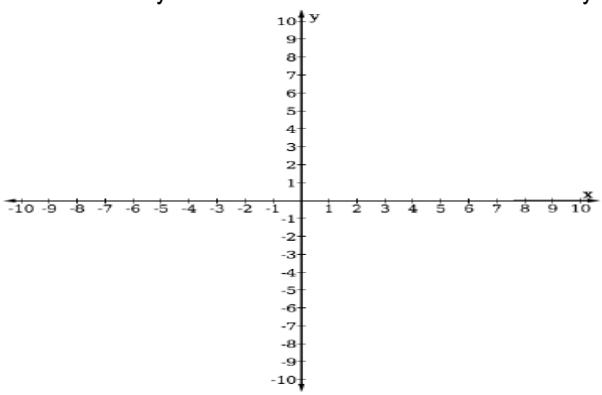
Theme: Algebra (M-08-116) **CODE C1**	Theme: Algebra (M-08-116) **CODE C1**
Lesson Title: Practice with Expansion	Lesson Title: Practice with Expansion
Remove the brackets and simplify the following algebraic expressions: 1. $3(2v + 3)$ 2. $x\,(4 - x)$ 2 minutes	Answer: 1. $3(2v + 3)$ $= (3 \times 2v) + (3 \times 3)$ $= 6v + 9$ 2. $x\,(4 - x)$ $= (x \times 4) + (x \times -x)$ $= 4x - x^2$
Theme: Algebra (M-08-117) **CODE C2**	Theme: Algebra (M-08-117) **CODE C2**
Lesson Title: Practice with Factorisation	Lesson Title: Practice with Factorisation
Complete the sentence: The factors of a number _____ exactly into that number. 1 minute	Answer: The factors of a number <u>divide</u> exactly into that number.
Theme: Algebra (M-08-117) **CODE C3**	Theme: Algebra (M-08-117) **CODE C3**
Lesson Title: Practice with Factorisation	Lesson Title: Practice with Factorisation
Factorise the expression below. Show how to check your answer. $3x + 12$ 1 minute	Answer: $3x + 12$ First, look for the HCF of the expression. This is the largest number which can divide $3x$ and 12. $3x + 12 = 3(\ )$ **Factor the HCF, 3** $= 3(x + 4)$ **Divide each term in $3x + 12$ by 3** **Answer:** $3(x + 4)$ Check the answer by expanding the brackets: $3(x + 3) = (3 \times x) + (3 \times 4)$ $= 3x + 12$
Theme: Algebra (M-08-118) **CODE C4**	Theme: Algebra (M-08-118) **CODE C4**
Lesson Title: Substitution with One Variable	Lesson Title: Substitution with One Variable
1. Find the value of $5 - 2x$ if $x = 4$. 2. Find the value of $3x + 8$ when $x = -5$. 2 minutes	Answer: 1. Substitute 4 for x and evaluate: $= 5 - 2(4)$ $= -3$ 2. Substitute $x = -5$ and evaluate, applying BODMAS: $= 3x + 8 = 3(-5) + 8$ $= -15 + 8$ $= -7$

