
10. **Say:** Work with your partner to count the total number of fingers.
11. Ask a pair of pupils to share their answer. (Answer: 10)
13. Remind the pupils that when adding 2 numbers, it does not matter what order the numbers are in; the answer will be the same.
12. Ask the pupils to return to their seats.




Independent Practice (10 minutes)

1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
2. Ask the pupils to write down the following equations in their exercise books:
 $3 + 2 =$ (Answer: 5) $2 + 3 =$ (Answer: 5) $5 + 3 =$ (Answer: 8) $3 + 5 =$ (Answer: 8)
 $4 + 1 =$ (Answer: 5) $1 + 4 =$ (Answer: 5) $6 + 4 =$ (Answer: 10) $4 + 6 =$ (Answer: 10)
3. **Say:** Work alone. Use your fingers, a number line or count inside your head to answer the equations.
4. Ask pupils to hold up their work for you to see.

Closing (3 minutes)

1. **Ask:** What is 3 plus 4? (Answer: 7)
2. **Ask:** What is 4 plus 3? (Answer: 7)
3. **Ask:** Is the answer the same if you change the order of the numbers? (Answer: yes)
4. **Say:** Well done. Thank you, class. Pupils say: Thank you.

Lesson Title: Using mental strategies for addition up to 100	Theme: Everyday Arithmetic – Addition/Subtraction up to 100	
Lesson Number: M-02-013	Class/Level: Class 2	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to solve simple addition problems up to 100 mentally.	 Teaching Aids 100 chart (at the end of the lesson).	 Preparation Create a 100 chart on the board.
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Opening (4 minutes)

1. Choose a volunteer. **Say:** Tell me a number between 1 and 50.
2. Choose a different volunteer (alternating between boys and girls). **Say:** Tell me a number between 1 and 10.
3. **Say:** I will now use just my brain to add the 2 numbers together.
4. Using mental math, add the two numbers together in your head and write the answer down.
5. Find the first number on the 100 chart and place your finger on it.
6. Add the second number by moving your finger.
7. Show the pupils that the number you wrote down and the number you are pointing to is the same.
8. **Say:** Today we will learn how to use mental math, like I did with this problem, to solve simple addition problems.

Introduction to the New Material (8 minutes)

1. **Say:** The easiest way to solve simple addition problems with mental math is to count up.
2. Write the number 8 on the board.
3. **Say:** Count to 8 in your head.
4. Add $+ 2 =$ and make it an equation like this: $8 + 2 =$
5. **Say:** Count aloud with me as I add 2 to 8: 8, 9, 10.
6. **Say:** I am now at 10 because I started at 8 and added 2.
7. Share some tips with pupils:
 - a) They may want to move a part of their body to help them keep track of the number they are adding on (nodding the head is an example).
 - b) They may want to picture the 100 chart to help them add on numbers.
8. Write the number 30 on the board.
9. Add $+ 10 =$ and make it an equation like this: $30 + 10 =$
10. **Say:** When adding 10 to any number you just need to add 1 to the first digit of the first number. When you add 10 to 30, you just need to add a 1 to the 3 and it becomes 40.
11. Write the answer 40 on the board like this: $30 + 10 = 40$

Guided Practice (10 minutes)

1. Write the number 25 on the board.
2. Add $+ 4 =$ and make it an equation like this: $25 + 4 =$
3. Tell pupils to use mental math to add the numbers together.
4. **Ask:** What is the solution? (Answer: 29)

5. **Ask:** How did you get to your solution? (Example answer: I started at 25 and then added 4 and ended up with 29.)
6. Write the number 38 on the board.
7. Add + 40 and make it an equation like this: $38 + 40 =$
8. Tell pupils to use mental math to add the numbers together.
9. **Say:** Remember, when adding a multiple of 10, only 1 number is needed to find a solution.
10. **Ask:** What is the solution? (Answer: 78)
11. **Ask:** How did you get to your solution? (Example answer: I started at 38 and counted on 4 Tens: 48, 58, 68, 78)

Independent Practice (10 minutes)

1. Tell pupils to work in pairs. **Say:** One of you will face the 100 chart and one of you will have your back to the 100 chart.
2. Write down these equations on the board:
 $12 + 3 =$ (Answer: 15) $34 + 5 =$ (Answer: 39) $63 + 4 =$ (Answer: 67) $89 + 2 =$ (Answer: 91)
 $30 + 20 =$ (Answer: 50) $40 + 50 =$ (Answer: 90) $23 + 20 =$ (Answer: 43) $60 + 30 =$ (Answer: 90)
3. **Say:** Take turns finding the answers. The pupil facing the 100 chart will check if the answer is correct or incorrect.
4. Walk through the room assisting pupils that are having difficulties.




Closing (3 minutes)

1. **Say:** Remember, the easiest way to use mental math for simple addition problems is to count up. When I add 8 and 3, I start at 8 and count up 3: 8, 9, 10, 11.
2. **Say:** Remember when adding a multiple of 10 to a number, only the first number will change. When I add 30 and 40, I am adding 3 Tens and 4 Tens. I use what I know about adding $3 + 4 = 7$ and make it 10 time bigger.
3. **Say:** Well done. Thank you class. Pupils say: Thank you.

[100 CHART]

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Lesson Title: Using the number line for addition of numbers up to 100	Theme: Everyday Arithmetic – Addition/Subtraction up to 100	
Lesson Number: M-02-014	Class/Level: Class 2	Time: 35 minutes

 <p>Learning Outcomes By the end of the lesson, pupils will be able to use the number line to add 2-digit problems up to 100.</p>	 <p>Teaching Aids 1. Number line 0-100 (at the end of the lesson) 2. Small piece of paper to act as a number line marker with tape on the back.</p>	 <p>Preparation 1. Draw a number line 0-100 across the board. 2. Make sure the number line marker will stick to the number line.</p>
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Opening (2 minutes)

1. Point to the number line. **Ask:** What is different about this number line compared to the 0 to 10 number line? (Answer: The number line is from 0 to 100.)
2. **Say:** Today we will use the number line to add 2-digit numbers.

Introduction to the New Material (10 minutes)

1. Write the number 25 on the board.
2. Show the pupils the marker. Stick it on the number line at 25.
3. Add $+ 36 =$ and make it an equation like this: $25 + 36 =$
4. **Say:** I will add the new number in 2 parts.
5. Underline the 2 in the 25. Underline the 3 in the 36. **Say:** The places I have underline are called the Tens place. These are multiples of 10 like we learned in our Tens lesson.
6. Tell the pupils that you will start with the Tens place.
7. **Say:** The number we are adding to 25 has a 3 in the Tens place so we will move the marker 3 sets of 10 to the right because we are adding.
8. Move the marker from 25 to 35. **Say:** I've added 1 set of 10.
9. Move the marker from 35 to 45. **Say:** I've added another set of 10.
10. Move the marker from 45 to 55. **Say:** I've added a third set of 10. My marker is now on 55.
11. **Say:** Now I am at 55. I have added all the tens I need to.
12. Next underline the 6 in the number 36. **Say:** This place in the number is called the ones place. It is a multiple of 1 like we learned in our first lessons.
13. **Say:** I now need to move the marker 6 places to the right because I am adding.
14. Move the marker 6 spaces. Count as you go along: '55, 56, 57, 58, 59, 60, 61'.
15. Place the marker on 61.
16. **Say:** I have added 25 and 36 using the number line. The answer is 61.

Guided Practice (8 minutes)

1. Write the number 53 on the board.
2. Ask a volunteer to place the marker on the number 53.
3. Write $+ 44 =$ on the board.
4. **Ask:** What is the first step? (Answer: Add the number in the tens place of the 44.)
5. **Say:** The 4 is the same thing as 4 sets of 10.
6. Ask a volunteer (alternating between boys and girls) to come to the board. **Say:** Move the marker 4 sets of 10 to the right because you are adding 4 sets of 10 which is 40.
7. **Say:** Count with your friend as s/he adds 4 sets of 10.

8. Stop on the 93.
9. **Ask:** What is the next step? (Answer: Add the number in the ones place which is 4.)
10. Ask a volunteer to come to the board. **Say:** Move the marker 4 places to the right because you are adding.
11. To the pupil **ask:** What number is the marker on now? (Answer: 97)

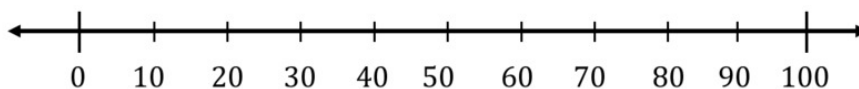
Independent Practice (12 minutes)

1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
2. Write down the following equations on the board for the pupils:
 $40 + 63 =$ (Answer: 103) $28 + 34 =$ (Answer: 62) $56 + 49 =$ (Answer: 105)
3. **Say:** Work alone. Use the number line on the board to solve the equations.
4. Some pupils may need to approach the board to use the number line. That is okay. They will need to take turns.
5. Once the pupils have found answers to all 3 equations, **ask** them to compare answers with a fellow pupil.
6. If their numbers do not match, they both need to solve the problem again until their numbers match.
7. Walk around the class. **Ask** pupils to explain how they solve the problems.




Closing (3 minutes)

1. Write the number 56. **Ask:** What number is in the tens place? (Answer: 5)
2. **Ask:** What number is in the ones place? (Answer: 6)
3. **Say:** Use mental math to add together 40 and 60. (Answer: 100)
4. **Say:** Well done, we all used our brains very well today to solve mental math problems. Thank you class. Pupils say: Thank you.

[NUMBER LINE 0-100]



Lesson Title: Using the number line for subtraction of numbers up to 100	Theme: Everyday Arithmetic – Addition/Subtraction up to 100	
Lesson Number: M-02-015	Class/Level: Class 2	Time: 35 minutes

	<p>Learning Outcomes By the end of the lesson, pupils will be able to solve subtraction problems up to 100 using the number line.</p>		<p>Teaching Aids 1. Number line 0-100 (at the end of the lesson). 2. Small number line marker with tape on the back.</p>		<p>Preparation 1. Draw a number line across the board. 3. Make sure the number line marker will stick to the number line.</p>
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Opening (2 minutes)

1. **Ask:** What did we learn about in the last lesson? (Example answer: Adding 2-digit numbers using the number line.)
2. **Say:** Today we will use the number line to add 2-digit numbers.

Introduction to the New Material (10 minutes)

1. Write the number 55 on the board.
2. Show the pupils the marker. Stick it on the number line at 55.
3. Add $- 33 =$ to the equation and make it like this: $55 - 33 =$
4. **Say:** I will be subtracting the new number in 2 parts.
5. Underline the first 5 in the 55. Underline the first 3 in the 33. **Say:** The places I underlined are called the Tens place. They are multiples of 10 like we learned in our Tens lesson.
6. Tell the pupils that you will start with the tens place.
7. **Say:** The number we are subtracting from 55 has 3 tens so we will move the marker 3 sets of 10 to the left because we are subtracting.
8. Move the marker from 55 to 45. **Say:** I've subtracted 1 set of 10.
9. Move the marker from 45 to 35. **Say:** I've subtracted another set of 10.
10. Move the marker from 35 to 25. **Say:** I've subtracted a third set of ten. My marker is now on 25.
11. **Say:** Now I am at 25. I have subtracted all the tens I need to.
12. Next underline the second 3 in the number 33. **Say:** This place in the number is called the ones place. It is a multiple of 1 like we learned in our first lessons.
13. **Say:** I now need to move the marker 3 places to the left because I am subtracting.
14. Move the marker 3 spaces to the left. Count as you go along.
15. Place the marker on 22.
16. **Say:** I have subtracted 33 from 55 using the number line. The answer is 22.

Guided Practice (8 minutes)

1. Write the number 53 on the board.
2. Ask a volunteer to place the marker on the number 53.
3. Write $- 44 =$ on the board.
4. **Ask:** What is the first step? (Answer: Subtract the number in the Tens place of the 44.)
5. **Say:** The 4 is the same thing as 4 sets of 10.
6. Ask a volunteer (alternating between boys and girls) to come to the board. **Say:** Move the marker 4 sets of 10 to the left because you are subtracting 4 sets of 10 which is 40.
7. **Say:** Count with your friend as s/he subtracts 4 sets of 10.

8. Stop on the 13.
9. **Ask:** What is the next step? (Answer: Subtract the number in the ones place which is 4.)
10. Ask a volunteer to come to the board. **Say:** Move the marker 4 places to the left because you are subtracting.
11. To the pupil **ask:** What number is the marker on now? (Answer: 9)

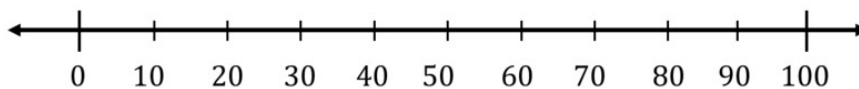
Independent Practice (12 minutes)

1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
2. Write down the following equations on the board for the pupils:
 $63 - 40 =$ (Answer: 23) $34 - 28 =$ (Answer: 6) $56 - 49 =$ (Answer: 7)
3. **Say:** Work alone. Use the number line on the board to answer to solve the equations.
4. Some pupils may need to approach the board to use the number line. That is okay. They will need to take turns.
5. Once the pupils have found answers to all 3 equations, ask them to compare answers with a fellow pupil.
6. If their numbers do not match, they both need to solve the problem again until their numbers match.
7. Walk around the class. Ask pupils to explain how they solve the problems.




Closing (3 minutes)

1. Write the number 56. **Ask:** What number is in the Tens place? (Answer: 5)
2. **Ask:** What number is in the ones place? (Answer: 6)
3. **Say:** Use mental math to subtract 40 from 60. (Answer: 20)
4. **Say:** Well done. Thank you class. Pupils say: Thank you

[NUMBER LINE 0-100]



Lesson Title: Subtraction as the inverse of addition	Theme: Everyday Arithmetic – Subtraction and Multiplication	
Lesson Number: M-02-016	Class/Level: Class 2	Time: 35 minutes

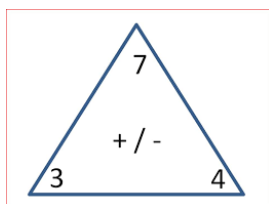
 Learning Outcomes By the end of the lesson, pupils will be able to solve subtraction problems by undoing addition.	 Teaching Aids Addition/Subtraction Fact Triangle example (at the end of the lesson).	 Preparation Create an addition/subtraction fact triangle on the board.
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Opening (2 minutes)

1. Ask pupils to name people they are related to. (Possible answers: mother, father, brother, sister, grandparent or specific names)
2. **Say:** Just like people, math operations have relatives too.
3. Explain that today they will be learning how addition and subtraction are related.

Introduction to the New Material (10 minutes)

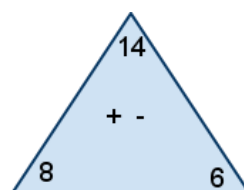
1. Point to the fact triangle on the board:



2. Write the following equation: $3 + 4 = 7$
3. **Say:** Remember you learned that it does not matter what order the numbers are in when you are adding. The answer will always be the same.
4. Write the following equation: $4 + 3 = 7$
5. **Say:** Both equations have the same 3 numbers: 3, 4 and 7.
6. **Say:** This is where we find out that addition and subtraction are related.
7. Write the following equation: $7 - 4 = 3$
8. **Say:** Now I am using subtraction. Starting with the total of 7, I subtract 4 to get the answer of 3.
9. Write the following equation: $7 - 3 = 4$
10. **Say:** Again I am using subtraction. Starting with the total of 7 again, I subtract 3 and to get the answer of 4.
11. **Say:** Both equations have the same 3 numbers: 3, 4 and 7.
12. **Say:** Subtraction problems can be solved by undoing addition.

Guided Practice (8 minutes)

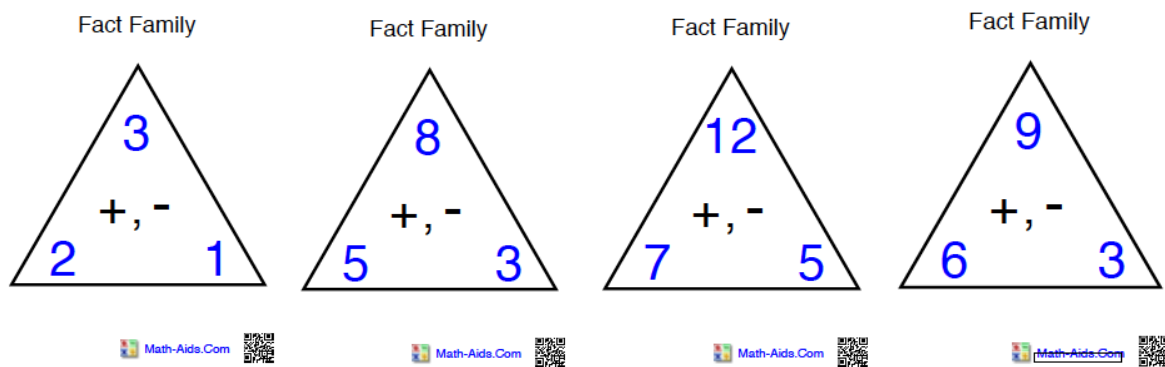
1. Write the following new fact triangle on the board



- Write the first addition equation on the board for the pupils: $8 + 6 = 14$
- Ask a volunteer to come to the board
- Say:** Let's all help our friend write the second addition equation. (Answer: $6 + 8 = 14$)
- After the first pupil writes the equation, ask another volunteer (alternating between boys and girls) to come to the board.
- Say:** Let's help our friend to undo the addition by writing a subtraction equation. (Answers: $14 - 6 = 8$ or $14 - 8 = 6$)
- Say:** The pupils used the related operations of addition and subtraction to solve the equations.

Independent Practice (13 minutes)

- Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
- Write the following fact triangles on the board:

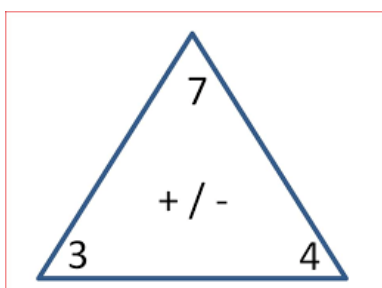


- Say:** Choose one of the fact triangles and write it in your book. **Say:** Write the 2 addition equations using the numbers in your triangle. Then write the 2 subtraction equations using the numbers in your triangle.
- Say:** When you are finished, have another pupil check your work.
- Say:** Then choose another fact triangle and write the 2 addition and 2 subtraction equations.




Closing (2 minutes)

- Ask:** Which operation is related to addition? (Answer: subtraction)
- Ask:** Which operation is related to subtraction? (Answer: addition)
- Say:** Well done. Thank you class. Pupils say: Thank you.

