



**DEPARTMENT OF  
EDUCATION**

**CERTIFICATE OF  
BASIC EDUCATION  
EXAMINATIONS**

**MATHEMATICS**

03<sup>rd</sup> November 2010

Time allowed: 3 hours

**Candidates are advised to  
fully utilize the allocated  
time.**

**INSTRUCTIONS TO CANDIDATES:**

*(To be read out by the external invigilator before the start of the examination)*

There are 50 questions in this paper. Attempt ALL questions even if you are not so sure of some of the answers.

The Examination is divided into three parts:

- PART A:**        **25 x Multiple-Choice questions**        **(25 marks)**  
**PART B:**        **20 x Short –Answer questions**        **(20 marks)**  
**PART C:**        **1 x Extended Answer question**        **(5 marks)**

The Answer Sheet is placed in the middle of the Examination Booklet. Take out the Answer Sheet from the Examination Booklet.

Write your candidate number, your name, school name and province name in the space given on the **Answer Sheet**. The invigilator will tell you what to write.

For each question in **PART A** choose the best answer and write its LETTER in the space given on the **Answer Sheet**.

For each question in **PART B** work out the answer and write the answer in the space provided on the **Answer Sheet**.

If you find a question very difficult, do not spend too much time thinking about it. Leave the question out and go on with the rest of the paper. If you have time in the end, return to the difficult questions and think about them more carefully.

Write your answers in BLUE or BLACK ink (pen or biro).

If you decide to change an answer, make your correction as shown below so that it is clearer to the markers what your final answer is. Do NOT use correction fluid on your answer sheet.



Hand in BOTH the Answer Sheet and the papers used for rough work at the end of the examination.

**Extra time will NOT be allowed to complete the examination under any circumstances.**

**DO NOT TURN OVER THIS PAGE AND DO NOT WRITE UNTIL  
YOU ARE TOLD TO START.**

## SECTION A (QUESTIONS 1 TO 25)

Answer these questions by writing **A** or **B** or **C** or **D** representing the correct answer.

## QUESTION 1

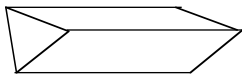
$$10 + 3 \times 5 - 20 =$$

- A. 65                      B. 45  
C. 15                      D. 5

## QUESTION 2



i



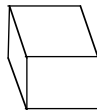
ii



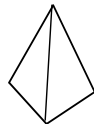
iii



iv



v



vi

Which of the above figures are prisms?

- A. i, ii and iii            B. ii, iv and v  
C. i, iii and vi            D. i, iii, iv

## QUESTION 3

What is the highest common factor of this expression  $2x^2 + 6xy$ ?

- A.  $2x$                       B.  $3x$   
C.  $2x^2$                     D.  $3x^2$

## QUESTION 4

Simplify  $2 \times 2a^2 \times 2a^2$

- A.  $8a^2$                       B.  $2a^4$   
C.  $8a^6$                       D.  $8x^5$

## QUESTION 5

Fiji time is 2 hours ahead of PNG time. A plane leaves Port Moresby at 4:00 am and flies for 5 hours to Suva.

At what time (Fiji time) does the plane arrive in Suva?

- A. 9:00 am                B. 10:00 am  
C. 11:00 am              D. 12:00 pm

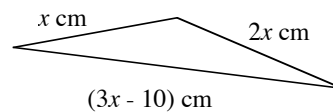
## QUESTION 6

$$3x - 4 = 32.$$

What is the value of  $x$ ?

- A. 12                        B. 36  
C. 84                        D. 108

## QUESTION 7



Given that  $x = 10$

What is the perimeter of the triangle above in centimetres?

- A. 40                        B. 50  
C. 60                        D. 70

## QUESTION 8

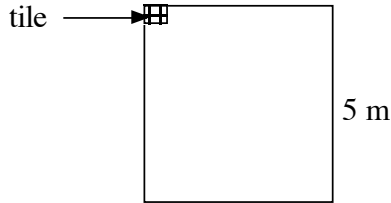
Warndia was paid K375.25 for working 25 hours.

What was his hourly pay?

- A. K15.00                B. K15.01  
C. K15.02                D. K15.10

**QUESTION 9**

The big square in the diagram indicates a bathroom floor of sides 5 m. The shaded area is a small square tile of sides 20 cm.



How many tiles will be needed to cover the bathroom floor?

- A. 2500
- B. 1250
- C. 865
- D. 625

**QUESTION 10**

A gardener harvested 55.75 kg of kaukau.

What is the weight of this kaukau to the nearest 10 kg?

- A. 56
- B. 58
- C. 59
- D. 60

**QUESTION 11**

On a map the distance between village P and village Q is 12 cm.

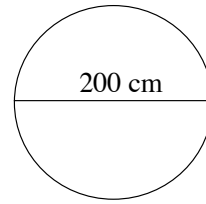
The scale on the map is 1 cm = 15 km.