Theme: Algebra (M-08-119) **CODE C5**	Theme: Algebra (M-08-119) **CODE C5**
Lesson Title: Substitution with Two Variables	Lesson Title: Substitution with Two Variables
If $x = -3$ and $y = 4$, what is the value of $x + xy$? 1½ minutes	Answer: Remember that two variables written together in a term (as in xy) means they are multiplied together. $x + xy = 3 + (-3)(4)$ **Substitute x = 3 and y = 4** $= 3 - 12$ **Subtract** $= -9$
Theme: Algebra (M-08-120) **CODE C6**	Theme: Algebra (M-08-120) **CODE C6**
Lesson Title: Substitution Practice	Lesson Title: Substitution Practice
Evaluate $x - y + z$ when $x = 4$, $y = -1$ and $z = 2$. 1½ minutes	Answer: $x - y + z = (4) - (-1) + (2)$ $= 4 + 1 + 2$ $= 7$
Theme: Algebra (M-08-121) **CODE C7**	Theme: Algebra (M-08-121) **CODE C7**
Lesson Title: Linear Equations in One Variable	Lesson Title: Linear Equations in One Variable
Solve each of the linear equations for the variable: 1. $z + 7 = 9$ 2. $4 + a = -4$ 2 minutes	Answer: 1. $z + 7 = 9$ **transpose 7 to solve for *z*** $z = 2$ 2. $4 + a = -4$ **transpose 4 to solve for *a*** $a = -8$
Theme: Algebra (M-08-122) **CODE C8**	Theme: Algebra (M-08-122) **CODE C8**
Lesson Title: Solving Linear Equations I	Lesson Title: Solving Linear Equations I
Solve for the variable in the equation below. $60 + x = 15$ 1 minute	Answer: $60 + x = 15$ To balance the equation, subtract 60 from both sides. $60 + x - 60 = 15 - 60$ **Subtract 60 from both sides** $x + 0 = -45$ **Simplify** $x = -45$

Theme: Algebra (M-08-123) **CODE C9**	Theme: Algebra (M-08-123) **CODE C9**
Lesson Title: Solving Linear Equations II	Lesson Title: Solving Linear Equations II
Solve the following equations: 1. $6x = 12$ 2. $5y = 5$ 2 minutes	Answer: 1. $6x = 12$ $\frac{6x}{6} = \frac{12}{6}$ **Divide both sides by 6** $x = 2$ 2. $5y = 5$ $\frac{5y}{5} = \frac{5}{5}$ **Divide both sides by 5** $y = 1$
Theme: Algebra (M-08-124) **CODE C10**	Theme: Algebra (M-08-124) **CODE C10**
Lesson Title: Solving Linear Equations III	Lesson Title: Solving Linear Equations III
Solve: $2(x + 1) = 6$ 2 minutes	Answer: Remove the brackets before balancing the equation. **BODMAS** $2(x + 1) = 6$ $2x + 2 = 6$ **Remove the brackets** $2x + 2 - 2 = 6 - 2$ **Subtract 2 from both sides** $2x = 4$ $\frac{2x}{2} = \frac{4}{2}$ **Divide both sides by 2** $x = 2$
Theme: Algebra (M-08-126) **CODE C11**	Theme: Algebra (M-08-126) **CODE C11**
Lesson Title: Verifying Solutions	Lesson Title: Verifying Solutions
Is x = 7 a solution to the equation $3x$ + 10 = x − 4? 3 minutes	Answer: substitute x = 7 and answer the question. $3x + 10 = x - 4$ **Equation** $3(7) + 10 = 7 - 4$ **Substitute** $21 + 10 = 3$ **Evaluate** $31 \neq 3$ LHS $\neq$ RHS No, x = 7 is **not** a solution to the equation. The left-hand side is not equal to the righthand side.
Theme: Algebra (M-08-128) **CODE C12**	Theme: Algebra (M-08-128) **CODE C12**
Lesson Title: Solving Linear Equations Story Problems I	Lesson Title: Solving Linear Equations Story Problems I
Solve the following word problem: Fatu is a baker. She is going to the market to buy sugar. Sugar costs Le 2,000.00 per cup. She has Le 8,000.00 to spend on sugar. a. Write a linear equation for the story, where s is cups of sugar. b. Solve the linear equation to find how many cups of sugar Fatu can buy. 3 minutes	Answer: a. To find a linear equation, multiply s by the cost of 1 cup. Fatu spends 2,000s on sugar. We also know that she spends 8,000 on sugar. This gives the equation $\mathbf{2{,}000}s = \mathbf{8{,}000}$. b. Solve the linear equation for s 2,000s = 8,000 $\frac{2{,}000s}{2{,}000} = \frac{8{,}000}{2{,}000}$ **Divide both sides by 2,000** s = 4 **Fatu can buy 4 cups of sugar.**