[EXAMPLE FACT TRIANGLE]



Lesson Title: One step word problems in addition up to 100 using pictures	Theme: Everyday Arithmetic – Subtraction and Multiplication	
Lesson Number: M-02-017	Class/Level: Class 2	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to use pictures to solve one-step word problems in addition.	 Teaching Aids None	 Preparation Draw a picture of 5 pupils on the board.
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Opening (2 minutes)

1. Point to the picture on the board.
2. **Say:** Drawings can be used to help solve addition problems.

Introduction to the New Material (10 minutes)

1. Write the following on the board: 5 pupils walked to school at 8.00 in the morning. 3 pupils walked to school at 8.30 in the morning. How many total pupils walked to school this morning?
2. **Say:** By using pictures and words, we can solve the addition problem.
3. Point to the 5 pupils in a group on the board.
4. Draw a second group of 3 pupils.
5. Circle the 5 pupils. Circle the number 5 in the word problem.
6. **Say:** The number 5 in the word problem refers to the 5 pupils in the picture.
7. Write the number 5 on the board.
8. Circle the 3 pupils. Circle the number 3 in the word problem.
9. **Say:** The number 3 in the word problem refers to the 3 pupils in the picture.
10. Write the number 3 on the board so it looks like this: 5 3
11. Circle the word total. **Say:** The word total tells us to ADD the numbers together.
12. Add a + between the 5 and the 3 and complete the equation so it looks like this: $5 + 3 =$
13. **Say:** 5 pupils added to 3 pupils equals 8 pupils.
14. **Say:** 8 pupils walked to school this morning.
15. Write: $5 + 3 = 8$

Guided Practice (10 minutes)

1. Write the following word problem on the board: Bintu saw 3 birds. Then she saw 8 more birds. How many birds did she see in all?
2. Read the word problem out loud.
3. Ask a volunteer to come to the board. **Say:** Draw a picture to match the problem. What should s/he draw first?
4. Encourage the class to direct the pupil to draw a group of 3 birds and a group of 8 birds. Support if needed.
5. Circle the number 3 in the word problem. Circle the 3 birds drawn by the pupil.

6. Write the number 3 on the board.
7. Ask a new volunteer (alternating between boys and girls) to approach the board. **Say:** Circle the next number in the word problem.
8. The pupil should circle 8 in the word problem.
9. Ask the pupil to circle the group of birds that matches the number.
10. The pupil should circle the group of 8 birds. The pupil can then return to their seat.
11. Write the number 8 on the board so it looks like this: 3 8
12. Underline the words 'in all' in the word problem. **Say:** These words tell you they are asking for the total number of birds.
13. Add a + between the 3 and the 8 and complete the equation so it looks like this: $3 + 8 =$
14. Ask a volunteer to raise their hand and answer the problem. (Answer: 11)
15. Complete the problem: $3 + 8 = 11$.
16. **Say:** Bintu saw 11 birds in all.




Independent Practice (10 minutes)

1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
2. Write the following word problems on the board and read them to the class:
 - a) 7 children play a game. 5 more children come to play. How many children are playing in total?
(Answer: $7 + 5 = 12$)
 - b) 6 bugs sit on a leaf. 5 more bugs sit with them. How many bugs are there in all?
(Answer: $6 + 5 = 11$)
3. **Say:** Work alone to draw pictures to match the problems. Solve the problems with an equation.
4. Some pupils may need help to identify the numbers in each problem. Walk through the room and assist pupils who are having difficulties.
5. Give pupils 8 minutes to draw then ask them to hold up their work for you to see.

Closing (3 minutes)

1. **Say:** Write an addition word problem in your exercise book that you would like to solve later.
2. **Say:** Well done. Thank you class. Pupils say: Thank you.

Lesson Title: One step word problems in subtraction up to 100 using pictures	Theme: Everyday Arithmetic – Subtraction and Multiplication	
Lesson Number: M-02-018	Class/Level: Class 2	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to use pictures to solve one-step word problems in subtraction.	 Teaching Aids None	 Preparation None
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Opening (2 minutes)

1. **Say:** Remember that in the last maths lesson we used pictures to help us solve addition problems.
2. **Say:** Drawings can also be used to help solve subtraction problems, which is the aim of today's lesson.

Introduction to the New Material (10 minutes)

1. Write the following on the board: 10 pupils walked to school at 8.00 in the morning. 3 of the 10 pupils walked home from school at 8.30. How many pupils remain at the school?
2. **Say:** By using pictures and words, we can solve the subtraction problem.
3. Circle the number 10 in the problem. Draw 10 pupils on the board.
4. **Say:** This is the number of pupils who walked to school at 8.00 in the morning.
5. Write the number 10 on the board, so the equation looks like this: 10
6. Circle 3 pupils in the group of 10. Circle the number 3.
7. **Say:** 3 pupils walked home.
8. Add a 3 to the equation so it looks like this: 10 3
9. Circle the word: remain
10. **Say:** The word 'remain' tells us to solve how many pupils are left after the 3 pupils walked home.
11. Add a – between the 10 and the 3 and complete the equation so it looks like this: $10 - 3 =$
12. Count out loud the number of pupils that are not circled. **Say:** 1, 2, 3, 4, 5, 6, 7.
13. **Say:** 7 pupils are left at the school.
14. Write: $10 - 3 = 7$

Guided Practice (10 minutes)

1. Write the following word problem on the board: Sahr saw 8 birds. Then 3 birds flew away. How many birds remain?
2. Ask a volunteer to come to the board. **Say:** Draw a picture to match the problem. What should s/he draw first?
3. Have the class direct the volunteer to draw a group of 8 birds.
4. Circle the number 8 in the word problem. Write the number 8.
5. Ask another volunteer (alternate between boys and girls) to approach the board. **Say:** Circle the number of birds in the problem that flew away.
6. The pupil should circle the number 3.
7. Write the number 3 on the board so the equation now looks like this: $8 - 3 =$
8. Underline the word 'remain' in the word problem.

9. **Say:** The problem is asking how many birds are still there after some birds left. Since they left we use a minus.
10. Insert a – between the 8 and the 3 and complete the equation so it looks like this: $8 - 3 =$
11. Ask a volunteer to raise their hand and count how many birds remain. (Answer: 1, 2, 3, 4, 5)
12. Complete the problem. Write: $8 - 3 = 5$
13. **Say:** 5 birds remain.




Independent Practice (10 minutes)

1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
2. Write the following word problems on the board and read them aloud to the pupils:
 - a) 10 children play a game. 5 children left to go home. How many children remain?
(Answer: $10 - 5 = 5$)
 - b) 12 bugs sit on a leaf. 5 bugs fly away. How many bugs remain?
(Answer: $12 - 5 = 7$)
3. **Say:** Work alone to draw pictures to match the problems. Solve the problems with an equation.
4. Some pupils may need help to identify the numbers in each problem. Walk through the room and assist pupils who are having difficulties.
5. Give the pupils 8 minutes to draw, then ask them to hold up their work for you to see.

Closing (3 minutes)

1. **Say:** Write a subtraction word problem in your exercise book that you would like to solve later.
2. **Say:** Well done. Thank you class. Pupils say: Thank you.

Lesson Title: Using doubling to multiply by two	Theme: Everyday Arithmetic – Subtraction and Multiplication	
Lesson Number: M-02-019	Class/Level: Class 2	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to use doubling to multiply by 2.	 Teaching Aids 100 chart (at the end of the lesson).	 Preparation Create a 100 chart on the board.
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Opening (2 minutes)

1. **Say:** Hold up 2 fingers on your right hand.
2. **Say:** Now hold up 2 fingers on your left hand.
3. **Say:** You have just doubled your number of fingers from 2 to 4.
4. **Say:** Today we will learn about doubling numbers.

Introduction to the New Material (10 minutes)

1. Write the following on the board: $2 \times 2 = 4$
2. **Say:** The first number is the first number of fingers you held up.
3. **Say:** The second number, 2, tells you to double your number. Doubling means to add the exact same amount to the first number.
4. **Say:** That's how you ended up with 4 fingers. 4 is the number 2 doubled.
5. **Say:** Hold up 5 fingers. Now hold up 5 more fingers.
6. **Ask:** How many fingers are you holding up in total? (Answer: 10)
7. Write: $5 \times 2 = 10$
8. **Say:** You just doubled 5 and came up with 10. This is also called multiplying. You multiplied the 5 two times and your answer was 10.
9. **Say:** Any number can be doubled or multiplied.

Guided Practice (10 minutes)

1. Write the following equation on the board: $6 \times 2 =$
2. Point to the number 6 on the 100 chart. Count up 6 more out loud. **Say:** 7, 8, 9, 10, 11, 12
3. **Say:** We started at 6 and then we added 6 more. The answer is 12.
4. Finish the equation $6 \times 2 = 12$.
5. Ask pupils to open their exercise books.
6. **Say:** Write the following equation: $4 \times 2 =$
7. **Say:** Make 4 Xs in your exercise book. Now make 4 more.
8. **Say:** How many do you have in total? (Answer: 8)
9. **Say:** We can use the 100 chart to answer our equation, or we can draw a picture to answer the equation. In both cases we have doubled our number by multiplying your number by 2.

Independent Practice (12 minutes)

1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
2. Write the following equations on the board:

$3 \times 2 = (\text{Answer: } 6)$ $11 \times 2 = (\text{Answer: } 22)$ $7 \times 2 = (\text{Answer: } 14)$ $9 \times 2 = (\text{Answer: } 18)$

3. **Say:** Write the equations in your exercise book. Solve using the 100 chart or by drawing pictures.
4. Walk around the room helping pupils who may need further instruction.
5. Give pupils 10 minutes to solve the equations.
6. Choose 4 volunteers (2 girls and 2 boys) to share one answer each with the class.
7. **Say:** Put your hands on your head if you wrote the same answers?




Closing (1 minute)

1. **Say:** Any number can be multiplied. Today you learned how to multiply numbers by 2. Next we will learn that numbers can be multiplied by other numbers.
2. **Say:** Well done. Thank you class. Pupils say: Thank you.

[100 CHART]

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Lesson Title: Commutative law of multiplication	Theme: Everyday Arithmetic – Subtraction and Multiplication	
Lesson Number: M-02-020	Class/Level: Class 2	Time: 35 minutes

	<p>Learning Outcomes By the end of the lesson, pupils will be able to reverse the position of numbers in multiplication to get the same answer.</p>		<p>Teaching Aids Multiplication table (at the end of the lesson).</p>		<p>Preparation Create a multiplication table on the board.</p>
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Opening (2 minutes)

1. Remind pupils that in the previous lesson they learned how to double a number by multiplying by 2.
2. **Say:** Any number can be multiplied. Today we will learn that numbers can be multiplied by other numbers and the order of the numbers does not matter.

Introduction to the New Material (10 minutes)

1. Point to the multiplication table on the board.
2. Point to the 2 line going horizontally.
3. **Say:** As you may remember in one of our first lessons, we learned how to count by 2s. As you will see here on the 2 line, these are the multiples of 2 that you learned. 2, 4, 6, 8, 10.
4. Point to the 5 line going horizontally.
5. **Say:** You also learned how to count in 5s. 5, 10, 15, 20.
6. **Say:** You can use the multiplication table to multiply 2 numbers that are not the same.
7. Point to the number 3 on the left and the number 6 at the top.
8. Move your finger away from the number 3 until it intersects with your finger moving down from the number 6.
9. **Say:** When you multiply 3 and 6, the answer is 18.
10. Write $3 \times 6 = 18$ on the board.
11. Point to the number 6 on the left and the number 3 at the top.
12. Move your finger away from the number 6 until it intersects with your finger moving down from the number 3.
13. **Say:** When you multiply 6 and 3, the answer is also 18. The order of the numbers does not matter; the answer will be the same. This is called the Commutative Law of Multiplication.

Guided Practice (10 minutes)

1. Write the following equation on the board: $4 \times 6 =$
2. Invite a volunteer to come to the board. **Say:** Put 1 finger on the 4 on the left side and 1 finger on the 6 on the top.
3. If they do not know where to put their fingers, help place their fingers in the correct spots.
4. **Say:** Move your fingers until they come together at a number.
5. They may need help keeping their fingers in the correct line and not go off track.
6. To the class, **Ask:** What number has our friend landed on? (Answer: 24)
7. Complete the equation on the board. Write: $4 \times 6 = 24$
8. Write the following equation on the board $6 \times 4 =$

9. **Say:** Put 1 finger on the 6 on the left side and 1 finger on the 4 on the top.
10. Again, support the pupil if they do not know where to put their fingers.
11. **Say:** Move your fingers until they come together at a number. Make sure they keep their fingers on the correct line and do not go off track.
12. To the class, **Ask:** What number has our friend landed on? (Answer: 24)
13. Complete the equation: $6 \times 4 = 24$
14. Ask the pupil to return to their seat.
15. **Say:** It does not matter what order the numbers are in, the answer will be the same.

Independent Practice (12 minutes)

1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
2. Write the pairs of equations on the board. Ask the pupils to copy them in their exercise books:

$5 \times 6 =$ (Answer: 30)	$6 \times 5 =$ (Answer: 30)
$7 \times 8 =$ (Answer: 56)	$8 \times 7 =$ (Answer: 56)
$10 \times 11 =$ (Answer: 110)	$11 \times 10 =$ (Answer: 110)
$3 \times 9 =$ (Answer: 27)	$9 \times 3 =$ (Answer: 27)
3. **Say:** Choose a pair of equations to solve using the multiplication table on the board.
4. **Say:** When you have solved the equation, compare answers with a friend.
5. **Say:** If your answers are the same then you may move on to the next pair of equations.
6. **Say:** If your answers are different, use the multiplication chart to solve the equation again.
7. Walk around and assist pupils needing help.




Closing (1 minute)

1. **Ask:** When multiplying two numbers, does it matter what order the numbers are in? (Answer: no)
2. **Say:** Correct! The order of the numbers does not matter, the answer will be the same.
3. **Say:** Well done. Thank you class. Pupils say: Thank you.

[MULTIPLICATION TABLE]

x	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

Lesson Title: Expressing and comparing length in everyday language (review)	Theme: Measurement and Estimation – Large Lengths	
Lesson Number: M-02-021	Class/Level: Class 2	Time: 35 minutes

 <p>Learning Outcomes By the end of the lesson, pupils will be able to:</p> <ol style="list-style-type: none"> Express length in everyday language. Compare lengths in everyday language. 	 <p>Teaching Aids</p> <ol style="list-style-type: none"> 2 pieces of string of different lengths. 1 book. 	 <p>Preparation Cut 2 pieces of string to different lengths.</p>
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Opening (2 minutes)

- Call 3 volunteers (a combination of boys and girls) of different heights to the front of the classroom.
- Compare the height of the pupils. For example, ‘Jusu is taller than Mariama. Tamba is shorter than Mariama.’
- Say:** Today we will learn how to use length in everyday language.

Introduction to the New Material (3 minutes)

- Point to the longer side of the classroom.
- Say:** This side of the classroom is longer than the other side.
- Hold up the longer piece of string that you have in 1 hand. Let it dangle so pupils can see how long it is.
- Hold up the shorter piece in your other hand.
- Raise your hand holding the longer string. **Say:** This string is longer than this string.
- Write the following words on the board: longer, shorter, taller

Guided Practice (10 minutes)

- Ask 2 volunteers (1 boy and 1 girl) who have different lengths of hair to the front of the room.
- Ask a pupil to raise their hand and use the words you have written on the board to compare the length of their hair. (Example answers: his hair is shorter than her hair, her hair is longer than his hair, his hair is longer than her hair)
- Write down the sentence the pupil stated on the board.
- Read the sentence aloud and underline the comparison word they used, such as ‘longer’ or ‘shorter’.
- Hold up a book for the class to see.
- Ask a pupil to use a comparison word to compare the book and another object in the room.
- Write down the sentence the pupil stated on the board.
- Read the sentence aloud and underline the comparison word they used, such as ‘longer’ or ‘shorter’.




Independent Practice (17 minutes)

1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
2. **Say:** You will be going on a length scavenger hunt with a partner.
3. **Say:** Your assignment is to find items to compare.
4. **Say:** Write down 5 comparison sentences in your exercise book using the comparison words longer, shorter and taller.
5. **Say:** Only 1 pupil needs to write down the sentence. Take turns writing.
6. **Say:** Here are two examples: 'The door is taller than the window. The chair is shorter than the wall.'
7. Have students go around the classroom or around the school. The more space they have the better so if you can use the school grounds it would be best.
8. If the pupils will be using the school grounds, make sure you tell them where they can go and cannot go so they know what area they may work in.
9. At the end of the 17 minutes, call the pupils back into the classroom or back to their seats if they are already in the classroom.

Closing (3 minutes)

1. Ask a group to share a sentence they wrote down. Write the comparison word they used on the board.
2. Ask another group to share a sentence they wrote down. Write the comparison word they used.
3. **Ask:** When talking about or comparing length, what words do we use? (Possible answers: longer, shorter, taller)
4. **Say:** Well done. Thank you class. Pupils say: Thank you.

Lesson Title: Measuring large lengths with non-standard units	Theme: Measurement and Estimation – Large Lengths	
Lesson Number: M-02-022	Class/Level: Class 2	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to measure objects and spaces in school using non-standard units.	 Teaching Aids None	 Preparation None
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Opening (2 minutes)

1. **Ask:** What could we use to measure how tall or how long things are? (Example answers: foot, hand, steps)
2. Write the pupils' answers on the board.
3. If they have not said the following, write on the board: foot, hand, steps

Introduction to the New Material (5 minutes)

1. **Say:** Today we will learn how to measure objects and spaces with non-standard units.
2. Circle the word 'hand' on the board. **Ask** pupils to hold up 1 hand.
3. **Say:** Look at your neighbour's hand. Compare your hand to their hand. **Ask:** Is it the same size?
4. The pupils should compare hand sizes either by putting hands next to each other or palm to palm. You may need to show pupils how to do this.
5. Most pupils will say, 'no'.
6. **Say:** Hands are non-standard units. They are not the same size.
7. Take your hands and use them to measure the height of your chalkboard. Make sure you put 1 hand right above the next, from the bottom of your hand to your fingertips. Tell the pupils to count your hands as you go.
8. When you have reached your fingertips to the top of the chalkboard, stop and announce the number of hands it took you to reach the top.
9. **Say:** The chalkboard is _____ hands tall.
10. **Say:** Units don't always have to be whole units. You can use half a unit. Half hands may be used as well if a whole hand is too much when measuring.

Guided Practice (13 minutes)

1. **Say:** You will now learn how to measure the long side of your desk/table using your hands.
2. Demonstrate to pupils how to place their hand on their desk and line up their other hand from the bottom of their hand to their fingertips.
3. **Say:** Use your hands to measure your desks. Pupils sharing desks will need to take turns.
4. Tell pupils to sit down when they are finished.
5. When all pupils are sitting down, **say:** Raise your hand if you want to share how many hands long your desk is.
6. **Say:** Now take out your pencil.
7. **Say:** Use your pencil to measure the short side of your desk.
8. Demonstrate how to use the pencil to measure their desk and to place their finger at the end of the pencil before moving it to the next space.

9. **Say:** When you put your finger down to mark your spot, do not move it until your pencil is placed in a new spot.
10. **Say:** Measure the short side of your desk. Take turns if you are sharing a desk.
11. Tell pupils to sit down when they are finished.
12. When all pupils are sitting down, **say:** Raise your hand if you want to share how many pencils wide your desk is.
13. **Say:** Steps or paces are often used for measuring longer lengths.
14. Demonstrate taking steps or paces. Point out that the steps/paces need to be about the same length or their answer will not be correct.




Independent Practice (12 minutes)

1. **Say:** Now you will measure things inside and outside the classroom. You may choose from the list I write, or you may choose your own items to measure.
2. Write a list of things the pupils can measure inside and outside the classroom:
 - a) How tall their friend is
 - b) How tall the chalkboard is
 - c) The length of the room
 - d) The width of the room
 - e) The height of a window
 - f) The width of a window
 - g) The distance from 1 classroom door to the next
 - h) The distance from the classroom to the head teacher's office
3. **Say:** Find a partner. Choose 2 or 3 things to measure, and choose the non-standard unit of measure you will use. Write these things down.
4. Have the pupils work together to measure and record their answers.

Closing (3 minutes)

1. Once pupils have all returned to their seats, ask 3 or 4 pairs of pupils to volunteer to share the following:
 - a) What they measured
 - b) What non-standard unit they used
 - c) How many units long/tall was the item/space they measured
2. **Say:** You did wonderful measuring today, well done. Thank you class. Pupils say: Thank you.

Lesson Title: Estimation of large lengths using non-standard units of measure	Theme: Measurement and Estimation – Large Lengths	
Lesson Number: M-02-023	Class/Level: Class 2	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to estimate lengths of large objects and spaces in school using non-standard units.	 Teaching Aids A clear jar or plastic bag of beads or other small objects.	 Preparation None
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Opening (3 minutes)

1. Show the pupils the clear jar/plastic bag. **Ask:** How many beads/small objects are inside?
2. Record the pupils' answers on the board.
3. **Say:** Because you do not know the exact number, you have made an estimate. An estimate is an educated guess.
4. **Say:** In the previous lesson, you used non-standard units to measure lengths of items and spaces.
5. **Say:** Today you will learn how to estimate the length of items or spaces.

Introduction to the New Material (5 minutes)

1. **Say:** Estimates are not exact, but they are meant to come close to the correct answer.
2. Point to the door of the classroom. **Say:** I will estimate how tall the doorway is.
3. **Say:** I estimate that the doorway is _____ hands tall.
4. Write your estimate on the board like this: Estimate = _____ hands
5. Use your hands to measure the doorway from top to bottom.
6. Have the pupils count along with you out loud.
7. Write the answer on the board like this: Actual = _____ hands
8. If the number of hands is not exact, it is okay to add half hands.
9. **Ask:** Was my estimate close to or far from the actual amount?
10. **Say:** The more you practise estimating, the better you become.

Guided Practice (10 minutes)

1. Point to the width of a classroom window.
2. **Ask** a pupil to raise their hand and estimate the width of the window using pencils as a non-standard unit.
3. Write the pupil's estimate on the board like this: Estimate = _____ pencils
4. Ask for 2 volunteers (1 boy and 1 girl) to measure the width of the window using a pencil or two pencils of equal length.
5. Have the class count out loud as the pupils measure the length.
6. After the pupils have measured the length, write the answer on the board like this: Actual = _____ pencils.
7. **Ask:** Was the estimate close to or far from the actual amount?
8. **Say:** You will now practise estimating objects and spaces.




Independent Practice (12 minutes)

1. Write a list of things the pupils can estimate and measure inside and outside the classroom:
 - a) How tall their friend is
 - b) How tall the chalkboard is
 - c) The length of the room
 - d) The width of the room
 - e) The height of a window
 - f) The width of a window
 - g) The distance from one classroom door to the next
 - h) The distance from the classroom to the head teacher's office
 - i) The distance from the classroom to the toilet
2. **Say:** Find a partner. Choose 2 or 3 things to estimate and measure.
3. **Say:** With your partner, make your own estimates using a non-standard unit, such as hands, steps or jumps, and write it down.
4. **Say:** Then measure the actual length of the item/space and record your answers.

Closing (5 minutes)

1. Once pupils have all returned to their seats, ask 3 or 4 pairs of pupils to volunteer to share their work. **Ask:** What items or space did you choose? What were your estimates? What non-standard unit of measurement did you choose? What was your actual number?
2. **Ask the class:** Do you think your estimate was close to the actual number or far from the actual number?
3. **Say:** Well done. Thank you class. Pupils say: Thank you.

Lesson Title: Measuring the perimeter of large objects and spaces using non-standard units	Theme: Measurement and Estimation – Large Lengths	
Lesson Number: M-02-024	Class/Level: Class 2	Time: 35 minutes

 <p>Learning Outcomes By the end of the lesson, pupils will be able to measure the perimeter of objects and spaces using non-standard units.</p>	 <p>Teaching Aids 100 chart (at the end of the lesson).</p>	 <p>Preparation Create a 100 chart on the board.</p>
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Opening (3 minutes)

1. **Say:** We have learned about using non-standard units to measure objects and space.
2. Draw a large rectangle on the board.
3. Trace the 4 sides of the rectangle in one motion.
4. **Say:** This is the perimeter of the rectangle. The perimeter is the distance around a shape.
5. Write the word 'perimeter' on the board.

Introduction to the New Material (5 minutes)

1. Using the same large rectangle on the board, measure 1 side of the rectangle using a pencil as the unit of measurement.
2. State the number aloud. Write it on the board.
3. Measure another side of the rectangle. State the number aloud. Write it on the board. Example: 3 + 5
4. Measure the third side of the rectangle. Add it to the equation. Example: 3 + 5 + 3
5. Measure the last side of the rectangle. Add it to the equation. Example: 3 + 5 + 3 + 5
6. Add all 4 sides together. Write the answer to the equation. Example: 3 + 5 + 3 + 5 = 16
7. **Say:** To find the perimeter of the rectangle I added all 4 sides together.

Guided Practice (11 minutes)

1. Tell pupils to measure the long side of their desk with a pencil and write the number down in their exercise books. If they share a desk they can do this with a partner.
2. **Ask** a pupil to share his/her number. Write the number on the board. ____
3. Tell the pupils to measure the short side of their desk with a pencil and write the number down.
4. **Ask** the same pupil to share his/her number. Write the number on the board. ____ + ____
5. Tell the pupils to measure the other long side of their desk with a pencil and write the number down. **Ask** the same pupil to share his/her number.
6. Write the number on the board. ____ + ____ + ____
7. Tell the pupils to measure the final short side of their desk with a pencil and write the number down. **Ask** the same pupil to share his/her number.
8. Write the number on the board. ____ + ____ + ____ + ____ =
9. Instruct the pupils to use their fingers or the 100 chart while you add up the numbers on the board.

10. Write the answer to the equation on the board.
11. **Ask:** Did you get the same answer?

Independent Practice (13 minutes)

1. Write a list of things the pupils can measure the perimeter of inside or outside the classroom:
 - a) The perimeter inside the classroom
 - b) The perimeter outside the classroom
 - c) The perimeter of another building
 - d) The distance around a window
 - e) The distance around a door frame
2. **Say:** Work with a partner. Choose a space to measure.
3. **Say:** Measuring large spaces with small objects, such as pencils or hands, will take a long time. You should use large units such as paces/steps or body lengths, from head to foot. Smaller objects or spaces can be measured with smaller units such as hands, pencils, or feet as larger units of measurement would be too big.
4. **Ask** the pupils to work in pairs to measure the actual perimeter of the space and record their answers.




Closing (3 minutes)

1. Once pupils have all returned to their seats, ask 3 or 4 groups of pupils to volunteer to share the following: what space they chose, what non-standard unit they chose and the actual perimeter they measured.
2. **Say:** Well done. Thank you class. Pupils say: Thank you.

[100 CHART]

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Lesson Title: Word problems involving large lengths using non-standard units	Theme: Measurement and Estimation – Large Lengths	
Lesson Number: M-02-025	Class/Level: Class 2	Time: 35 minutes

 <p>Learning Outcomes By the end of the lesson, pupils will be able to solve word problems involving large lengths using non-standard units.</p>	 <p>Teaching Aids 100 chart (at the end of the lesson).</p>	 <p>Preparation Create 100 chart on the board.</p>
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Opening (2 minutes)

1. **Say:** We have been learning how to use non-standard units to measure objects and spaces.
2. **Say:** Name some non-standard units of measure. (Example answers: hands, pencils, steps)
3. Record their answers on the board.

Introduction to the New Material (5 minutes)

1. Write the following word problem on the board:
Sara walked 50 steps to her friend Salay's home.
She then walked 35 additional steps to her friend Lucy's home.
How many steps did she walk in total?
2. Write the following equation on the board: $50 + 35 = \underline{\quad}$
3. Using the 100 chart, point to 0. **Say:** Starting on 0, Sara walked 50 steps.
4. Move your finger to point on the 50.
5. **Say:** Then she walked 35 more steps.
6. **Say:** I will break the 35 up into 30 and 5.
7. Add 30 by moving your finger from the 50 to the 80, then add 5 by moving your finger to 85.
8. Complete the equation: $50 + 35 = 85$

Guided Practice (12 minutes)

1. Explain that you will do the next problem together.
2. Write the following problem on the board:
Sowa went to the market to do his family's shopping.
He walked 22 steps from his home to reach the fruit vendor at the market.
He walked 32 steps more steps to purchase cornmeal from another vendor.
He then walked 20 steps to purchase bread.
How many steps did he walk in all?
3. **Ask:** How many steps did he walk first? (Answer: 22)
4. Begin to write the equation on the board. Write: 22
5. **Ask:** How many steps did he walk next? (Answer: 32)
6. Add to the equation on the board: $22 + 32$
7. **Ask:** How many steps did he walk last? (Answer: 20)
8. Add to the equation on the board: $22 + 32 + 20 =$
9. **Say:** Use the 100 chart to add the numbers together.
10. Have pupils share their answers with you until you get the correct answer. (Answer: 74)
11. Complete the equation on the board: $22 + 32 + 20 = 74$

Independent Practice (11 minutes)

1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
2. Write the following problem on the board:
Esther walked 45 steps to her aunt and uncle's home.
She then walked 15 steps to her friend Zinab's home.
She then walked 25 steps back to her home.
How many steps did she walk in total?
3. **Say:** Write the word problem in your book. Work on your own to solve it using the 100 chart or their fingers.
4. Pupils should write an equation and solve the problem. (Example answer: $45 + 15 + 25 = 65$)




Closing (5 minutes)

1. **Say:** Think of a word problem like the problems we have shared.
2. Choose a volunteer to share their word problem with the class.
3. Write the equation on the board as the pupil tells you the word problem.
4. Pupils may want to write down the equation in their exercise books.
5. Solve the equation with the class, explaining how you add the numbers together.
6. **Ask** pupils to raise their hand if they got the same answer.
7. **Say:** Well done. Thank you class. Pupils say: Thank you.

[100 CHART]

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Lesson Title: Using appropriate non-standard units of length to measure different objects and spaces	Theme: Measurement and Estimation – Short Lengths	
Lesson Number: M-02-026	Class/Level: Class 2	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to select appropriate non-standard units to measure different sized objects and spaces.	 Teaching Aids None	 Preparation None
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Opening (2 minutes)

- Ask:** If you were going to measure the distance from our classroom's door to the head teacher's office, would you measure it with your hands or in steps? (Answer: steps)
- Ask:** Why would you use that measure? (Answer: Because it is too far to measure with hands.)
- Say:** It is important to choose the appropriate non-standard unit when measuring objects and spaces.

Introduction to the New Material (7 minutes)

- Say:** Remember that non-standard units of measurement are units that vary in size.
- Ask:** Can you name different kinds of non-standard units of measurement? (Example answers: hands, steps, pencils, feet)
- Record their answers on the board.
- Ask:** What would you use to measure the distance from your home to your neighbour's home? Your hands or your steps? (Answer: steps)
- Say:** It would be difficult to measure the distance with your hands, as it would take a long time. Also because of the long distance and small units the answer might be very inaccurate.
- Ask:** What would you use to measure the width of a doorway? Your hands or your steps? (Answer: hands)
- Say:** Steps would be too big to measure the width of the doorway. Using hands would be more appropriate.

Guided Practice (12 minutes)

- Write the following phrases on the board:
 - Perimeter of your house
 - Height of your brother/sister
- Ask:** What would you use to measure the perimeter of your house? Your hands or your steps? (Answer: steps)
- Say:** Steps is the correct answer because measuring with your hands would take too long. The measurement could be inaccurate.
- Ask:** What would you use to measure the height of your brother/sister? Your pencil or your steps? (Answer: pencil)
- Say:** A pencil is the correct answer because you cannot use steps to measure the height of a person.




Independent Practice (10 minutes)

1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
2. Write the following items with 2 options for units of measurement on the board:
 - a) Height of a water jug – fingers or feet (Answer: fingers)
 - b) Length of a bed – foot or hands (Answer: either foot or hands)
 - c) Length of a road from 1 point to another – car or hands (Answer: car)
 - d) Height of a flower – fingers or steps (Answer: fingers)
 - e) Length of a book – steps or fingers (Answer: fingers)
3. **Say:** Get into pairs.
4. **Say:** Discuss what units of measurement you think would be most appropriate for measuring the items above.
5. **Say:** Write your answers in your book.

Closing (4 minutes)

1. **Ask** a different pair to share what they decided would be the best units of measurement for each of the items.
2. **Say:** Put your hands on your head if your group chose the same unit.
3. Have the groups explain why they chose the unit they did.
4. **Say:** Well done. Thank you class. Pupils say: Thank you.

Lesson Title: Measuring lengths of small objects	Theme: Measurement and Estimation – Short Lengths	
Lesson Number: M-02-027	Class/Level: Class 2	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to measure the length of small objects in the classroom.	 Teaching Aids Buttons, stones or other small objects around the same size.	 Preparation Collect buttons, stones, other small objects.
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Opening (5 minutes)

1. Play a game of 'I Spy' with the pupils.
2. Choose a small object and do not say it out loud.
3. **Say:** I spy something _____. (Fill in the blank with the colour of the object.)
4. **Say:** Your job is to raise your hand and ask 'is it _____?' Then say your guess.
5. Pupils may need help completing the question, 'Is it _____?'
6. Call on volunteers until a pupil has guessed the correct object.
7. **Say:** I chose a small object because today we will learn how to measure small objects in the classroom.

Introduction to the New Material (7 minutes)

1. **Ask:** What small objects do you see in the classroom?
2. Record the pupils' answers on the board.
3. If an object is too big, like a window or a door, **say:** I am looking for small objects.
4. Write down at least 10 small objects that the pupils have identified.
5. The objects can be part of the classroom or on a person. (Example answers: eyes, ears, fingers, pencils, books, chalk)
6. **Say:** Small objects require small units of measurement.

Guided Practice (8 minutes)

1. Choose 1 of the objects the pupils have identified.
2. **Ask:** What could we use for small non-standard units of measurement to measure this? (Example answers: fingers, fingernails, buttons, erasers, marker caps)
3. Choose a book and hold it up for the class to see.
4. **Ask:** What unit of measurement should we use to measure the length of the book?
5. Choose 1 of the units of measurement suggested.
6. Show the pupils how to correctly use the unit of measurement to measure the length of the book.
7. If measuring requires a half unit at the end of the measurement, explain that it is okay to use a half unit.
8. Record the length of the book on the board.

Independent Practice (12 minutes)




1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.

2. Have the pupils get into pairs and wait for your instructions.
3. **Say:** Choose 5 or 6 small objects in the room to write down on a piece of paper.
4. **Say:** Discuss what unit of measurement you want to use to measure each item.
5. Show the jar of buttons/stones/ other small objects to the pupils. Tell them they can use the buttons/stones/small objects to measure any of the items.
6. Give the pupils 11 minutes to measure the objects and record their answers.

Closing (3 minutes)

1. **Ask** 4 groups of pupils to share the small item they chose to measure and the unit of measurement they used.
2. Have the groups also share why they choose the unit of measurement that they did.
3. **Say:** Well done. Thank you class. Pupils say: Thank you.

Lesson Title: Estimation of small lengths using non-standard units of measurement	Theme: Measurement and Estimation – Short Lengths	
Lesson Number: M-02-028	Class/Level: Class 2	Time: 35 minutes

	<p>Learning Outcomes By the end of the lesson, pupils will be able to estimate the length of small objects in the classroom using non-standard units.</p>		<p>Teaching Aids Jar of buttons or other small objects around the same size.</p>		<p>Preparation Collect buttons, stones or other small objects.</p>
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Opening (3 minutes)

1. **Say:** Remember, during the previous lesson you learned how to measure small objects with non-standard units of measurement.
2. **Ask:** What units of measurement did you use?
3. Write their answers on the board.

Introduction to the New Material (7 minutes)

1. **Ask:** Do you remember what an estimate is? (Example answers: a good guess, a guess where you try to work out what something is)
2. They may need help recalling the answer. **Say:** An estimate is ‘an educated guess’.
3. **Say:** Remember, you learned how to estimate large lengths in a previous lesson. Estimates are not exact. They are meant to come close to the correct answer.
4. Point to a piece of paper.
5. **Say:** I am going to estimate how long the piece of paper is using my pointer finger and whole units.
6. **Say:** I estimate that the paper is _____ fingers long.
7. Write your estimate on the board like this: Estimate = _____ fingers
8. **Say:** Now I will measure it.
9. Use your finger to measure the length of the paper.
10. Have the pupils count along with you.
11. Write the answer on the board like this: Actual = _____ fingers
12. **Ask:** Was my estimate close to or far from the actual amount?
13. Explain that the more you practise estimating, the better you become.

Guided Practice (8 minutes)

1. Point to the width of a piece of paper.
2. **Say:** Raise your hand if you can estimate the width of the piece of paper using a button as the unit of measurement. Please use whole units, not half, when estimating.
3. Write the pupil’s estimate on the board like this: Estimate = _____ pencils
4. Ask for 2 pupils (1 boy and 1 girl) to volunteer to measure the width of the paper using a button.
5. Encourage the class to count along with the pupils as they measure.

6. Once they have measured the length, write the answer on the board like this: Actual = _____ buttons.
7. **Ask:** Was the estimate close to or far from the actual amount?
8. Tell the pupils they will now practise estimating objects and spaces.
9. **Ask:** Can you tell me 10 small objects in the classroom?
10. Write the names of the objects on the board.




Independent Practice (12 minutes)

1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
2. Ask the pupils to find a partner. **Say:** With your partner, choose 2 or 3 things to estimate and then to measure.
3. Have both pupils make their own estimates using non-standard units, like erasers, buttons, fingers, fingernails, and write down their estimates.
4. Have the pupils measure the actual size of the small object and record their answers.

Closing (3 minutes)

1. Once pupils have returned to their seats, call on 3 or 4 pairs of pupils to volunteer to share the following: what object they chose, what each of their estimates were, including what non-standard unit they chose, and what the actual number was.
2. Have the class say who was the closest to the actual measurement.
3. **Say:** Well done. As we practise, our estimates are getting more accurate. Thank you class. Pupils say: Thank you.

Lesson Title: Compare and order lengths using non-standard units	Theme: Measurement and Estimation – Short Lengths	
Lesson Number: M-02-029	Class/Level: Class 2	Time: 35 minutes

 <p>Learning Outcomes By the end of the lesson, pupils will be able to compare and order lengths using non-standard units.</p>	 <p>Teaching Aids 1. Strips of paper of varying lengths (1 for each pupil). 2. Small rocks/pebbles of similar size (1 for each pupil). 3. 100 chart (at the end of the plan).</p>	 <p>Preparation 1. Cut up strips of paper of varying lengths. 2. Gather 1 small rock/pebble of similar size for each pupil. 3. Create a 100 chart on the board.</p>
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Opening (5 minutes)

1. Hold up a book.
2. **Ask:** What is this? (Answer: book)
3. **Say:** Raise your hand and tell me the name of an object larger than a book.
4. Ask another pupil to tell you the name of an object larger than that.
5. Continue this process until pupils have named the largest object they know of.
6. Hold the book up again. Ask pupils to name an object smaller than the book.
7. Continue this process until pupils have named the smallest object they know of.