Theme: Algebra (M-08-129) **CODE C13**	Theme: Algebra (M-08-129) **CODE C13**
Lesson Title: Solving Linear Equation Story Problems II	Lesson Title: Solving Linear Equation Story Problems II
Solve the following word problem: Three more than twice a certain number is nineteen. What is the number? 3 minutes	Answer: Write a linear equation based on the first sentence. Then solve the linear equation. Read the sentence carefully. Assign a variable to the "certain number", say x. $2x + 3 = 19.$ Solve the equation for x: $2x + 3 - 3 = 19 - 3$ **Subtract 3 from both sides** $2x = 16$ $\frac{2x}{2} = \frac{16}{2}$ **Divide both sides by 2** $x = 8$ The certain number is 8.
Theme: Algebra (M-08-130) **CODE C14**	Theme: Algebra (M-08-130) **CODE C14**
Lesson Title: Linear Equation Practice	Lesson Title: Linear Equation Practice
The ages of 4 friends are x, x + 3, x − 1 and x + 2. a. Write an expression for the combined age of the friends. b. If their combined age is 44 years, what is the age of the youngest friend? 3 minutes	Answer: a. Combined age = $x + (x + 3) + (x - 1) + (x + 2)$ $= 4x + 4$ b. Set the expression equal to 44 to find x. $4x + 4 = 44$ **Equation** $4x = 40$ $\frac{4x}{4} = \frac{40}{4}$ **Divide both sides by 4** $x = 10$ Use the value of x to find the age of each friend: $x - 1 = 10 - 1 = 9$ **The youngest friend is 9 years old**
Theme: Algebra (M-08-131) **CODE C15**	Theme: Algebra (M-08-131) **CODE C15**
Lesson Title: Introduction to the Cartesian Plane	Lesson Title: Introduction to the Cartesian Plane
Sketch a Cartesian plane with axes from −10 to +10. It is not necessary to measure intervals on the axes with a ruler.	Answer: x and y axes meet at 0 and are labelled x and y. 
Theme: Algebra (M-08-132) **CODE C16**	Theme: Algebra (M-08-132) **CODE C16**
Lesson Title: Identifying Points in the Cartesian Plane	Lesson Title: Identifying Points in the Cartesian Plane
Identify which quadrant each of the following points is in: a. (−3, 2) b. (−5, −7) c. (1, −3) 3 minutes	Answer: a. (−3, 2) is in quadrant II because both x is negative and y is positive. b. (−5, −7) is in quadrant III because both x and y are negative. c. (1, −3) is in quadrant IV because x is positive and y is negative.

Theme: Algebra (M-08-133) **CODE C17**

Lesson Title: Plotting Points on the Cartesian Plane

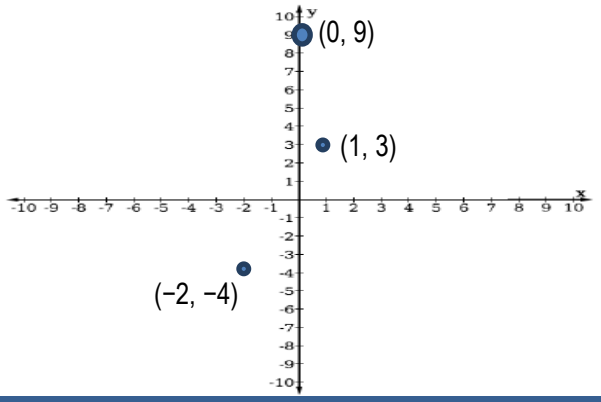
Draw a Cartesian plane and plot the following points:
(1, 3), (0, 9), (−2, −4)

2 minutes

Theme: Algebra (M-08-133) **CODE C17**

Lesson Title: Plotting Points on the Cartesian Plane

Answer:



Theme: Algebra (M-08-134) **CODE C18**

Lesson Title: Table of Values

Complete the table of values for the linear equation
$y = -x - 3$

x	-2	-1	0	1	2
y					

2 minutes

Theme: Algebra (M-08-134) **CODE C18**

Lesson Title: Table of Values

Answer:

x	-2	-1	0	1	2
y	-1	-2	-3	-4	-5

Theme: Algebra (M-08-135) **CODE C19**

Lesson Title: Graphing a Line

Complete the table of values for the linear equation
$y = -2x + 1$.
Plot each point on the given Cartesian plane.

x	-2	-1	0	1	2
y					

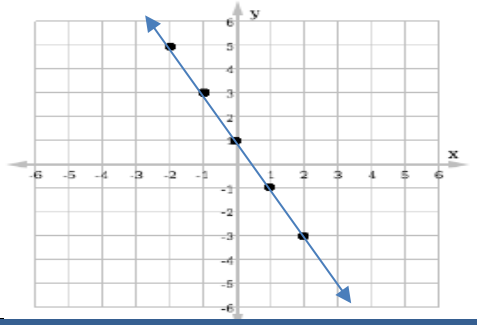
2½ minutes

Theme: Algebra (M-08-135) **CODE C19**

Lesson Title: Graphing a Line

Answer:

x	-2	-1	0	1	2
y	5	3	1	-1	-3



Theme: Statistics and Probability (M-08-136) **CODE C20**

Lesson Title: Data Collection

The coach took the height measurements of the football players to buy them new uniforms. Their heights (in cm) are: 178, 170, 167, 172, 173, 177, 172, 170, 172, 173, 177, 169, 170, 168, 172, 173.

a. Write the heights of the players in **ascending** order.
b. What is the height of the **tallest** player?
c. What is the height of the **shortest** player?
d. If players taller than 175 cm wear a large uniform, how many large uniforms are needed?

3 minutes

Theme: Statistics and Probability (M-08-136) **CODE C20**

Lesson Title: Data Collection

Answer:

a. 167, 168, 169, 170, 170, 170, 172, 172, 172, 172, 173, 173, 173, 177, 177, 178

b. 178 cm

c. 167 cm

d. 3 large uniforms

Theme: Statistics and Probability (M-08-138) **CODE C21**

Lesson Title: Bar Charts

The table below shows the marks of pupils in a test. No pupil scored lower than 40% or higher than 85%. Draw a bar chart for the information using squared paper or your own paper.

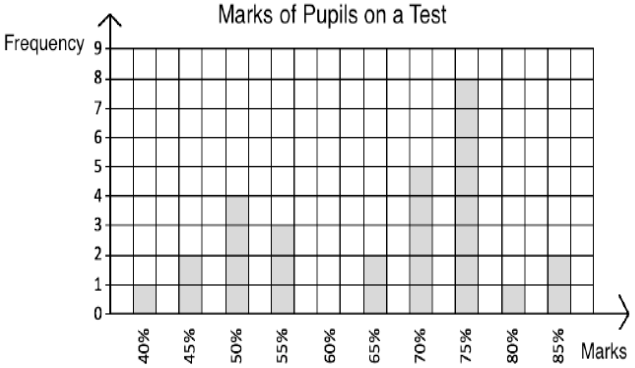
Marks	40%	45%	50%	55%	60%	65%	70%	75%	80%	85%
Number of pupils	1	2	4	3	0	2	5	8	1	2

3 minutes

Theme: Statistics and Probability (M-08-138) **CODE C21**

Lesson Title: Bar Charts

Answer:



Theme: Statistics and Probability (M-08-139) **CODE C22**

Lesson Title: Line Graphs

The table below shows daily temperatures for London, recorded for 6 days in degrees Celsius. Display the data in a **line graph.** Use 15 to 25 degrees to mark the y-axis.

Day	1	2	3	4	5	6
Temperature (°C)	17	19	18	16	21	23

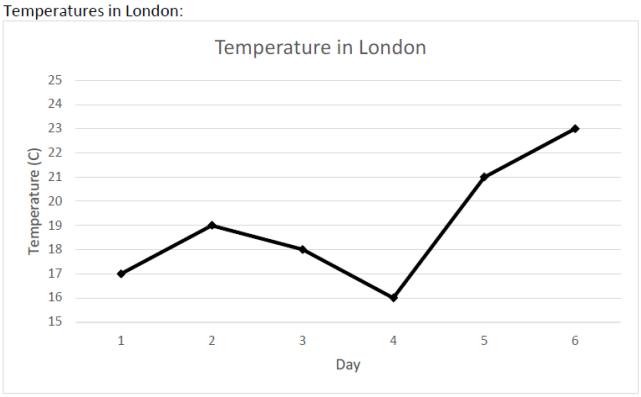
3½ minutes

Theme: Statistics and Probability (M-08-139) **CODE C22**

Lesson Title: Line Graphs

Answer:

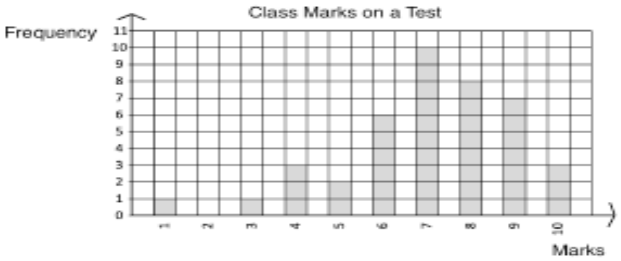
Temperatures in London:



Theme: Statistics and Probability (M-08-140) **CODE C23**

Lesson Title: Interpreting Charts and Graphs

Use the bar chart to answer the questions.



a. What was the lowest score on the test?
b. If pupils need 7 marks or higher to pass, how many pupils passed the test?

2 minutes

Theme: Statistics and Probability (M-08-140) **CODE C23**

Lesson Title: Interpreting Charts and Graphs

Answer:

a. 1 mark
b. 10 + 8 + 7 + 3 = 28 pupils

Theme: Statistics and Probability (M-08-141) **CODE C24**

Lesson Title: Mean

The number of goals scored by a team in 9 football matches are as follows:

3, 5, 7, 7, 8, 8, 8, 11, 15.

Calculate the **mean** number of goals scored.

2 minutes

Theme: Statistics and Probability (M-08-141) **CODE C24**

Lesson Title: Mean

Answer:

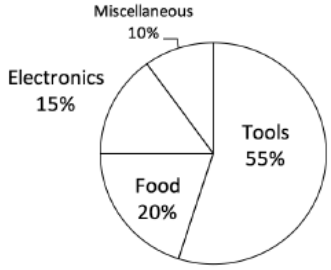
Find the mean by adding the number of goals scored, and dividing by the number of football matches:

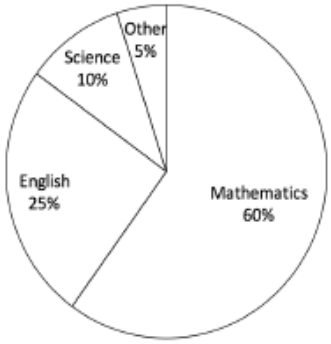
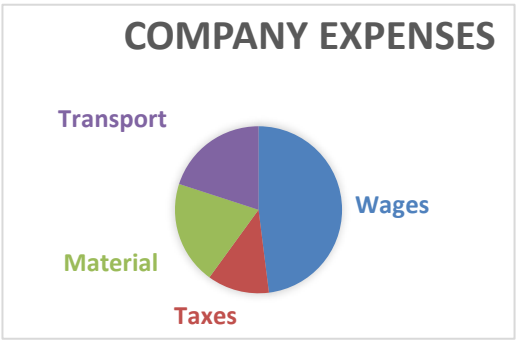
Mean $= \frac{3+5+7+7+8+8+8+11+15}{9}$