Introduction to the New Material (8 minutes)

1. Invite 6 volunteers (3 boys and 3 girls) to the front of the room.
2. Ask them to stand in a line.
3. Using a pencil as a non-standard unit of measurement, measure the first pupil. Have the class count out loud with you. Write their name and the number on the board like this example: Mary – 10 pencils
4. Continue measuring each pupil with a pencil and record the measurements on the board. Use half units of measurement when necessary.
5. Once all the measurements are recorded, order the measurements from smallest to largest.
6. Order the pupils in a line based on their measurements.
7. **Say:** Today's lesson will focus on comparing and ordering lengths.

Guided Practice (8 minutes)

1. Hand each pupil a strip of paper and a pebble.
2. Guide the pupils in measuring their strip of paper with the pebble while you measure your strip of paper.
3. Write your answer on the board. Tell pupils to write their number in their exercise books or on a piece of paper.
4. Ask 3 pupils (a combination of boys and girls) to volunteer to come to the front of the room and hold up their strips of paper.
5. Ask each pupil to share their measurement with the class.
6. Write the measurements on the board.
7. **Say:** Look at these measurements. **Ask:** Who has the smallest piece of paper?

8. Have that pupil stand the furthest to the left at the front of the classroom facing the class.
9. **Say:** Look at the measurements. **Ask:** Who has the largest piece of paper?
10. Have that pupil stand the furthest to the right at the front of the classroom facing the class.
11. The last pupil can stand in the middle of the 2 pupils.
12. The order should look like this: shortest middle longest
13. **Say:** They are in order from shortest to longest.
14. Ask the pupils to return to their seats.

Independent Practice (12 minutes)

1. Ask the pupils to measure their strip of paper using their smallest finger.
2. **Say:** Ask 6 other classmates for the measurement of their strips of paper. Write the numbers down.
3. **Say:** Order the measurements from smallest to largest, from left to right.
4. **Say:** You may use the 100 chart for guidance.
5. **Say:** If 2 measurements are the same, it does not matter which is written first as the numbers are equal.




Closing (3 minutes)

1. Once all pupils have completed the ordering of measurements, ask a volunteer to share the 7 recorded measurements in order from least to greatest.
2. Write the numbers on the board.
3. **Ask:** Are these measurements in order from smallest to largest?
4. **Say:** Today you learned how to compare and order strips of paper from least to greatest.
5. **Say:** Well done. Thank you class. Pupils say: Thank you.

[100 CHART]

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Lesson Title: Word problems involving small lengths using non-standard units	Theme: Measurement and Estimation – Short Lengths	
Lesson Number: M-02-030	Class/Level: Class 2	Time: 35 minutes

	<p>Learning Outcomes By the end of the lesson, pupils will be able to solve word problems involving small lengths using non-standard units.</p>		<p>Teaching Aids 1. 100 chart (at the end of the plan). 2. Eraser.</p>		<p>Preparation 1. Create a 100 chart on the board.</p>
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Opening (5 minutes)

- Say:** Name maths-related words that you know.
- Write the words on the board.
- If the pupils have not said the following, write these on the board as well: length, unit, measure, small, large, height, record, answer, non-standard
- Remind pupils that in a previous lesson they learned how to solve word problems involving large lengths.
- Say:** Today you will learn to solve word problems involving short lengths.

Introduction to the New Material (5 minutes)

- Write the following word problem on the board and read it aloud to the class:
The grasshopper hopped 4 hops towards the light.
It then hopped 5 hops away from the light.
How many hops did the grasshopper hop in all?
- Write the following equation on the board: $5 + 4 = \underline{\quad}$
- Say:** Raise your hand if you know the answer. (Answer: 9)
- Complete the equation: $5 + 4 = 9$
- Say:** We have just solved a word problem involving short lengths.

Guided Practice (12 minutes)

- Say:** The next problem we will do together using an eraser as the unit of measurement
- Write the following problem on the board:
An ant left its anthill in search of food.
The ant walked 10 eraser lengths in the first hour.
It then walked 5 eraser lengths in the second hour.
The last hour it only walked 3 eraser lengths.
How many eraser lengths did the ant walk in all?
- Ask:** How many eraser lengths did the ant walk first? (Answer: 10)
- Begin the equation with: 10
- Ask:** How many eraser lengths did the ant walk next? (Answer: 5)
- Add to the equation: $10 + 5$

7. **Ask:** How many eraser lengths did the ant walk last? (Answer: 3)
8. Add to the equation: $10 + 5 + 3$
9. **Say:** Use your fingers or the 100 chart to add the numbers together.
10. **Ask:** What is your answer? (Answer: 18)
11. Complete the equation: $10 + 5 + 3 = 18$

Independent Practice (10 minutes)

1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
2. Write the following problem on the board and read it aloud to the class:
 A ladybug moved 6 finger lengths to climb on a leaf.
 She then moved 4 finger lengths to a new leaf.
 Finally she moved 8 finger lengths to the last leaf and fell asleep.
 How many finger lengths did she move in total?
3. **Say:** Write the word problem in your book, then work on your own to solve it using the 100 chart or your fingers:
4. Have pupils write an equation and solve the problem.
5. The answer should look like this: $6 + 4 + 8 = 18$ finger lengths.




Closing (5 minutes)

1. Ask pupils to think of a word problem similar to the problems you have shared.
2. Choose a volunteer to share their word problem with the class.
3. Write the equation on the board as the pupil tells you the word problem.
4. Pupils may want to write down the equation as well.
5. Solve the equation with the class. Explain how you add the numbers together.
6. Ask the pupils to raise their hand if they got the same answer.
7. **Say:** Well done. Thank you class. Pupils say: Thank you.

[100 CHART]

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Lesson Title: Circles, triangles and their properties	Theme: Geometry – 2-D Shapes	
Lesson Number: M-02-031	Class/Level: Class 2	Time: 35 minutes

	<p>Learning Outcomes By the end of the lesson, pupils will be able to identify and draw circles and triangles by tracing the shapes.</p>		<p>Teaching Aids 1. Paper circles. 2. Paper triangles. 3. Paper squares and rectangles.</p>		<p>Preparation Cut out paper circles and triangles of different sizes. Have a paper circle and a paper triangle for each pupil.</p>
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Opening (5 minutes)

1. Draw a circle on the board. **Ask:** Do you know what this is called? (Answer: circle)
2. **Say:** A circle is a shape. We can find circles all around us.
3. **Ask:** Can you tell me where you have seen a circle before?
4. Write the pupils' answers on the board.
5. Draw a triangle on the board. **Ask:** Do you know what this is called? (Answer: triangle)
6. **Say:** Triangles are shapes with 3 points and 3 sides.
7. **Say:** Triangles can be different sizes, but they all have 3 points and 3 sides.
8. **Ask:** Can you tell me where you have seen a triangle before?
9. Write the pupils' answers on the board.

Introduction to the New Material (4 minutes)

1. Hold up a paper circle. **Say:** The circle is a special shape in that it is 1 continuous line.
2. Show the continuous line by tracing your finger around the circle.
3. **Say:** The line never ends. **Say:** A circle is round. **Say:** Circles come in all sizes.
4. Hold up a paper triangle.
5. **Say:** A triangle is not round like a circle. It has points.
6. Point to the 3 points on the paper triangle.
7. **Say:** A triangle also has 3 sides.
8. Run your finger along each side of the triangle.
9. **Say:** Triangles also come in all sizes. **Say:** Today you will learn how to identify and draw circles and triangles.

Guided Practice (11 minutes)

1. Hold up a paper circle. **Ask:** Is this a circle? (Answer: yes)
2. **Ask:** Why is it a circle? (Example answer: Because it is round.)
3. Hold up a paper square. **Ask:** Is this a circle? (Answer: no)
4. **Ask:** Why not? (Example answers: it has straight lines; it is not round)
5. **Say:** You have just learned how to identify circles.
6. **Say:** Now you will create a circle along with me.
7. Hand a paper circle to each pupil. **Say:** Place your circle on a piece of paper.

8. **Say:** Beginning at one spot, slowly and carefully trace around the outside of the circle until you reach the place where you started.
9. **Say:** Try to do this without lifting your pencil.
10. Once the pupils have completed this, **say:** You have just traced a circle!
11. **Say:** Now we will learn more about triangles.
12. Hold up a paper rectangle. **Ask:** Is this a triangle? (Answer: no)
13. **Ask:** Why not? (Example answers: it has four points, it has four sides).
14. Hold up a paper triangle. **Ask:** Is this a triangle? (Answer: yes)
15. **Ask:** Why is it a triangle? (Example answers: it has three points, it has three sides).
16. **Say:** You have just learned how to identify triangles.
17. **Say:** Now you will create a triangle along with me.
18. **Say:** Draw 3 dots anywhere on your paper. The closer they are to each other, the easier it will be to draw straight lines to make the triangle.
19. As they pupils are drawing dots on their paper, draw 3 dots on the board.
20. **Say:** Choose 1 point to start at. Draw a straight line from that point to the next point.
21. Show how to draw a straight line from 1 dot to the next as the pupils draw their own lines.
22. **Say:** Now we will connect the next 2 points together.
23. Show how to draw a line from 1 point to the next, forming the second side.
24. **Say:** Every triangle has 3 sides and 3 points, so we must now connect the last 2 points to form the triangle. Draw a line to connect the last 2 points together.
25. Show how to draw a straight line between the final 2 points.
26. **Say:** You have drawn a triangle. A triangle has 3 points and 3 sides.




Independent Practice (7 minutes)

1. **Say:** Now it is time to work on your own. Your first job is to trace a circle onto your paper. Try hard to trace the circle without lifting your pencil.
2. **Say:** When you have completed your circle, trade your circle with a classmate. Trace your new circle on your paper.
3. **Say:** Keep trading circles with classmates and tracing new circles until you have filled one side of your paper.
4. **Say:** Once you have filled one side of your paper, flip your paper over.
5. **Say:** Your second job is to draw triangles on the new side of the paper.
6. **Say:** Keep trading triangles with classmates and tracing new triangles until you have filled up this side of your paper.
7. Walk around the room. Help pupils who are having difficulty tracing their circles and triangles.

Closing (8 minutes)

1. Take the pupils outside the classroom to look for circles and triangles. Have pupils draw the circles and triangles they see.
2. **Say:** Well done. We found a lot of circles and triangles today! Thank you class. Pupils say: Thank you.

Lesson Title: Squares and their properties	Theme: Geometry – 2-D Shapes	
Lesson Number: M-02-032	Class/Level: Class 2	Time: 35 minutes

	Learning Outcomes By the end of the lesson, pupils will be able to identify and roughly draw a square.		Teaching Aids Paper squares.		Preparation Cut out paper squares of different sizes.
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Opening (5 minutes)

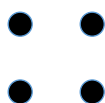
1. Begin by reminding the pupils that they are learning about shapes.
2. **Ask:** What shapes have we learned about in the previous lesson? (Answer: circle and triangle)
3. **Say:** Today you will learn about squares.
4. **Ask:** Does anyone know what a square is?
5. **Say:** Squares are shapes with 4 points and 4 equal sides.
6. Hold up the paper squares that you have cut out.
7. Point out the 4 points.
8. Point out the 4 equal sides.
9. **Say:** Squares can be different sizes, but they all have 4 points and 4 equal sides.

Introduction to the New Material (6 minutes)

1. Draw 4 points on the board in the shape of a square. Make sure the square will have equal sides.
2. **Say:** Squares have 4 points and 4 equal sides. That means that each side measures exactly the same.
3. Connect the dots to make a square.
4. Count each side as you connect 1 dot to the next. **Say:** 1, 2, 3, 4.
5. **Say:** The lines between the dots must be straight. They cannot be curved. The 4 sides must be equal or the same length.
6. Draw 3 points on the board.
7. Connect the 3 points together.
8. **Ask:** Is this a square? (Answer: no)
9. **Ask:** Why is this not a square? (Answer: A square has 4 points and 4 equal sides.)

Guided Practice (9 minutes)

1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
2. **Say:** Draw 2 dots anywhere on your paper. The closer the dots are to each other, the easier it will be to draw straight lines to make the square.
3. As the pupils are drawing dots on their paper, draw 2 dots on the board. ● ●
4. **Say:** Draw 2 more dots right below the first dots. Make sure they are the same distance from the dots above them and the dot next to them.
5. Draw on the board:



6. **Say:** Choose a point to start at. Draw a straight line from that point to the next point.
7. Draw a straight line from 1 dot to the next as the pupils draw their own lines.
8. **Say:** Now we will connect the next 2 points together.
9. Draw a line from 1 point to the next, forming the second side.
10. **Say:** Now we will connect the next 2 points together.
11. Draw a line from 1 point to the next, forming the third side.
12. **Say:** Now we must connect the last 2 points to form the square. Draw a line to connect the last 2 points together.
13. Draw a straight line between the final 2 points.
14. **Say:** You have drawn a square. A square has 4 points and 4 equal sides.




Independent Practice (13 minutes)

1. **Say:** Now it is your turn to create squares on your own.
2. **Say:** Your job is to draw as many squares as you can to fill the page in your exercise book or to fill your paper.
3. **Say:** Remember that squares have 4 points and 4 equal sides. Be careful when you are placing the points on your piece of paper. You want the distance between the dots to be the same.
4. **Say:** Once you have filled the page, find a classmate who has finished as well.
5. **Say:** Take turns drawing 4 points on a piece of paper that can be connected to make a square.
6. **Say:** Once you have drawn 4 points, hand the paper to your partner to connect the dots and create a square.
7. Walk around the room. Assist pupils needing help.

Closing (2 minutes)

1. **Ask:** How many points does a triangle have? (Answer: 3)
Ask: How many sides does a triangle have? (Answer: 3)
Ask: How many points does a square have? (Answer: 4)
Ask: How many sides does a square have? (Answer: 4)
Ask: What is special about the sides in a square? (Answer: They are equal.)
2. **Say:** Well done. Thank you class for drawing your squares carefully. Pupils say: Thank you.

Lesson Title: Rectangles and their properties	Theme: Geometry – 2-D Shapes	
Lesson Number: M-02-033	Class/Level: Class 2	Time: 35 minutes

	<p>Learning Outcomes By the end of the lesson, pupils will be able to identify and roughly draw a rectangle.</p>		<p>Teaching Aids Paper rectangles.</p>		<p>Preparation Cut out paper rectangles of different sizes.</p>
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Opening (5 minutes)

1. Remind pupils that they are learning about shapes.
2. **Ask:** What shapes have we learned about in the previous lessons? (Answers: circle, triangle and square)
3. **Say:** Today you will learn about rectangles.
4. **Ask:** Does anyone know what a rectangle is?
5. **Say:** Rectangles are shapes with 4 points and 4 sides. Not all the sides are equal like in a square. Two pairs of sides are equal.
6. Hold up a paper rectangle that you have cut out.
7. Point out the 4 points.
8. Point out the 2 pairs of equal sides.
9. **Say:** These 2 sides are the same, and these 2 sides are they same.
10. **Say:** Rectangles can be different sizes, but they all have 4 points and 4 sides. Two pairs of sides are equal.

Introduction to the New Material (6 minutes)

1. Draw 4 points on the board in the shape of a rectangle.
2. **Say:** Rectangles have 4 points and 4 sides.
3. Connect the dots to make a rectangle.
4. Count each side as you connect 1 dot to the next.
5. **Say:** The lines between the dots must be straight. They cannot be curved.
6. Label each side 1, 2, 3 and 4.
7. Remind the pupils that there are 2 pairs of equal sides.
8. Point to the sides that are equal and state the number of the sides. For example, sides 1 and 3 are equal, and sides 2 and 4 are equal.
9. Connect the 4 points together.
10. **Ask:** Why is this not a square? (Answer: A square has 4 equal sides.)

Guided Practice (9 minutes)

1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
2. **Say:** Draw 2 dots anywhere on your paper. The closer they are to each other, the easier it will be to draw straight lines to make the rectangle.
3. As they pupils are drawing dots on their paper, draw 2 dots on the board. ● ●
4. **Say:** Draw 2 more dots right below the first dots. Make sure they are the same distance from the dots above them and the same distance apart as the dots above them.

5. Draw on the board:



6. **Say:** Choose a point to start at. Draw a straight line from that point to the next point.
7. Draw a straight line from 1 dot to the next as the pupils draw their own lines.
8. **Say:** Now we will connect the next 2 points together.
9. Draw a line from 1 point to the next, forming the second side.
10. **Say:** Now we will connect the next 2 points together.
11. Draw a line from 1 point to the next, forming the third side.
12. **Say:** Now we must connect the last 2 points to form the rectangle. Draw a line to connect the last 2 points together.
13. Draw a straight line between the final 2 points.
14. **Say:** You have drawn a rectangle. A rectangle has 4 points and 4 sides. Two pairs of sides are equal in measurement.




Independent Practice (11 minutes)

1. **Say:** Now it is your turn to create rectangles on your own.
2. **Say:** Your job is to draw as many rectangles as you can to fill the page in your exercise book or to fill your paper.
3. **Say:** Remember that rectangles have 4 points and 4 sides with 2 pairs of sides being equal. Be careful when you are placing the points on your page that only 2 pairs of sides are equal and not all sides are equal.
4. **Say:** Once you have filled the page, find a classmate who has finished as well.
5. **Say:** Take turns drawing 4 points on a piece of paper that can be connected to make a rectangle.
6. **Say:** Once you have drawn 4 points, hand the paper to your partner to connect the dots and create a rectangle.
7. Walk around the room. Assist pupils needing help.

Closing (4 minutes)

1. **Ask:** How many points does a triangle have? (Answer: 3)
2. **Ask:** How many sides does a triangle have? (Answer: 3)
3. **Ask:** How many points does a square have? (Answer: 4)
4. **Ask:** How many sides does a square have? (Answer: 4)
5. **Ask:** What is special about the sides in a square? (Answer: They are equal.)
6. **Ask:** How many points does a rectangle have? (Answer: 4)
7. **Ask:** How many sides does a rectangle have? (Answer: 4)
8. **Ask:** What is special about the sides in a rectangle? (Answer: Two pairs of sides are equal.)
9. **Say:** Well done, you can draw lots of shapes now! Thank you class. Pupils say: Thank you.

Lesson Title: Rectangles, Squares and their properties	Theme: Geometry – 2-D Shapes	
Lesson Number: M-02-034	Class/Level: Class 2	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to identify the difference between squares and rectangles.	 Teaching Aids None	 Preparation None
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Opening (4 minutes)

1. **Say:** In our previous lessons we have learned about rectangles and squares.
2. **Ask:** How many sides does a rectangle have? (Answer: 4)
3. **Ask:** How many points does a rectangle have? (Answer: 4)
4. **Ask:** How many sides does a square have? (Answer: 4)
5. **Ask:** How many points does a square have? (Answer: 4)
6. **Say:** Both rectangle and squares have 4 sides and 4 points.
7. **Say:** The difference between rectangles and squares is that the sides on a square are exactly the same.

Introduction to the New Material (6 minutes)

1. Draw a rectangle on the board. Make sure the difference in length of pairs of sides is large enough for the pupils to see.
2. **Say:** Rectangles have 4 points and 4 sides.
3. Label each side 1, 2, 3 and 4.
4. **Say:** Remember that there are 2 pairs of equal sides. The four sides are not exactly the same. The sides across from each other are the same.
5. Point to the sides that are equal and state the number of the sides. For example, sides 1 and 3 are equal, and sides 2 and 4 are equal.
6. Draw a square on the board. Make sure the sides are almost exactly the same.
7. **Say:** Squares also have 4 points and 4 sides.
8. Label each side 1, 2, 3 and 4.
9. **Say:** You can see that the four sides are exactly the same.
10. **Say:** Therefore this shape is a square.