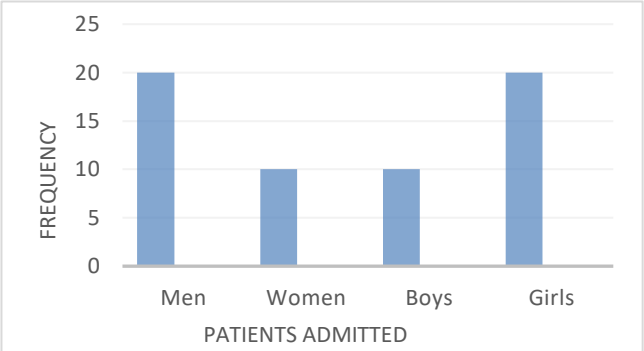
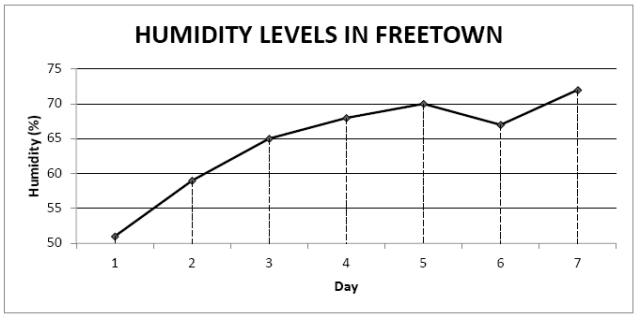
$= \frac{72}{9}$

$= 8$

The **mean** number of goals scored is **8**.

Theme: Statistics and Probability (M-08-142) **CODE C25**	Theme: Statistics and Probability (M-08-142) **CODE C25**
Lesson Title: Median	Lesson Title: Median
The shoe sizes of five pupils are 10, 9, 10, 11 and 8. Find the **median** shoe size. 1½ minutes	Answer: List the numbers in **ascending order**: 8, 9, 10, 10, 11 Identify the middle of the list: 10 The **median** shoe size of the five pupils is **10**.
Theme: Statistics and Probability (M-08-143) **CODE C26**	Theme: Statistics and Probability (M-08-143) **CODE C26**
Lesson Title: Mode and Range	Lesson Title: Mode and Range
John is a doctor. Today, he treated 10 children. He recorded the weight of each child in kilograms, listed below. Find the **mode** and **range** of their weights. 14, 20, 17, 21, 15, 13, 20, 19, 15, 12 2 minutes	Answer: Write the numbers in ascending order: 12, 13, 14, 15, 15, 17, 19, 20, 20, 21 **Mode:** The mode is the number that appears most often. The numbers 15 and 20 both appear 2 times. Therefore, there are 2 modes: 15 and 20 kg. **Range:** Subtract the lowest number from the highest number: 21 – 12 = 9. The range is 9 kg.
Theme: Statistics and Probability (M-08-144) **CODE C27**	Theme: Statistics and Probability (M-08-144) **CODE C27**
Lesson Title: Interpreting Pie Charts	Lesson Title: Interpreting Pie Charts
Aminata earned Le 2,000,000.00 by selling goods in her shop. The pie chart below shows the percentage that Aminata earned this week in each category of goods.  How much did Aminata earn from electronics? 1½ minutes	Answer: To find how much she earned from electronics, find 15% of Le 2,000,000.00. Earned from electronics Earned from electronics $= \frac{15}{100} \times Le\ 2\ 000\ 000$ $= 0.15 \times Le\ 2\ 000\ 000$ $= Le\ 300{,}000$
Theme: Statistics and Probability (M-08-144) **CODE C28**	Theme: Statistics and Probability (M-08-144) **CODE C28**
Lesson Title: Interpreting Pie Charts	Lesson Title: Interpreting Pie Charts
Please refer to the information and diagram in **CODE C27** to answer the following questions: a. From which category of goods did Aminata earn the least amount of money? b. How much more did Aminata earn from tools than from electronics? 3½ minutes	Answer: a. Aminata earned the least amount of money from **miscellaneous** b. Earned from tools $= \frac{55}{100} \times Le\ 2{,}000{,}000$ $= 0.55 \times Le\ 2{,}000{,}000$ $= Le\ 1{,}100{,}000$ Aminata earned $Le\ 300{,}000$ from electronic sales and hence: **difference:** $= 1{,}100{,}000 - 300{,}0000$ $= \boldsymbol{Le\ 800{,}000}$

Theme: Statistics and Probability (M-08-145) **CODE C29**	Theme: Statistics and Probability (M-08-145) **CODE C29**
Lesson Title: Pie Chart Angles	Lesson Title: Pie Chart Angles
Find the **combined** sector angle for Mathematics and English on the pie chart below:  2 minutes	Answer: To find the combined sectoral angle, we first have to find the sector angles for Mathematics and English. $Mathematics = \frac{60}{100} \times 360° = 216°$ $English = \frac{25}{100} \times 360° = 90°$ **combined sector angle** $= 306°$
Theme: Statistics and Probability (M-08-146) **CODE C30**	Theme: Statistics and Probability (M-08-146) **CODE C30**
Lesson Title: Creating Pie Charts	Lesson Title: Creating Pie Charts
The cost incurred on infrastructure development by a mining company is as follows: Wages: 48% Taxes: 12% Material: 20% Transport: 20%. Show this information in a **pie chart**. **Hint**: Use sector angles for a more accurate diagram. 2½ minutes	Answer:  Wages: 173° Taxes: 43° Material: 72° Transport: 72°.
Theme: Statistics and Probability (M-08-147) **CODE C31**	Theme: Statistics and Probability (M-08-147) **CODE C31**
Lesson Title: Creating Stem Diagrams	Lesson Title: Creating Stem Diagrams
The IQ scores of 5 female mathematicians are: 170 164 159 172 154 Display the data in a stem diagram. 2 minutes	Answer: Data in ascending order: 154, 159, 164, 170, 172 **IQ scores** Stem | Leaf 15 | 4,9 16 | 4 17 | 0,2 Key:15|4 = 154 IQ score
Theme: Statistics and Probability (M-08-148) **CODE C32**	Theme: Statistics and Probability (M-08-148) **CODE C32**
Lesson Title: Interpreting Stem Diagrams	Lesson Title: Interpreting Stem Diagrams
Martin is a driver. He recorded the amount of petrol that he used each day for 10 days in the stem diagram below. Find the **mean**, **mode**, and **range** of the data. **PETROL USED** Stem | Leaf 0 | 8, 9 1 | 4, 7 2 | 3, 6, 6 3 | 0, 4 4 | 2 Key: 1|4 = 1.4 litres 3½ minutes	Answer: The data in ascending order: 0.8, 0.9, 1.4, 1.7, 2.3, 2.6, 2.6, 3.0, 3.4, 4.2 **mean**: 2.29 litres **mode**: 2.6 litres **range**: 3.4 litres

Theme: Statistics and Probability (M-08-149) **CODE C33**	Theme: Statistics and Probability (M-08-149) **CODE C33**
Lesson Title: Choosing a Graph or Chart	Lesson Title: Choosing a Graph or Chart
Dr Mkhize wants to create a chart or graph to show the patients admitted to the hospital last week. There were 20 men, 10 women, 10 boys and 20 girls admitted to the hospital. Display this information for her. 2½ minutes	Answer: Reminder: A **bar chart** is used to compare different amounts 
Theme: Statistics and Probability (M-08-150) **CODE C34**	Theme: Statistics and Probability (M-08-150) **CODE C34**
Lesson Title: Practice Making Statistical	Lesson Title: Practice Making Statistical
The graph below gives the average high temperature in Freetown. Find the mean and median for the data **in %**.  2 minutes	Answer: The data in ascending order: 51, 59, 65, 67, 68, 70, 72 (in percent) **Mean** $= \frac{51+ 59+ 65+ 68+ 70+ 67+ 72}{7}$ $= 64.57\%$ humidity **Median** $= 67\%$ humidity