Guided Practice (7 minutes)

1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
2. Draw a square on the board.
3. **Ask:** Is this a square or a rectangle? (Answer: square)
4. **Ask:** How do you know it is a square? (Example answers: it has four points, it has four sides, all four sides are equal).
5. **Say:** Now it is your turn to draw a square.
6. **Say:** Remember that all 4 sides must be the same.

7. Draw a rectangle on the board.
8. **Ask:** Is this a square or a rectangle? (Answer: rectangle)
9. **Ask:** How do you know it is a rectangle? (Example answers: it has four points, it has four sides, two pairs of sides are equal).
10. **Say:** Now it is your turn to draw a rectangle.
11. **Say:** Remember that only two pairs of sides have to be equal. The equal sides must be across from each other.




Independent Practice (12 minutes)

1. **Say:** Now we will be going outside to search for squares and rectangles.
2. **Say:** Before we go outside we must prepare our paper.
3. Write: square
4. **Say:** Please write the word square on one side of your paper.
5. Write: rectangle
6. **Say:** Please write the word rectangle on the other side of your paper.
7. **Say:** If you see something in the shape of a rectangle when we are outside, draw what you see on the side of your paper that says rectangle.
8. **Say:** If you see something in the shape of a square when we are outside, draw what you see on the side of your paper that says square.
9. **Say:** Remember that both rectangles and squares have 4 sides, but squares have 4 sides that are exactly the same.
10. **Say:** Please stay where I can see you and do not enter other classrooms. When you hear my signal, please return to the classroom.

Closing (6 minutes)

1. **Ask:** Where did you see rectangles?
2. Write pupil responses on the board.
3. **Ask:** Where did you see squares?
4. Write pupil responses on the board.
5. **Ask:** How many points does a rectangle have? (Answer: 4)
6. **Ask:** Are the sides equal on a rectangle? (Answer: no)
7. **Ask:** How many sides does a square have? (Answer: 4)
8. **Ask:** What makes a square different than a rectangle? (Answer: The sides of a square are all equal.)

Lesson Title: Making patterns using triangles, squares, rectangles and circles	Theme: Geometry – 2-D Shapes	
Lesson Number: M-02-035	Class/Level: Class 2	Time: 35 minutes

 <p>Learning Outcomes By the end of the lesson, pupils will be able to make patterns using triangles, squares, rectangles and circles.</p>	 <p>Teaching Aids Paper circles, triangles, rectangles and squares from previous lessons.</p>	 <p>Preparation None</p>
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Opening (5 minutes)

1. Hold up a paper circle. **Ask:** What shape is this? (Answer: circle)
2. **Ask:** How many sides does it have? (Answer: 1 continuous side)
3. Hold up a paper square. **Ask:** What shape is this? (Answer: square)
4. **Ask:** How many sides does it have? (Answer: 4)
5. Hold up a paper triangle. **Ask:** What shape is this? (Answer: triangle)
6. **Ask:** How many sides does it have? (Answer: 3)
7. Hold up a paper rectangle. **Ask:** What shape is this? (Answer: rectangle)
8. **Ask:** How many sides does it have? (Answer: 4)

Introduction to the New Material (8 minutes)

1. **Say:** Watch what I do.
2. Clap your hands 5 times. Stomp each of your feet. Clap your hands 3 times.
3. Repeat the same pattern again. Clap your hands 5 times, stomp each of your feet and clap your hands 3 times.
4. **Say:** Do it with me.
5. Clap your hands 5 times, stomp each of your feet and clap 3 times.
6. Repeat the pattern 3 times.
7. **Say:** We have just created a pattern.
8. **Say:** A pattern is something that is arranged in a specific way. It follows a certain rule and repeats.
9. **Say:** Today we will use shapes to create patterns.

Guided Practice (7 minutes)

1. Draw the following pattern on the board:



2. **Ask:** What is the pattern? (Answer: circle-circle-circle-square-square)
3. **Say:** After the first 5 shapes, the shapes repeat. This is what makes it a pattern.
4. Draw the following pattern on the board. Ask the pupils to copy it down in their exercise books:



5. **Ask:** Can you identify the pattern? (Answer: circle-square-triangle)
6. Remind the pupils that a pattern is something that is arranged in a specific way. It follows a certain rule and repeats.




Independent Practice (10 minutes)

1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
2. **Say:** Now it is your turn to create your own patterns.
3. **Say:** Using the shapes we have learned about, circle, triangle, rectangle and square, create a pattern on your paper.
4. **Say:** Repeat the pattern on your paper at least 5 times.
5. **Say:** When you have completed your pattern, share it with another pupil.
6. **Say:** Ask the pupil to identify the pattern you have created.
7. **Say:** Take turns working with other pupils to share your pattern and identify other pupils' patterns.
8. **Say:** Make sure to use the correct names for the shapes when identifying the patterns you see.
9. Walk around the room. Support pupils needing help.

Closing (5 minutes)

1. Ask the pupils to share a pattern using their bodies. (Example answer: hands-feet-voice)
2. Invite pupils to share their pattern with the class. Have the pupils repeat the pattern.
3. Pupils sharing should stand at the front of the room so all pupils can see the body motions.
4. **Say:** Well done. Thank you class. Pupils say: Thank you.

Lesson Title: Using pictures to make up word problems using addition up to 100	Theme: Everyday Arithmetic – Addition: Word Problems up to 100	
Lesson Number: M-02-036	Class/Level: Class 2	Time: 35 minutes

	<p>Learning Outcomes</p> <p>By the end of the lesson, pupils will be able to use pictures to make up word problems using addition up to 100.</p>		<p>Teaching Aids</p> <ol style="list-style-type: none"> 100 chart (at the end of the lesson) Drawings/pictures with multiple items in them. 		<p>Preparation</p> <ol style="list-style-type: none"> Create a 100 chart on the board. Draw a picture on the board of a jungle with 26 yellow butterflies and 32 blue butterflies.
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Opening (2 minutes)

1. Show pupils different drawing or pictures. These can be drawings/pictures of anything with multiple objects in them and large enough for the pupils to see.
2. **Say:** Drawings can be used to help solve addition problems.

Introduction to the New Material (6 minutes)

1. Point to the picture on the board.
2. **Say:** Mity went for a walk early one morning. When she reached the edge of the jungle she saw butterflies everywhere. She counted 26 yellow butterflies and 32 blue butterflies. How many butterflies did Mity see in all?
3. Write the equation for the addition problem in the story on the board: $26 + 32 = 58$
4. **Say:** Today you will use your imagination and pictures to create word problems using addition.

Guided Practice (8 minutes)

1. Draw a picture of a classroom on the board.
2. Inside the classroom, draw the number of pupils your class has.
3. Write a word problem for the pupils. For example: 'In our class there are 25 girls and 27 boys. How many pupils are there in all?' Revise the numbers to match the number in your class.
4. Write the equation $25 + 27 =$ on the board. If your class has different numbers of boys and girls, then your equation needs to be the same as the numbers you use in your word problem.
5. **Say:** Use the 100 chart or mental math to solve the equation. (Answer: 52 for this problem, your answer will be the number of pupils in your class.)
6. **Say:** Now it is your turn to create a word problem using a picture.

Independent Practice (15 minutes)

1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
2. Ask pupils to find a partner sitting nearby.
3. **Say:** In one of your books, draw a quick picture of either a jungle, the classroom or a market. Draw some animals or people in your picture. Give pupils 5 minutes to draw.
4. **Say:** Use your imagination and together come up with a story about the picture. Make sure to include at least one addition problem in your story.
5. **Say:** You do not need to write down the whole story but you might want to try to write down a few important words.
6. **Say:** Make sure you write down the numbers that are in your story. If your story has 15 monkeys, 25 snakes, and 3 butterflies, make sure to write those numbers down.
7. **Say:** Once you have created your story, write down the addition equation from your story.
8. **Say:** With your partner, solve your addition equation. Make sure to check your work.
9. Walk around the room and help pupils think of ideas.
10. Make sure they write down the numbers from their stories and create and solve the addition equations.




Closing (4 minutes)

1. Ask a group of pupils to volunteer to share their story with the class.
2. Write the equation the pupils share on the board. Ask the class to share the solution.
3. **Say:** Well done. Thank you class. Pupils say: Thank you.

[100 CHART]

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Lesson Title: Using longer stories to make up short word problems using addition up to 100	Theme: Everyday Arithmetic – Addition: Word Problems up to 100	
Lesson Number: M-02-037	Class/Level: Class 2	Time: 35 minutes

	<p>Learning Outcomes By the end of the lesson, pupils will be able to use longer stories to make up short word problems using addition up to 100.</p>		<p>Teaching Aids 1. Story: <i>'The Clever Hyena- part 1'</i> (at the end of the plan). 2. Story: <i>'The Clever Hyena- part 2'</i> (at the end of the plan). 3. 100 Chart (at the end of the plan).</p>		<p>Preparation Create a 100 chart on the board.</p>
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Opening (2 minutes)

1. Remind pupils that in the previous lesson they learned to use pictures to create word problems.
2. **Say:** Raise your hand if your family members like to share stories with you.
3. **Ask:** Are the stories long? What are they about?
4. Ask 2 volunteers (1 boy and 1 girl) to answer the questions.

Introduction to the New Material (8 minutes)

1. Read *'The Clever Hyena- Part 1'* (at the end of the lesson).
2. When you get to the numbers in the story, write them on the board: 15 15 5
3. At the end of the story, tell the pupils that you are going to create a short word problem out of the longer story.
4. **Say:** A clever hyena walked 15 steps towards his cave. Then he walked 15 more steps. Finally he walked the last 5 steps. How many steps did he walk in all?
5. **Say:** I have taken the longer story and made it into a short word problem.
6. Now finish the equation by adding plus signs (+) between the numbers and an equal sign (=).
7. Use the 100 chart to add the numbers. Explain how you add them.
8. Write the solution to the equation on the board: $15 + 15 + 5 = 35$

Guided Practice (8 minutes)

1. **Say:** I am now going to read another story about the clever hyena. Read *'The Clever Hyena- Part 2'* (at the end of the lesson)
2. **Say:** When I am finished, tell me the numbers you heard in the story. (Answer: 15 and 16)
3. Tell the pupils you are now going to create a short word problem with the numbers.
4. **Say:** The clever hyena saw 16 birds and 15 butterflies outside his cave. How many birds and butterflies did he see in all?
5. **Say:** Tell me the addition equation from the story.
6. Write the equation on the board: $16 + 15 =$
7. Tell the pupils to use the 100 chart to solve the equation.
8. Ask a pupil to raise their hand and say the answer to the equation. (Answer: 31)
9. Complete the equation: $16 + 15 = 31$

Independent Practice (15 minutes)

1. **Say:** Please find a partner to work with. In pairs, make up another story about the clever hyena. Make sure your story has an addition problem in it like the first 2 examples.
2. **Say:** Write a short word problem based on your story.
3. **Say:** Write down the equation that matches your word problem. Then solve the equation.
4. Walk around the room. Support groups of pupil come up with a word problem and write down the equation that goes with it.

Closing (2 minutes)

1. Ask a pair of pupils to volunteer to share their story, word problem and equation with the class.
2. Write down the equation. Confirm that the equation is correct.
3. Solve the problem with the class. Confirm with the group that the answer is correct.
4. **Say:** Well done. Thank you class. Pupils say: Thank you.

[STORY: THE CLEVER HYENA-PART 1]

A clever hyena lived in a cave. Every day, after hunting he would carefully walk home to make sure he was safe from lions hiding in his cave. First he would walk **15** steps. Then he would walk **15** more steps. Finally, he would walk the last **5** steps. When he got to his cave he would call out, 'Hello cave!' to make sure there were no lions inside.




[STORY: THE CLEVER HYENA-PART 2]

One day the clever hyena was walking home to his cave. Everything around him was very quiet. 'Something is wrong,' the hyena said to himself. 'Why are all the birds and insects so silent?' He thought to himself, 'This morning I saw **16** birds outside the cave and **15** butterflies. Now I see none.' The clever hyena knew that the animals had all run away because there was a lion in his cave.

[100 CHART]

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Lesson Title: Using songs and rhymes to make up word problems using addition up to 100	Theme: Everyday Arithmetic – Addition: Word Problems up to 100	
Lesson Number: M-02-038	Class/Level: Class 2	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to use songs and rhymes to make up word problems using addition up to 100.	 Teaching Aids 1. Rhyme, ' <i>Five Little Monkeys</i> ' (at the end of the lesson). 2. Rhyme ' <i>One, Two, Buckle My Shoe</i> ' at the end of the lesson).	 Preparation None
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Opening (2 minutes)

1. **Say:** Raise your hand and share with the class your favourite rhyme or song.
2. Have 2 volunteers (1 boy and 1 girl) share with the class.
3. **Say:** Today we will use rhymes and songs to make up addition word problems.

Introduction to the New Material (8 minutes)

1. Read '*5 Little Monkeys*' (at the end of the lesson) through once.
2. Now read it through again and as you get to a number, write it on the board.
3. When you are finished it should look like this: 5 4 3 2 1
4. **Say:** We are going to use the numbers from the rhyme to create an addition problem.
5. Add + and = symbols to the equation so it looks like this: $5 + 4 + 3 + 2 + 1 =$
6. **Say:** Now we are going to solve the equation using mental math:
7. Write the answer on the board: $5 + 4 + 3 + 2 + 1 = 15$

Guided Practice (8 minutes)

1. Read the next rhyme '*One, Two, Buckle My Shoe*' (at the end of the lesson) to the pupils.
2. Before you read it through a second time, **say:** Raise your hand when you hear a number.
3. Read it through again. When a pupil raises their hand, **ask:** What number did you hear?
4. By the end of the rhyme the following should be written on the board: 1 2 3 4 5 6 7 8 9 10
5. Tell the pupils you are going to create an addition equation with the numbers.
6. Add + and = symbols to the equation so it looks like this: $1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10$
7. Count aloud as you point to and add the numbers: $1 + 2 = 3$, $3 + 3 = 6$, $6 + 4 = 10$, $10 + 5 = 15$, $15 + 6 = 21$, $21 + 7 = 28$, $28 + 8 = 36$, $36 + 9 = 45$, $45 + 10 = 55$.
8. **Say:** The answer is 55.

Independent Practice (15 minutes)

1. Write the following rhyme on the board:
Counting in Two's
 'Two, four, six, eight

Meet me by the garden gate

If I'm late, don't wait.

Two, four, six, eight'

2. Have pupils get in pairs.
3. **Say:** Write down the numbers you hear in the song.
4. **Say:** In pairs, create an addition problem using the numbers.
5. Two answers are acceptable. (Example answers: $2 + 4 + 6 + 8 = 20$, $2 + 4 + 6 + 8 + 2 + 4 + 6 + 8 = 40$)

Closing (2 minutes)

1. Ask the pupils to name other songs that have numbers in them.
2. Write the names of the songs on the board.
3. **Say:** Well done! There are lots of songs and rhymes that have numbers in them! Thank you class.
Pupils say: Thank you.

[FIVE LITTLE MONKEYS]

Five little monkeys jumping on the bed

One fell off and bumped his head

Mama called the doctor and the doctor said:

"No more monkeys jumping on the bed!"

Four little monkeys....

Three little monkeys...

Two little monkeys...

One little monkey ...

Now there's no little monkeys jumping on the bed.

They're all jumping on the roof instead!

[ONE, TWO, BUCKLE MY SHOE]

One, two,

Buckle my shoe;

Three, four,

Close the door;

Five, six,

Pick up sticks;




Seven, eight,

Lay them straight:

Nine, ten,

A big fat hen.

Lesson Title: Representing word problems using addition in pictures	Theme: Everyday Arithmetic – Addition: Word Problems up to 100	
Lesson Number: M-02-039	Class/Level: Class 2	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to represent word problems using addition in pictures.	 Teaching Aids None	 Preparation None
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Opening (2 minutes)

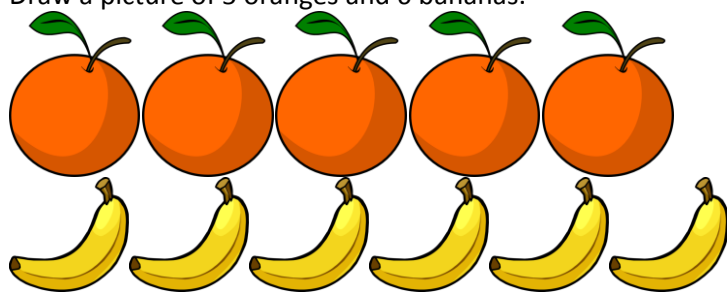
1. **Say:** In the previous lessons, you have used pictures to solve problems.
2. **Say:** Today you will use your imagination to create pictures that go along with word problems.

Introduction to the New Material (6 minutes)

1. **Say:** Mity went for a walk early one morning. When she reached the edge of the jungle she saw animals everywhere. She counted 6 frogs and 3 snakes. How many animals did Mity see in all?
2. At the end of the story, write down the equation for the addition problem in the story. $6 + 3 = 9$
3. Draw a picture of 6 frogs and 3 snakes.
4. **Say:** Today you will use your imagination to draw pictures to go along with word problems.

Guided Practice (8 minutes)

1. **Say:** Sahr went to his neighbour's shop to buy 5 oranges and 6 bananas.
2. Write the equation $5 + 6 =$ on the board.
3. **Say:** Let's draw a picture on your paper that shows the number of pieces of fruit that Sahr bought.
4. Draw a picture of 5 oranges and 6 bananas.



5. **Say:** Sahr bought a total of 11 pieces of fruit.

Independent Practice (15 minutes)




1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
2. **Say:** Now it is your turn to create pictures of your own. Here is the word problem for your picture.
3. **Say:** Jeneba went to her cousin's home on the other side of the village. On her way she saw 4 birds, 3 snakes and 2 chickens.
4. **Say:** Draw a picture to go along with the story.

5. **Say:** Create an addition equation to go along with it. Make sure to solve the equation. (Example answer: $4 + 3 + 2 = 9$)

Closing (4 minutes)

1. Ask 4 volunteers (2 girls and 2 boys) to share their pictures with the class.
2. Write the equation the pupils share on the board. Ask the class to solve the equations.
3. **Say:** Well done. Thank you class. Pupils say: Thank you.

Lesson Title: Solving simple word problems using addition	Theme: Everyday Arithmetic – Addition: Word Problems up to 100	
Lesson Number: M-02-040	Class/Level: Class 2	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to solve simple word problems using addition.	 Teaching Aids 100 chart (at the end of the lesson).	 Preparation Create a 100 chart on the board.
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Opening (2 minutes)

1. **Ask:** What have we been working on during math?
2. Write the answers on the board.
3. **Say:** Today we will solve simple word problems using addition.

Introduction to the New Material (6 minutes)

1. **Say:** Mohamed was walking to school early in the morning. On his way to school he saw 14 boys and 26 girls. **Ask:** How many pupils did he see in all?
2. Write the equation on the board: $14 + 26 = 40$
3. **Say:** I have added 14 and 26 together by starting at 14 on the 100 chart.
4. **Say:** I then added 20 which brought me to 34. Lastly I added 6. The answer is 40.
5. **Say:** On Mohamed's way home from school he saw 34 boys and 15 girls. **Ask:** How many pupils did he see in all?
6. Write the equation on the board: $34 + 15 = 49$
7. **Say:** I have added 34 and 15 together by starting at 34 on the 100 chart.
8. **Say:** I then added 10 which brought me to 44. Lastly I added 5. The answer is 49.

Guided Practice (8 minutes)

1. **Say:** Sahr went to his neighbour's shop to buy 15 mangos and 10 bananas. He then went to another neighbour's shop to buy 12 limes and 4 grapefruits. **Ask:** How many pieces of fruit did he buy?
2. **Say:** Write down the numbers you heard in the story.
3. Write: 15 10 12 4
4. **Say:** Now we will make it an equation.
5. Write on the board: $15 + 10 + 12 + 4 =$
6. **Say:** We will start at 15 on the 100 chart. We will add 10 and that will bring us to 25.
7. **Say:** Next we will add 10 from the 12 and that will bring us to 35. We can't forget the 2 from the 12 so we add 2 more.
8. **Say:** Now we are at 37. Lastly we add 4 to 37 and our answer is 41.

Independent Practice (15 minutes)

1. **Say:** Now it is your turn to solve this word problem. I will write it on the board and then read it aloud.
2. Write on the board:
 Aminata went for a walk today. First she walked 5 kilometres to her friend's home. Then she walked 8 kilometres to her school. Then she walked 6 kilometres home. How far did she walk?

3. Read the word problem out loud.
4. **Say:** Now it is your turn to create an equation and solve it. (Example answer: $5 + 8 + 6 = 19$ kilometres)
5. **Ask** 2 volunteers (1 boy and 1 girl) to share their answer and how they solved the problem with the class.
6. **Say:** Put your hands on your head if you solved the problem in the same way?
7. **Ask:** Who solved the problem in a different way? **Ask** 2 volunteers (1 boy and 1 girl) to share how they solved the problem in a different way.




Closing (4 minutes)

1. **Ask:** Who will tell me a word problem so I can write the equation?
2. Invite a volunteer to share a problem and write the equation on the board.
3. Ask the pupils to solve the word problem.
4. **Say:** Well done. Thank you class. Pupils say: Thank you.

[100 CHART]

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Lesson Title: Using pictures to make up word problems using subtraction up to 100	Theme: Everyday Arithmetic – Subtraction: Word problems up to 100	
Lesson Number: M-02-041	Class/Level: Class 2	Time: 35 minutes

	<p>Learning Outcomes By the end of the lesson pupils will be able to use pictures to make up word problems using subtraction up to 100.</p>		<p>Teaching Aids None</p>		<p>Preparation Draw a picture on the board of a jungle with 26 yellow butterflies and 5 blue butterflies.</p>
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Opening (2 minutes)

1. Point to the picture of the jungle on the board.
2. **Say:** As you will remember, we used drawings to help solve addition problems. Drawings can also be used to help solve subtraction problems.

Introduction to the New Material (6 minutes)

1. **Say:** Mity went for a walk early one morning. When she reached the edge of the jungle, she saw butterflies everywhere! She counted 26 yellow butterflies and 5 blue butterflies. The 5 blue butterflies flew away. How many butterflies were left?
2. At the end of the story, write down the equation for the addition problem in the story. $26 - 5 = 21$
3. **Say:** Today you will be using your imagination and pictures to create word problems using subtraction.

Guided Practice (8 minutes)

1. Draw a picture on the board of the classroom. **Say:** This is our classroom.
2. **Ask:** How many pupils are there in our class today? In the classroom, draw the number of pupils in your class. The drawings do not need to be elaborate.
3. Begin by writing a word problem for the pupils. **Example:** In our class there are 45 pupils (or however many you have).
4. **Say:** 7 pupils went home early. How many were left?
5. On the board, write the equation $45 - 7 =$ **(If your class has different numbers of children then your equation needs to be the same as the numbers you use in your word problem.)**
6. **Say:** Use the 100-chart or mental math to solve the equation. (Answer: 38 for this problem – yours will be different)
7. **Say:** Now it is your turn to create a word problem using a picture.

Independent Practice (15 minutes)




1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
2. Ask pupils to find a partner sitting nearby.

3. **Say:** In one of your books, draw a quick picture of either a jungle, the classroom or a market. Draw some animals or people in your picture. Give pupils 5 minutes to draw.
4. **Say:** Use your imagination and together come up with a story about the picture. Make sure to include at least one subtraction problem in your story.
5. **Say:** You do not need to write down the whole story but you might want to try to write down a few important words.
6. **Say:** Make sure you write down the numbers that are in your story. If your story has 15 monkeys, 25 snakes, and 3 butterflies, make sure to write those numbers down.
7. **Say:** Once you have created your story, write down the subtraction equation from your story.
8. **Say:** With your partner, solve your subtraction equation. Make sure to check your work.
9. Walk around the room and help pupils think of ideas.
10. Make sure they write down the numbers from their stories and create and solve the subtraction equations.

Closing (2 minutes)

1. Ask 2 pairs to share their story with the class.
2. Write the equation the pupils share on the board and ask the class to the answer the problems.
3. **Say:** Well done. Thank you, class. Pupils say: Thank you.

Lesson Title: Using longer stories to make up short word problems using subtraction up to 100	Theme: Everyday Arithmetic – Subtraction: Word problems up to 100	
Lesson Number: M-02-042	Class/Level: Class 2	Time: 35 minutes

	<p>Learning Outcomes</p> <p>By the end of the lesson pupils will be able to use longer stories to make up short word problems using subtraction up to 100.</p>		<p>Teaching Aids</p> <p>1. Story: 'The Clever Hyena- part 3' (at the end of the lesson). 2. Story: 'The Clever Hyena- part 4' (at the end of the lesson). 3. 100 chart (at the end of the lesson).</p>		<p>Preparation</p> <p>Create a 100 chart on the board.</p>
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Opening (2 minutes)

1. Remind pupils that in the previous lesson, they learned to use pictures to create word problems.
2. **Say:** Raise your hand if your family members like to share stories with you.
3. **Ask:** Are the stories long? What are they about?
4. Ask volunteers to answer the questions, alternating between boys and girls.

Introduction to the New Material (8 minutes)

1. Read 'The Clever Hyena- part 3' (at the end of the lesson) aloud.
2. When you get to the numbers in the story, write them on the board (45 15 5).
3. At the end of the story, tell the pupils that you are going to create a shorter word problem out of the long story.
4. **Say:** A clever hyena walked 45 steps towards his cave. Then he walked 15 steps backwards. Then he walked another 5 steps backwards. He looked around him, watching for any signs of danger.
5. **Say:** Does anyone know the subtraction equation regarding the steps?
6. **Say:** I have taken the longer story and made it into a short story problem.
7. Now finish the equation by adding subtraction signs (-) between the numbers and an equal sign (=).
8. Use the 100 chart to subtract the numbers, explaining how you are subtracting.
9. Write the solution to the equation: $45 - 15 - 5 = 25$

Guided Practice (8 minutes)

1. **Say:** I am now going to read another story about the clever hyena. Read 'The Clever Hyena- part 4' (at the end of the lesson) aloud.
2. **Say:** When I am finished, tell me the numbers you heard in the story. (30 and 15).
3. Tell the pupils you are now going to create a shorter word problem with the numbers.
4. **Say:** The hyena saw 30 birds and now there are only 15. How many birds had flown away?
5. **Say:** Tell me the subtraction equation from the story.
6. Write the equation on the board: $30 - 15 =$

- Tell the pupils to use the 100 chart to solve the equation.
- Ask pupils to raise their hands and give you the solution to the equation. (Answer: 15)
- Complete the equation: $30 - 15 = 15$

Independent Practice (15 minutes)

- Say:** Find a partner to work with. In pairs, make up another story about the clever hyena. Make sure your story has a subtraction problem in it like the first 2 examples.
- Say:** Write a short word problem based on your story.
- Say:** Write down the equation that matches your word problem. Then solve the equation.
- Walk around the room. Help groups of pupil come up with a word problem and write down the equation that goes with it.

Closing (2 minutes)

- Ask a pair of pupils to volunteer to share their story, word problem and equation with the class.
- Write down the equation. Confirm that the equation is correct.
- Solve the problem with the class. Confirm with the group that the answer is correct.
- Say:** Well done. Thank you class. Pupils say: Thank you.

[STORY: THE CLEVER HYENA-PART 3]

A clever hyena lived in a cave. One day, after hunting he was carefully walking home to make sure he was safe from lions hiding in his cave. First he walked 45 steps. Then he heard a sound and crept backwards 15 steps. Then he walked another 5 steps backwards. He looked around him, watching for any signs of danger.




[STORY: THE CLEVER HYENA-PART 4]

Everything around the clever hyena was very quiet. 'Something is wrong,' the hyena said to himself. 'Why are all the birds and insects so silent?' He thought to himself, 'This morning I saw 30 birds outside the cave and now I only see 15'. The clever hyena knew that the animals had all run away because there was a lion in his cave.

[100 CHART]

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Lesson Title: Using songs and rhymes to make up word problems using subtraction up to 100	Theme: Everyday Arithmetic – Subtraction: Word problems up to 100	
Lesson Number: M-02-043	Class/Level: Class 2	Time: 35 minutes

	<p>Learning Outcomes By the end of the lesson pupils will be able to use songs and rhymes to make up word problems using subtraction up to 100.</p>		<p>Teaching Aids 1. Rhyme, '<i>Five Little Monkeys</i>' (at the end of the plan). 2. Rhyme '<i>One, Two, Buckle My Shoe</i>' at the end of the lesson).</p>		<p>Preparation None</p>
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Opening (2 minutes)

1. **Say:** Raise your hand and share your favourite rhyme or song with the class.
2. **Say:** Today, we will be using some of the rhymes and songs we used before to make up subtraction word problems.

Introduction to the New Material (8 minutes)

1. Read through '*5 Little Monkeys*' (at the end of the lesson).
2. Now read it again and as you get to a number, write it on the board. Write numbers as a list down the board.
3. **Say:** We are going to use the numbers from the rhyme to create a subtraction problem.
4. Add - 1 and an equal sign after the 5 so it looks like this: $5 - 1 =$
5. **Say:** Now we are going to solve the equation using mental math. Ask for a volunteer to write the answer on the board (Answer: 4)
6. Continue to add -1 after each number on the board and have pupils solve the equations.

Guided Practice (8 minutes)

1. Read the next rhyme, '*One, Two, Buckle My Shoe*' (at the end of the lesson), to the pupils.
2. Before you read it through a second time, **Say:** Raise your hand when you hear a number.
3. Read it again, and when a pupil raises their hand **Ask:** What number did you hear?
4. By the end of the rhyme, you should have the following numbers written on the board in a list:
1 2 3 4 5 6 7 8 9 10
5. Tell the pupils you are going to create subtraction equations with the numbers. Write -3 and an equal sign after the 10 so it looks like this: $10 - 3 =$
6. Count backward 3 numbers starting at 10. 10...9...8...7
7. **Say:** The answer is 7.
8. Continue to create subtraction equations having pupils provide the answers as a group.

Independent Practice (15 minutes)

1. Write the following rhyme on the board:

Counting in Twos

'Two, four, six, eight

Meet me by the garden gate

If I'm late, don't wait.

Two, four, six, eight'

2. **Say:** Write down the numbers you hear in the song.
3. **Say:** Create two subtraction problems using the numbers. Give pupils 5 minutes to write their problems.
4. **Say:** Swap books with a partner and see if you can solve their problems.
5. There will be many different equations created from the numbers. You will need to check them as you walk around the room.

Closing (2 minutes)

1. Ask the pupils to name other songs that have numbers in them.
2. Sing one of the songs together and create a subtraction equation with the numbers.
3. **Say:** Well done. Thank you, class. Pupils say: Thank you.

[FIVE LITTLE MONKEYS]

Five little monkeys jumping on the bed

One fell off and bumped his head

Mama called the doctor and the doctor said:

"No more monkeys jumping on the bed!"

Four little monkeys....

Three little monkeys...

Two little monkeys...

One little monkey ...

Now there's no little monkeys jumping on the bed.

They're all jumping on the roof instead!

[ONE, TWO, BUCKLE MY SHOE]

One, two,

Buckle my shoe;

Three, four,

Close the door;

Five, six,

Pick up sticks;




Seven, eight,

Lay them straight:

Nine, ten,

A big fat hen.

Lesson Title: Representing word problems using subtraction in pictures	Theme: Everyday Arithmetic – Subtraction: Word problems up to 100	
Lesson Number: M-02-044	Class/Level: Class 2	Time: 35 minutes

 <p>Learning Outcomes By the end of the lesson pupils will be able to represent word problems using subtraction in pictures.</p>	 <p>Teaching Aids None</p>	 <p>Preparation None</p>
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Opening (2 minutes)

1. **Say:** In previous lessons, you have used your imagination to create pictures that go along with addition word problems.
2. **Say:** Today, you will use your imagination to create pictures that go along with subtraction word problems.

Introduction to the New Material (6 minutes)

1. **Say:** Mity went for a walk early one morning. When she reached the edge of the jungle, she saw frogs everywhere! She counted 10 frogs but 5 quickly hopped away. How many frogs were left?
2. Ask a volunteer to answer the question.
3. At the end of the story, write down the equation for the subtraction problem in the story ($10 - 5 =$) on the board. Have a volunteer write the answer on the board (Answer: 5)
4. Draw a picture that shows 10 frogs and 5 hopping away.
5. **Say:** Mity went for a walk early one morning. When she reached the edge of the jungle, she saw frogs everywhere! She counted 10 frogs but 5 quickly hopped away. **5** frogs were left?
6. **Say:** Today, you will be using your imagination to draw pictures to go along with word problems.

Guided Practice (8 minutes)

1. **Say:** Sahr went to his neighbour's shop to buy 15 oranges for his mother. When he returned home, he realised he only had 12 oranges left. How many had he lost along the way?
2. Write the equation $15 - 12 =$ on the board.
3. **Say:** Draw a picture in your book that shows the number of pieces of fruit that Sahr was carrying and the number he dropped along the way.
4. Ask the pupils to hold up the number of fingers to show how many oranges Sahr dropped (Answer: 3)
5. Ask a volunteer to write the answer on the board.

Independent Practice (15 minutes)




1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.

2. **Say:** Now it is your turn to create pictures of your own.
3. **Say:** Here is the word problem for your picture.
4. **Say:** Jeneba went to her cousin's home on the other side of the village. On her way, she saw 8 birds that were red or blue. 5 of the birds were blue. How many birds were red?
5. **Say:** Draw a picture to go along with the story. Give pupils 10 minutes to draw.
6. **Say:** Create a subtraction equation to go along with it. Make sure to solve the equation. (Answer: $8 - 5 = 3$)
7. Ask pupils to hold up their work for you to see.

Closing (4 minutes)

1. Ask 2 volunteers (1 boy and 1 girl) to share their pictures with the class.
2. Write the equation the pupils share on the board and ask the group of pupils to give the solution.
3. **Say:** Well done. Your pictures are wonderful. Thank you, class. Pupils say: Thank you.

Lesson Title: Solving simple word problems using Subtraction	Theme: Everyday Arithmetic – Subtraction: Word problems up to 100
Lesson Number: M-02-045	Class/Level: Class 2 Time: 35 minutes

 Learning Outcomes By the end of the lesson pupils will be able to solve simple word problems using subtraction.	 Teaching Aids 100 chart (at the end of the lesson).	 Preparation Create a 100 chart on the board.
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Opening (2 minutes)

1. **Ask:** What have we been working on during math?
2. Write the answers on the board.
3. **Say:** Today, we will solve some simple word problems using subtraction.

Introduction to the New Material (6 minutes)

1. **Say:** Gabriel was walking to school early in the morning. On his way to school, he saw 26 students, 14 of whom were girls. How many boys did he see?
2. Write the equation $26 - 14 =$
3. **Say:** I started at 26 on the 100 chart.
4. **Say:** I then took away 10 of the 14 which left me with 16. $26 - 10 = 16$
5. **Say:** Lastly, I took away the last 4. $16 - 4 = 12$
6. **Say:** Gabriel saw 12 boys on his way to school.
7. **Say:** On Gabriel's way home from school, he saw 34 students and 15 were girls. How many boys did he see?
8. Write the equation: $34 - 15 =$
9. **Say:** I started at 34 on the 100 chart. Then I took away 10 of the 15 which left me with 24. $34 - 10 = 24$
10. **Say:** Then I took away the last 5. $24 - 5 = 19$
11. **Say:** Gabriel saw 19 boys on his way home from school.

Guided Practice (8 minutes)

1. **Say:** Fatima went to her neighbour's shop to buy 25 mangos. She shared 8 mangos with her friends. How many did she take home?
2. **Ask:** What numbers did you hear in the story? (Answers: 25, 8)
3. Write: 25 8 on the board.
4. **Say:** Now we will make it an equation.
5. **Write:** $25 - 8 =$
6. **Say:** I used a subtraction sign because her friends ate 8 of the 25 mangoes.
7. **Say:** We will start at 25 on the 100-chart. Then we will count down 8 spots.
8. Count with the class, pointing to the numbers.
9. **Say:** Now we are at 17. The equation is $25 - 8 = 17$

Independent Practice (15 minutes)

1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
2. **Say:** Now it is your turn to solve this word problem. I will write it on the board and then read it aloud.
3. **Write:** Kumba went on a walk today. She started at her home and walked 15 kilometres to her friend's home. Then she walked 8 kilometres back to her house before she stopped. How many kilometres does she have left to reach her home?
4. Read the word problem aloud.
5. **Say:** Now it is your turn to create the equation and solve it. Write it in your book. (Answer: $15 - 8 = 7$) Give pupils 5 minutes to write.
6. **Say:** Let's try another word problem.
7. **Write:** Mohamed was at the market with his mother. They were selling bananas. They had 24 bananas to sell. Aminata came to the market and bought 12 bananas from Mohamed and his mother. How many bananas did Mohamed have left to sell?
8. Read the word problem aloud.
9. **Say:** Create the equation and solve it in your book. (Answer: $24 - 12 = 12$)




Closing (4 minutes)

1. **Say:** Tell me a short story containing a subtraction problem and I will write the equation.
2. Write the equation on the board.
3. Ask the students to solve the word problem together.
4. **Say:** Well done. Thank you, class. Pupils say: Thank you.

[100 CHART]

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Lesson Title: Recognising and making repeated patterns in pictures	Theme: Algebra – Number Patterns - Addition	
Lesson Number: M-02-046	Class/Level: Class 2	Time: 35 minutes

 Learning Outcomes By the end of the lesson pupils will be able to recognise and make repeating patterns in pictures.	 Teaching Aids None	 Preparation Draw the circle/star pattern from the Introduction on the board.
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Opening (4 minutes)

1. Do the following: Clap clap clap, stomp stomp stomp, clap clap clap, stomp stomp stomp.
2. **Say:** Now it is your turn to copy me.
3. You may need to repeat the pattern before the pupils are able to follow along.
4. **Ask:** What is the pattern? (Answer: 3 claps and 3 stomps)
5. **Say:** Today we will continue working on patterns.

Introduction to the New Material (8 minutes)

1. Point to the drawing on the board:



2. **Say:** Here is a picture with a pattern.
3. Draw the next part in the pattern (star)
4. **Say:** I have drawn a star because it is the next picture in the pattern. Circle, star, circle, star, circle, star.
5. Draw the next pattern:



6. **Say:** Here is another pattern.
7. **Ask:** What shape comes next? (Answer: rectangle)
8. Draw the next part in the pattern (rectangle)
9. **Say:** The rectangle is the next shape in the pattern. The pattern is oval, rectangle, oval, rectangle, oval, rectangle.
10. **Say:** Now we will work together.

Guided Practice (10 minutes)

1. Draw the following pattern on the board:



2. **Say:** Draw this pattern in your book.
3. **Say:** Now draw what comes next in the pattern.
4. **Ask:** What comes next in the pattern? (Answer: half-circle)
5. **Ask:** How do you know the answer is a half-circle? (Answer: The pattern is heart, triangle, half-circle.)
6. Draw the following pattern on the board:



7. **Ask:** What is the next picture in the pattern? (Answer: caterpillar)
8. **Ask:** How do you know that is the next picture? (Answer: The pattern is caterpillar, bug, bug, caterpillar, bug, bug.)




Independent Practice (12 minutes)

1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
2. **Say:** Now it is your turn to create your own patterns from the examples I have shown you.
3. **Say:** Once you have created a pattern, trade with a partner and continue the pattern they have started.
4. **Say:** You may create as many patterns to trade with a partner as time allows.
5. Walk around the room and assist any pupils needing help.

Closing (1 minute)

1. **Say:** Today, we have learned to make repeated patterns using pictures. Tomorrow, we will learn how to add addition to our patterns.
2. **Say:** Well done. Thank you, class. Pupils say: Thank you.

Lesson Title: Recognising and making repeated patterns in pictures involving addition	Theme: Algebra – Number Patterns - Addition	
Lesson Number: M-02-047	Class/Level: Class 2	Time: 35 minutes

 Learning Outcomes By the end of the lesson pupils will be able to recognise and make repeating patterns in pictures involving addition.	 Teaching Aids None	 Preparation Draw the caterpillar pattern from the Introduction on the board.
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Opening (4 minutes)

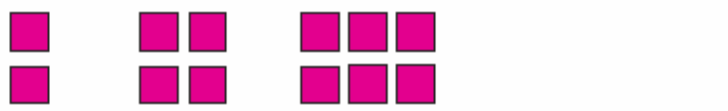
1. Do the following: Clap (pause) clap clap (pause) clap clap clap (pause) clap clap clap clap.
2. **Say:** Now it is your turn.
3. You may need to repeat the pattern before the pupils are able to follow along.
4. **Ask:** What is the pattern? (Answer: The claps increase by one.)
5. **Say:** Today we will continue working on patterns.

Introduction to the New Material (8 minutes)

1. Point to the drawing on the board:



2. **Say:** Here is a picture with a pattern.
3. Draw the next part in the pattern. (Caterpillar with 7 parts)
4. **Say:** I have drawn a caterpillar with 7 parts because the pattern is increased by 2 parts: $1 + 2 = 3$, $3 + 2 = 5$, $5 + 2 = 7$
5. **Say:** This is one example of a pattern. This is a growing pattern. Also known as an addition pattern. As you can see the caterpillar is growing larger.
6. Draw the following pattern on the board:



7. Now draw the next part of the pattern. (8 squares)
8. **Say:** We know the next part of the pattern is 8 squares because the squares increase by 2: 2, 4, 6, 8.
9. **Say:** These are addition patterns.

Guided Practice (10 minutes)

1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
2. **Say:** Draw this pattern on your paper.



3. **Say:** Now draw what comes next in the pattern.
4. **Ask:** What comes next in the pattern? (Answer: Building with 4 levels).
5. **Ask:** How do you know the answer is 4? (Answer: Because the levels increase by 1.)
6. Draw the following pattern on the board:



7. **Ask:** What comes next in the pattern? (Answer: 7 triangles)
8. **Ask:** How do you know the answer is 7? (Answer: The numbers increase by 2.)




Independent Practice (12 minutes)

1. **Say:** Now it is your turn to create your own addition patterns from the examples I have shown you.
2. **Say:** Once you have created a pattern, trade with a partner and continue the pattern they have started.
3. **Say:** You may create as many patterns to trade with a partner as time allows.
4. Walk around the room and assist any pupils needing help.

Closing (1 minute)

1. **Say:** Today we have learned to make repeated patterns using pictures and addition. Next we will learn about patterns with sound.
2. **Say:** Well done. Thank you, class. Pupils say: Thank you.

Lesson Title: Recognising and making repeated patterns using sound	Theme: Algebra – Number Patterns - Addition	
Lesson Number: M-02-048	Class/Level: Class 2	Time: 35 minutes

 <p>Learning Outcomes By the end of the lesson pupils will be able to recognise and make repeating patterns using sound.</p>	 <p>Teaching Aids None</p>	 <p>Preparation None</p>
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Opening (2 minutes)

1. **Say:** In the last few lessons, we have used pictures to identify and create patterns.
2. **Say:** In past lessons, I have showed you some patterns with sound, and today you will be learning more about them.
3. **Say:** Today, we will focus on identifying and repeating patterns using sound.

Introduction to the New Material (5 minutes)

1. **Say:** I am going to make some sounds and actions that create a pattern. Watch carefully and see if you can spot the pattern. Once you spot the pattern, please join in.
2. Do the following: clap hands, slap knees
3. Repeat until all the pupils are performing the pattern.
4. **Ask:** What was the pattern? (Answer: clap hands, slap knees)
5. **Say:** Remember that it is only a pattern if it is repeated.
6. **Ask:** What does the word repeat mean? (Answer: When something is done the same way multiple times in a row.)

Guided Practice (10 minutes)

1. **Say:** Now I will show you a new pattern. Please watch carefully to spot the pattern. Once you spot the pattern, please join in.
2. Do the following: Slap knees, slap knees, clap hands
3. Repeat the pattern until all the pupils have joined in.
4. **Ask:** What was the pattern? (Answer: slap knees, slap knees, clap hands)
5. **Ask:** Who would like to share a pattern with the class?
6. Ask the volunteer to come to the front of the class and start a pattern. Have all the pupils repeat the pattern the first pupil created.
7. **Ask:** What was the pattern?
8. **Ask:** Who else would like to share a pattern with the class?
9. Alternate between boys and girls to lead the pattern. Have all the pupils repeat the pattern the second pupil created.
10. **Ask:** What was the pattern?




Independent Practice (12 minutes)

1. **Say:** Please get into pairs with a pupil near you.
2. Once the pupils are in pairs, **say:** You will take turns sharing patterns with your partner. One of you will create a pattern and the other will join in when they figure out the pattern.
3. **Say:** Once you have each taken a turn showing a pattern, choose one pattern to add words to. Practise so you can show the class.

Closing (6 minutes)

1. Ask the 4 groups to come to the front of the class and show the patterns with the sounds and words that they have created. **Say:** When you spot the pattern, join in!
2. **Say:** Well done, you all made great patterns today! Thank you, class. Pupils say: Thank you.

Lesson Title: Recognising and making repeated patterns that involve addition using sound	Theme: Algebra – Number Patterns - Addition	
Lesson Number: M-02-049	Class/Level: Class 2	Time: 35 minutes

 <p>Learning Outcomes By the end of the lesson pupils will be able to recognise and make repeating patterns that involve addition using sound.</p>	 <p>Teaching Aids None</p>	 <p>Preparation None</p>
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Opening (2 minutes)

1. **Say:** In the previous lesson, we learned how to recognise and repeat patterns using sound. Today, we will create more patterns using sound and addition.

Introduction to the New Material (5 minutes)

1. **Say:** I am going to make some sounds/actions that create a pattern. Watch carefully and see if you can spot the pattern. Once you spot the pattern, please join in.
2. Do the following: Clap... Clap clap... Clap clap clap
3. Repeat until all the pupils are performing the pattern.
4. **Ask:** What was the pattern? (Answer: Adding a clap every time.)
5. **Say:** This is an example of creating patterns using sound and addition.

Guided Practice (5 minutes)

1. **Say:** Now I will show you a new pattern.
2. Do the following: Clap... Clap stomp... Clap stomp snap... Clap stomp snap clap
3. **Ask:** Did you spot the pattern? (Answer: Adding a new action every time to the pattern.)
4. **Say:** Here is a new pattern.
5. Do the following: Clap clap... Clap clap clap clap... Clap clap clap clap clap clap.
6. **Ask:** What comes next in the pattern? (Answer: 8 claps) Repeat the pattern if necessary.
7. **Say:** As you saw, in the pattern I was adding by 2s. 2 claps, 4 claps, 6 claps, 8 claps.
8. **Ask:** Who would like to share a pattern with the class? Choose a volunteer to demonstrate a pattern.
9. **Ask:** What was the pattern?

Independent Practice (15 minutes)




4. **Say:** Find a partner.
5. Once the pupils have a partner, **Say:** You will take turns sharing patterns with addition with your partner. One of you will create a pattern and the other will guess what the pattern is.

6. **Say:** Once you have each taken a turn showing a pattern, choose one of the patterns to add words to. Remember your pattern must have sound and addition.
7. **Say:** Practise so you can show the class.

Closing (*8 minutes*)

3. Ask 3 pairs to come to the front of the class to show the patterns with sounds and words that they have created. Encourage the class to join in when they spot the pattern.
4. **Say:** Well done. Thank you, class. Pupils say: Thank you.

Lesson Title: Drawing patterns for number sequences that involve addition	Theme: Algebra – Number Patterns - Addition	
Lesson Number: M-02-050	Class/Level: Class 2	Time: 35 minutes

 Learning Outcomes By the end of the lesson pupils will be able to find patterns in number sequences that involve addition.	 Teaching Aids 100 chart (at the end of the lesson).	 Preparation Create a 100 chart on the board.
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Opening (2 minutes)

1. **Say:** In the previous lesson, we learned how to recognise and make repeating patterns using sound and addition. Today, we will use numbers and addition to create patterns.

Introduction to the New Material (5 minutes)

1. Write the following on the board: 1 ___ 3 ___ 5 ___ 7 ___ 9
2. **Say:** Here is an example of a number pattern involving addition.
3. **Say:** In this pattern, I have skipped a number. The first missing number is 2.
4. Write a 2 on the first line.
5. **Say:** The second missing number is 4.
6. Write a 4 on the second line.
7. **Say:** The third missing number is 6.
8. Write a 6 on the third line.
9. **Say:** The last missing number is 8.
10. Write an 8 on the last line.
11. **Say:** We have finished the pattern by adding the missing numbers. In this case, all the multiples of 2 were missing.

Guided Practice (8 minutes)

1. **Say:** Now we will complete the next pattern together.
2. Write: 4 8 12 ___ ___ ___ (three blank spaces)
3. **Ask:** Can anyone tell me what the pattern is? (Answer: adding 4)
4. **Ask:** What is the next number in the pattern? Use the 100 chart if you need help. (Answer: 16)
5. Write 16 on the first line.
6. **Ask:** What is the next number in the pattern? (Answer: 20) Write 20 on the second line.
7. **Ask:** What is the next number in the pattern? (Answer: 24) Write 24 on the third line.
8. **Say:** In this pattern, we added 4 to the previous number to continue our pattern.
9. **Say:** Now we will complete a new pattern together.
10. Write: 10 15 20 25 ___ ___ ___
11. **Ask:** Can anyone tell me what the pattern is? (Answer: adding 5)
12. **Ask:** What is the next number in the pattern? Use the 100-chart if you need help. (Answer: 30) Write 30 on the first line.

13. **Ask:** What is the next number in the pattern? (Answer: 35) Write 35 on the second line.
14. **Ask:** What is the next number in the pattern? (Answer: 40) Write 40 on the third line.
15. **Say:** In this pattern we added 5 to the previous number to continue our pattern.

Independent Practice (15 minutes)

1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
2. **Say:** You will complete this activity on your own.
3. Write the following patterns on the board:
 - a. 15 17 ____ 21 ____ 25 27 ____ (Answer: 15, 17, **19**, 21, **23**, 25, 27, **29**)
 - b. 3 ____ 23 ____ 43 ____ ____ 73 ____ (Answer: 3, **13**, 23, **33**, 43, **53**, **63**, 73, **83**)
 - c. 18 ____ 30 ____ 42 48 ____ 60 (Answer: 18, **24**, 30, **36**, 42, 48, **54**, 60)
 - d. 11 ____ 33 ____ 55 ____ 77 ____ 99 (Answer: 11, **22**, 33, **44**, 55, **66**, 77, **88**, 99)
4. **Say:** First identify the pattern of the numbers. (Answers: a. add 2, b. add 10, c. add 6, d. add 11)
5. **Say:** Then fill in the missing numbers to complete the pattern. You may use the 100-chart to help you. Give pupils 10 minutes to complete.
6. Ask 4 volunteers (2 boys and 2 girls) to write the missing numbers on the board.
7. **Say:** Check your answers are correct.




Closing (5 minutes)

1. **Say:** Today, we learned how to complete patterns using numbers and addition.
2. **Ask:** What was your favourite pattern?
3. Ask volunteers raising their hand to share their favourite pattern.
4. **Say:** Well done. Thank you, class. Pupils say: Thank you.

[100 CHART]

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Lesson Title: Making up a plan for data collection – Lesson 1	Theme: Statistics and Probability – Data Handling	
Lesson Number: M-02-051	Class/Level: Class 2	Time: 35 minutes

	Learning Outcomes By the end of the lesson pupils will be able to decide on questions to ask in a survey and devise a plan for data collection.		Teaching Aids None		Preparation None
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Opening (5 minutes)

- Ask:** How many siblings (brothers and sisters) do you have?
- Record each different answer on the board.
- Ask the pupils to raise their hand if they have the same number of siblings.
- Record the answers with tally marks.
- Tally marks look like this:

1	I	6	
2	II	7	I
3	III	8	II
4	IIII	9	III
5	I	10	IIII

- Say:** Today, we are going to learn about taking a survey, just like I did when I asked you how many siblings you have.

Introduction to the New Material (10 minutes)

- Say:** A survey is a question or set of questions you ask to get information. The information you get is called data.
- Say:** Over the next few weeks, we will be learning how to create a survey, how to carry out a survey, and how to present the results.
- Say:** Today, we will focus on creating a survey and making a plan to gather data.
- Say:** Data is another word for information.
- Say:** I conducted a survey earlier when I asked you how many siblings you had.
- Say:** The responses you shared with me are called data.
- Say:** I recorded the data using tally marks. You might notice the tally marks are in organised into groups of 5.
- Say:** Let's count to 50 by 5s.
- Count with the pupils to 50 by 5s.
- Say:** To make a set of 5 tally marks, you write 4 lines and then draw a diagonal line to make it number 5.
- Demonstrate this for the pupils.
- Say:** Tally marks are not always in sets of 5. Sometimes they are alone or with other tally marks.
- Write the following: **3 III 4 IIII 2 II**

14. Explain that if you count the number of lines, you will get the same number as the number listed.
15. **Say:** Now that we've talked about tally marks, let's talk about questions and who you might want to ask them to, and how you might want to ask them.

Guided Practice (12 minutes)

1. **Ask:** What questions can you think of that you would like to ask the class?
2. Write the questions shared by 6 volunteers (3 girls and 3 boys) on the board.
3. Help the pupils think of questions that require numbers as responses.
4. Ask the pupils to vote for their one favourite question. Remind them they may only vote for one. Count the number of hands raised for each question and write the number next to it.
5. Circle the top four questions chosen.
6. **Say:** Based on a survey, our class would choose to use _____ as our survey questions.
7. **Say:** Now that we have decided questions, we need to decide whom we will survey.
8. **Say:** Who might we want to survey?
9. Suggest the whole school, Class 3, Class 1, or others if pupils have not thought of them. Record the answers on the board.




Independent Practice (6 minutes)

1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
2. **Say:** Now it is time to get in pairs and decide which of the four survey questions your pair will collect data for.
3. **Say:** Please decide and write down the following:
 - Survey question to be used: _____
 - Who we will survey: _____

Closing (2 minutes)

1. **Say:** Today, you have decided what survey question you will use and to whom you will ask the question. In the next lesson, we will talk about how to collect the data and how many people you will collect the data from.
2. **Say:** Well done. Thank you, class. Pupils say: Thank you.

Lesson Title: Making up a plan for data collection piloting – Lesson 2	Theme: Statistics and Probability – Data Handling	
Lesson Number: M-02-052	Class/Level: Class 2	Time: 35 minutes

 <p>Learning Outcomes By the end of the lesson pupils will be able to devise a plan for data collection and run a small statistical pilot study.</p>	 <p>Teaching Aids None</p>	 <p>Preparation None</p>
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Opening (2 minutes)

1. **Say:** In the previous lesson, we learned about surveys and how to create them.
2. **Say:** Today, we will be learning about how to collect the data and how to determine how many people we will survey.
3. **Say:** We will also practise surveying by asking each other our survey questions.

Introduction to the New Material (12 minutes)

1. **Ask:** What is a survey? (Answer: A survey is a question or set of questions you ask to get information.)
2. **Say:** Last lesson you and your partner decided what question you want to use for your survey and who you would like to survey.
3. **Say:** Today, you will learn about how to collect the data. **Ask:** What is data? (Answer: the information)
4. **Say:** You will also learn how to decide how many people to survey.
5. **Say:** We will begin by learning about how many people to survey. There are many reasons surveys are conducted. Sometimes surveys are conducted to find out specific information so you can make decisions based on the information.
6. **Say:** For example, if I wanted the class to play a game but wanted the class to help me choose it, I would survey the class to find out what game was most popular. I would know what game was most popular because it would be the most popular response in the survey.
7. **Say:** If the head teacher asked how old most pupils were in this class, I would survey this class to find out what age was stated the most.
8. **Say:** It is important to know that the more people that respond to the survey, the easier it will be to identify patterns. You will remember we learned about patterns in previous lessons.
9. **Say:** When deciding how many people to survey, you must come up with a reasonable number. If you were to decide to survey 200 pupils, it would take a lot of time to survey each one. If you decided to only survey 5, it would be difficult to say there was a pattern as each person may give you a different answer.
10. **Say:** I would recommend you survey no less than 20 people and no more than 50 people.
11. **Say:** As I said, you will also learn how to collect the data.

12. **Say:** Surveys are conducted many different ways. They are conducted in person, via mobile, and through written surveys, just to name a few.
13. **Say:** For our purposes, we will be collecting the data by asking people the survey question and recording their responses. This is called a 'personal survey.'
14. **Say:** Remember in the previous lesson, we learned how to use tally marks. You will use tally marks to record your answers on a piece of paper.

Guided Practice (10 minutes)

1. **Say:** Get together with your survey partner from last lesson.
2. **Ask:** What is the question your group will ask?
3. **Ask:** Which group of people you will ask?
4. **Say:** Now discuss with your partner how many people you think you should survey at a minimum. The word minimum means the least amount.
5. **Say:** Now discuss with your partner how many people you think your group should survey at a maximum. The word maximum means the most amount.
6. Once all pupils have finished their discussions, they may return to their seats.




Independent Practice (10 minutes)

1. **Say:** You have had a chance to speak with your partner to talk more about your ideas for your survey.
2. **Say:** Write down the following in your book:
 - Survey question to be used: _____
 - Who we will survey: _____
 - The minimum number of people we will survey is: _____
 - The maximum number of people we will survey is: _____
 - Our method of data collection: Personal survey
3. **Say:** Once you have written the above information, look at me so I know you are finished.
4. **Say:** Now it is time to pilot, or test out, your survey.
5. **Say:** Using the survey question you decided on, on your own, survey 6-8 people in the class. Remember to record the responses with tally marks.
6. **Say:** When you are finished, count your tally marks and write down the most popular response to your survey question.

Closing (1 minute)

1. **Say:** Raise your hand if you are ready to survey people outside the class.
2. **Say:** During our next couple of math lessons, we will be putting our surveys into action.
3. **Say:** Well done. Thank you, class. Pupils say: Thank you.

Lesson Title: Putting the data collection plan into action – Lesson 1	Theme: Statistics and Probability – Data Handling	
Lesson Number: M-02-053	Class/Level: Class 2	Time: 35 minutes

	<p>Learning Outcomes By the end of the lesson pupils will be able to:</p> <ol style="list-style-type: none"> Put a data collection plan into action. Organise and work in a team as data collectors. 		<p>Teaching Aids None</p>		<p>Preparation None</p>
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Opening (2 minutes)

- Say:** Today is the big day! You have created your survey, decided who you will survey, and how many people you will survey. Now it is time to put your plan into action.

Introduction to the New Material (5 minutes)

- Say:** Here are some important things to remember when surveying.
 - Make sure you record every response.
 - If the response is one you have not received before, make sure to write it down. If the response is one you have received before, record the response with a tally mark.
 - If you don't understand the response, ask the person to repeat or explain.
 - Take your time and remember only to ask people in the group you decided to survey.
 - Request permission to enter a class to survey the pupils.
 - We will be surveying again tomorrow so if you don't reach your minimum today, that is okay.
- Say:** You will be walking around with your partner. You will each take turns asking your question and you will each take turns recording the answer. The data should be recorded on one sheet for the whole group.

Guided Practice (10 minutes)

- Say:** Get together with your partner and come up with a plan for your survey.
- Say:** Decide where you will begin, and your order for asking questions and recording.

Independent Practice (15 minutes)




- Say:** Now it is time to go out and conduct our surveys. Make sure to ask a teacher's permission before entering their classroom to conduct your survey. You will come back to class when you hear my signal (clapping, whistle, whatever signal you use for your class).
- Say:** Also, remember the important notes that I shared:
 - If the response is one you have not received before, make sure to write it down. If the response is one you have received before, record the response with a tally mark.

- If you don't understand the response, ask the person to repeat or explain.
 - Take your time and remember to only ask people in the group you decided to survey.
 - Request permission to enter a class to survey the pupils.
 - We will be surveying again tomorrow so if you don't reach your minimum today, that is okay.
 - Stay with your partner!
3. **Say:** Good Luck and have fun!
 4. Make sure you are walking around observing the pupils and helping when needed.

Closing (3 minutes)

1. Bring all the pupils back into the classroom again.
2. **Ask:** What successes did you have today? Have the pupils share their answers with the class.
3. **Ask:** What challenges did you encounter today? Have the pupils share their answers with the class.
4. **Say:** In our next lesson, we will continue our data collection. If you need help, please come and ask me so I may help you be successful.
5. **Say:** Well done. Thank you, class. Pupils say: Thank you.

Lesson Title: Putting the data collection plan into Action – Lesson 2	Theme: Statistics and Probability – Data Handling	
Lesson Number: M-02-054	Class/Level: Class 2	Time: 35 minutes

	<p>Learning Outcomes By the end of the lesson pupils will be able to:</p> <ol style="list-style-type: none"> Put a data collection plan into action. Organise and work in a team as data collectors. 		<p>Teaching Aids None</p>		<p>Preparation None</p>
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Opening (4 minutes)

- Say:** In the previous lesson, we began our data collection.
- Ask:** What are the important things to remember when surveying?
 - If the response is one you have not received before, make sure to write it down. If the response is one you have received before, record the response with a tally mark.
 - If you don't understand the response, ask the person to repeat or explain.
 - Take your time and remember only to ask people in the group you decided to survey.
 - Request permission to enter a class to survey the pupils.
 - Today is the last day we are surveying, so please make sure your group reaches the minimum number you decided on.
 - Stay with your partner!

Introduction to the New Material (5 minutes)

- Share your observations from yesterday. Perhaps the pupils were hurrying to collect the data. Perhaps they weren't recording every response. Share your observations and remind the pupils how to do it correctly.

Guided Practice (5 minutes)

- Ask:** Who would like to share something they learned about conducting a survey?
- Choose 4 volunteers (2 boys and 2 girls) to share what they learned.

Independent Practice (18 minutes)




- Say:** Today is the last day that we will collect data. Make sure you collect at least the minimum amount you decided you would collect. Make sure to ask a teacher's permission before entering their classroom to conduct your survey. You will come back to class when you hear my signal (clapping, whistle, whatever signal you use for your class).
- Say:** Remember the important notes I shared:
 - If the response is one you have not received before, make sure to write it down. If the response is one you have received before, record the response with a tally mark.

- If you don't understand the response, ask the person to repeat or explain.
 - Take your time and remember only to ask people in the group you decided to survey.
 - Request permission to enter a class to survey the pupils.
 - Today is the last day we are surveying, so please make sure your group reaches the minimum number you decided on.
 - Stay with your partner!
3. **Say:** Good Luck and have fun!
 4. Make sure you are walking around observing the pupils and helping when needed.

Closing (3 minutes)

1. Bring all the pupils back into the classroom again.
2. **Ask:** What was different about today's data collection than the previous day?
3. **Ask:** What additional successes did you have today? Have the pupils share their answers with the class.
4. **Ask:** What additional challenges did you encounter today? Have the pupils share their answers with the class.
5. **Say:** In our next lesson, we will learn how to share the data.
6. **Say:** Well done. Thank you, class. Pupils say: Thank you.

Lesson Title: Creating tally charts	Theme: Statistics and Probability; Data Handling	
Lesson Number: M-02-055	Class/Level: Class 2	Time: 35 minutes

	Learning Outcomes By the end of the lesson, pupils will be able to prepare a tally chart.		Teaching Aids Beads or seeds.		Preparation Gather enough beads or seeds for the class.
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Opening (1 minute)

- Say:** Today we will start preparing our report to send to the Minister with the findings from your surveys. We will learn how to use data to create a visual picture of the results.
- Say:** The first visual picture we are going to create is a tally chart.

Introduction to the New Material (12 minutes)

- Say:** I have a handful of beads/seeds here on the table. In order to count the number I have and not lose count, I will use tally marks.
- Say:** First I will teach you how to keep track with tally marks. 1 tally mark represents 1 object.
- Say:** Tally marks are easily counted when they are in sets of 5.
- Say:** To make a set of 5 tally marks, you write 4 lines and then draw a diagonal line to make number 5.
- Demonstrate for the pupils by drawing 4 lines and then a diagonal line across them.
- Say:** Tally marks are not always in sets of 5. Sometimes they are alone or with other tally marks.
- Write the following: **3 III 4 IIII 2 II**
- Explain that if you count the number of lines you will get the same number as the number listed.
- Draw a tally chart on the board.

1		6	
2		7	
3		8	
4		9	
5		10	

- Say:** This is what tally marks look like up to 10. You will see that 10 is 2 sets of 5.
- Say:** I will now use these tally marks to count the beads/seeds I have here.
- Move 5 beads/seeds into a pile. **Say:** 1, 2, 3, 4, 5.
- Write a set of 5 tally marks
- Move 5 more beads/seeds into the same pile. **Say:** 6, 7, 8, 9, 10.
- Write a set of 5 tally marks.
- Say:** That is 10 all together. I have a pile of 10 here and will now start a new pile.
- Move 5 beads/seeds into a pile. **Say:** 1, 2, 3, 4, 5.
- Write a set of 5 tally marks.
- Move 5 more beads/seeds into the same pile. **Say:** 6, 7, 8, 9, 10.
- Write a set of 5 tally marks.

21. **Say:** That is 10 more. Now I have 2 piles of 10.
22. **Say:** 2 piles of 10 make 20.
23. **Say:** I can keep adding more.
24. Move 5 beads/seeds into a new pile. **Say:** 1, 2, 3, 4, 5.
25. Write a set of 5 tally marks.
26. Move 5 more beads/seeds into the same pile. **Say:** 6, 7, 8, 9, 10.
27. Write a set of 5 tally marks.
28. **Say:** That is 10 more. Now I have 3 piles of 10.
29. **Say:** 3 piles of 10 make 30.

Guided Practice (6 minutes)

1. **Say:** Now we can continue this together.
2. **Ask:** What comes next? (Answer: Count 5 and make 5 tally marks.)
3. **Say:** I will count to 5 and make a set of tally marks.
4. **Ask:** What comes next? (Answer: Count 5 and make another 5 tally marks.)
5. **Say:** I have counted 5 more and made another set of tally marks.
6. **Ask:** How many do I have now? (Answer: 10)
7. **Ask:** If I add this set of 10 to the number I had before, what is the total number I have? (Answer: 40)
8. **Say:** You will now work on this with a partner.




Independent Practice (15 minutes)

1. Give a handful of beads/seeds to each pair.
2. **Say:** Work with a partner to count the number of beads/seeds you have between you.
3. **Say:** Use the tally marks to help you keep track of how many you have.

Closing (1 minute)

1. **Say:** Today we learned how to create tally charts.
2. **Say:** In our next lesson we will continue learning about tally charts based on the answers to a survey question.

Lesson Title: Developing tally charts based on answers to questions	Theme: Statistics and Probability; Data Handling	
Lesson Number: M-02-056	Class/Level: Class 2	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to prepare a tally chart.	 Teaching Aids None	 Preparation None
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Opening (1 minute)

- Say:** You will remember in our previous lesson we learned how to create tally charts.
- Say:** Today we will create tally charts based on answers to a question.

Introduction to the New Material (5 minutes)

- Draw a tally chart on the board.

1		6	
2		7	
3		8	
4		9	
5		10	

- Say:** You will remember that tally marks are not always in sets of 5. Sometimes they are alone or with other tally marks.
- Write the following: **3 ||| 4 |||| 2 ||**
- Explain that if you count the number of lines you will get the same number as the number listed.
- Say:** Here on the tally chart you will see that 10 is 2 sets of 5.

Guided Practice (18 minutes)

- Say:** Now we will learn how to create tally charts based on answers to survey questions.
- Write: What is your favourite fruit?
- Write: Pineapple Orange Mango Guava Other
- Make sure there are words are spaced out so you can record the answers.
- Say:** My survey question is: What is your favourite fruit?
- Say:** I will ask the class this question and you will tell me one of the responses I have listed on the board.
- Say:** I will record your answers with tally marks.
- Ask 25-30 pupils the question and record their answers with tally marks under the response.
- Say:** I have asked ___ of you my question and have recorded your answers with tally marks.
- Say:** Now I can count up the total for each response by counting the tally marks.
- Demonstrate counting the tally marks aloud and write the total for each category next to the response. Example: Pineapple – 15

12. Announce the responses to the class.
13. **Say:** Now you will practise by surveying your fellow pupils using the same question I asked earlier. You will ask the question to 15 pupils.
14. **Say:** Use the tally marks to help you keep track of each response.
15. **Say:** Once you have the question 15 times, count the number of tally marks for each category and record the totals just as I have here on the board.




Independent Practice (10 minutes)

1. **Say:** You will now work with your partner to create a tally chart for the data you gathered during your survey.
2. **Say:** Create the tally chart and then total the responses.
3. **Say:** When our time is up you will hear my signal.
4. Walk around the class and assist those who need help.

Closing (1 minute)

1. **Say:** Today you learned how to ask a survey question and create tally charts based on the responses. You also created a tally chart for the data you collected during a previous lesson.
2. **Say:** In our next lesson we will learn how to create bar charts, another way to visually display information.

Lesson Title: Creating bar charts	Theme: Statistics and Probability; Data Handling	
Lesson Number: M-02-057	Class/Level: Class 2	Time: 35 minutes

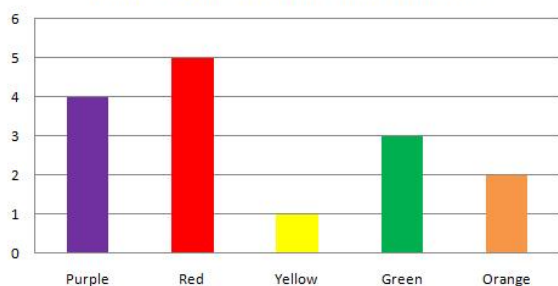
	<p>Learning Outcomes By the end of the lesson, pupils will be able to prepare a bar chart.</p>		<p>Teaching Aids None</p>		<p>Preparation Draw a bar chart on the board. Make sure to use colour or a pattern to show different areas of the chart.</p>
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Opening (2 minutes)

1. **Say:** Today, we will learn about bar charts and how they can be used to display information.


Introduction to the New Material (10 minutes)

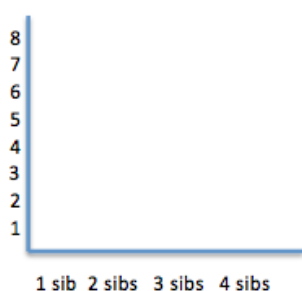
1. Point to the bar chart that you have drawn on the board.



2. **Say:** This is a bar chart. This bar chart shows tells the favourite colour of pupils that were asked.
3. **Say:** You will see that the bar for purple goes up to the number 4. The bar for red goes to number 5. The bar for yellow goes to number 1. The bar for green goes up to number 3. The bar from orange goes up to number 2.
4. **Say:** The bar that is the longest is the one that was most popular. According to this bar chart, red was the most popular.
5. **Say:** The bar that is the shortest is the one that was least popular. According to this bar chart, yellow was the least popular.

Guided Practice (10 minutes)

1. **Say:** Now we will learn how to create a bar chart.
 2. **Say:** Draw two lines on your paper like this to start the bar chart:
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3. **Say:** These two lines form the bar chart. We will write numbers on the chart to help us measure. The numbers will go up and down.
 4. **Say:** The line on the left helps us measure the number of people that responded a certain way.



5. **Say:** The line on the bottom lists the responses.
6. **Say:** If my survey question were 'how many siblings do you have?', my responses would first have been recorded in a tally chart. I would then have totalled up the responses.
7. **Say:** Here are the totals I will use to create a bar chart:

2 siblings – 5	3 siblings – 7
1 sibling – 4	4 siblings – 4
8. **Ask:** How many people said they had 1 sibling? (Answer: 4)
9. **Say:** We will make a bar above 1 sibling that goes up to the number 4.
10. **Say:** We will then make a bar for 2 siblings. **Ask:** How many people said they had 2 siblings? (Answer: 5)
11. **Say:** We will make a bar above 2 siblings that goes up to the number 5.
12. Continue asking for volunteers to say how many people said they had 3 and 4 siblings. (Answers: 7, 4)



13. **Say:** We have now recorded all the responses and have created a bar chart.

Independent Practice (12 minutes)

1. Check pupils have an exercise book and a pencil. If they don't, tell pupils to work together with somebody who has. Or give a piece of chalk to some pupils and they can work at the board or a slate.
2. **Say:** Now it is your turn to create a bar chart on your own. Use the following totals to guide you:

Favourite Activity

playing with friends – 5 reading – 3




dancing/singing – 9 playing games – 3

3. Walk around the room helping pupils as necessary. Give pupils 10 minutes to draw their bar chart.
4. Ask pupils to hold up their work for you to see.

Closing (1 minute)

1. **Say:** We learned how to draw a bar chart today and to record data on it. In our next lesson, we will put the data from our survey into a bar chart.
2. **Say:** Well done. Thank you, class. Pupils say: Thank you.

Lesson Title: Writing the report to the Minister with the survey findings	Theme: Statistics and Probability; Data Handling	
Lesson Number: M-02-058	Class/Level: Class 2	Time: 35 minutes

 Learning Outcomes By the end of the lesson, pupils will be able to write a statistical report and represent data using a bar chart.	 Teaching Aids None	 Preparation None
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Opening (3 minutes)

1. **Say:** In the previous lessons we learned how to create tally charts and bar charts.
2. **Say:** Today your task is to create a bar chart for the data you collected and recorded in a tally chart.
3. **Say:** You will then work with your partner to practise giving the presentation.

Introduction to the New Material (0 minutes)

Guided Practice (0 minutes)




Independent Practice (31 minutes)

1. **Say:** Your first task today is to create a bar chart to display the responses to your survey question.
2. **Say:** Here are the instructions for creating your bar chart.
3. **Say:** Along the bottom of your chart you will write the possible responses from your survey.
4. **Say:** Along the side of your chart, up and down, you will evenly divide the line by the total number of responses. If you surveyed 50 people, you will want to divide your line into intervals of 5s. If you surveyed 20, you will want to divide your line into intervals of 2.
5. **Say:** When drawing the bars, if your number does not fall exactly on an interval, estimate where it should be. If your number is 23, then it will be higher than the 20 but less than the 25.
6. **Say:** Take your time creating your bar chart and writing your findings, as you will be showing the class.
7. **Say:** Once you have created your bar chart you will write a numerical summary of your findings next to the bar chart.
8. **Say:** Then together with your partner, practise presenting your bar chart and the numerical summary of your findings.
9. **Say:** You will present to the class so take your time and prepare well.

Closing (1 minute)

1. **Say:** Today, you created bar charts and wrote numerical summaries of your findings. In the next few lessons we will take turns presenting our reports to the class.

Lesson Title: Presenting a statistical report – Lesson 1	Theme: Statistics and Probability – Data Handling	
Lesson Number: M-02-059	Class/Level: Class 2	Time: 35 minutes

 <p>Learning Outcomes By the end of the lesson pupils will be able to present a statistical report to the class.</p>	 <p>Teaching Aids None</p>	 <p>Preparation None</p>
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Opening (1 minute)

1. **Say:** Today we will begin presenting our statistical reports to the class. I hope you are as excited to share them as I am to see them!

Introduction to the New Material (3 minutes)

1. **Say:** Since we do not have a lot of time and we have a lot of reports to share, I will not take a lot of time to talk about how to present the reports.
2. **Say:** Here are some important things to keep in mind:
 - Make sure to speak loudly and clearly so everyone can hear you.
 - Tell the class the survey question you asked.
 - Tell the class how many people your pair asked your question to.
 - Show the group your bar chart.
 - Share the data you have already summarised.

Guided Practice (0 minutes)




Independent Practice (30 minutes)

1. This time will be used for pupil presentations.

Closing (1 minute)

1. **Say:** Thank you and great job to those who presented their statistical reports today. In the next lesson, we will continue with the presentations.

Lesson Title: Presenting a statistical report – Lesson 2	Theme: Statistics and Probability – Data Handling	
Lesson Number: M-02-060	Class/Level: Class 2	Time: 35 minutes

 Learning Outcomes By the end of this lesson pupils will be able to present a statistical report to the class.	 Teaching Aids None	 Preparation None
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Opening (1 minutes)

1. **Say:** In the previous lesson, we began sharing our statistical reports with the class. Today we will continue to share the reports.

Introduction to the New Material (2 minute)

1. **Say:** Remember the important things to keep in mind:
 - Make sure to speak loudly and clearly so everyone can hear you.
 - Tell the class the survey question you asked.
 - Tell the class how many people your pair asked your question to.
 - Show the group your bar chart.
 - Share the data you have already summarised.

Guided Practice (0 minutes)

Independent Practice (31 minute)

1. This time will be used for pupil presentations.

Closing (2 minutes)

1. **Say:** Thank you and great job to those who presented their statistical reports today!

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