What is the actual distance in km between village P and village Q?

- A. 183
- B. 182
- C. 181
- D. 180

**QUESTION 12**

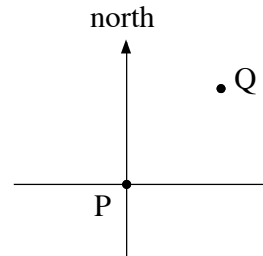
Given that  $A = \pi r^2$ , use  $\pi = 3.14$  to find the area of the circle below in  $\text{cm}^2$ .



- A. 3.14
- B. 62.8
- C. 314
- D. 628

**QUESTION 13**

The diagram shows two places, P and Q.

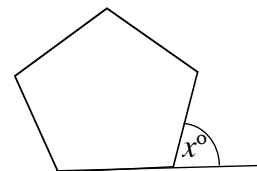


Which statement correctly describes the locations of P and Q?

- A. P is north east of Q
- B. P is south west of Q
- C. Q is north west of P
- D. P is directly south of Q

**QUESTION 14**

The diagram shows a regular pentagon.



What is the value of the angle  $x$ ?

- A. 1440
- B. 360
- C. 144
- D. 72

**QUESTION 15**Simplify  $36a^3 \times \frac{1}{4}a^2$ 

- A.  $18a^9$                       B.  $9a$   
 C.  $9a^5$                         D.  $36a^5$

**QUESTION 16**

A pipe has a length of 1 m and a diameter of 14 cm.

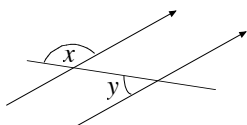
How many mL of water would it hold if it was full?

Hint: Use  $\pi = \frac{22}{7}$ .               $1 \text{ cm}^3 = 1 \text{ mL}$

- A. 31,800                      B. 15,400  
 C. 8,400                        D. 154

**QUESTION 17**

The diagram shows two parallel lines and a transversal with the angles  $x$  and  $y$  as shown.

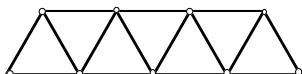


Which of the relationships is true for  $x$  and  $y$ ?

- A.  $x^\circ + y^\circ = 180^\circ$     B.  $x^\circ + y^\circ = 90^\circ$   
 C.  $x^\circ = y^\circ$                 D.  $x^\circ - y^\circ = 90^\circ$

**QUESTION 18**

Nainokop uses matchsticks to make triangle patterns as show below.



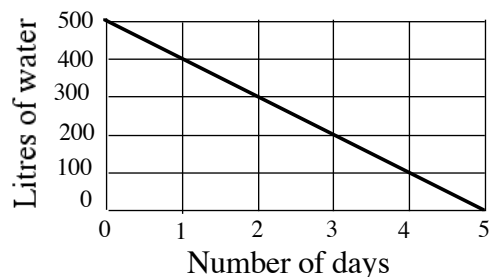
The pattern is  $m = 2t - 1$  where  $m$  is the number of matchsticks used and  $t$  is the number of triangles formed.

How many matchsticks would be used to make 15 triangles?

- A. 7                                B. 15  
 C. 30                              D. 31

**Use this graph to answer Questions 19 and 20**

The graph shows how much water a family uses per day.

**QUESTION 19**

How many litres of water were used in the first 3 days?

- A. 100                            B. 200  
 C. 300                            D. 400

**QUESTION 20**

If the family uses water at the same rate, how much water will be used in the month of April?

- A. 15,000                      B. 10,000  
 C. 5,000                        D. 3,000

**QUESTION 21**

A PMV carrying 36 passengers drove to a village. At the first bus stop, 11 passengers got off and 6 new passengers got on. At the second stop 20 got off and 2 got on. On the third stop everybody got off the PMV.

How many passengers got off at the third stop?

- A. 75                              B. 39  
 C. 18                              D. 5

**QUESTION 22**

Study the pattern below and answer the question that follows

$$(r^2 - x^2) = (r - x)(r + x)$$

$$(a^2 - b^2) = (a - b)(a + b)$$

Calculate the value of  $(50^2 - 49^2)$

- A. 1
- B. 10
- C. 99
- D. 100

**QUESTION 23**

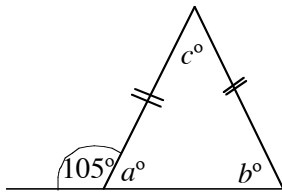
The circumference of a circle is 220 cm.

Note that  $\pi = \frac{22}{7}$  and  $C = 2\pi r$

What is the radius of the circle in cm?

- A. 22
- B. 35
- C. 70
- D. 154

**QUESTION 24**



Find the size of angle  $c$ .

- A.  $130^\circ$
- B.  $105^\circ$
- C.  $75^\circ$
- D.  $30^\circ$

**QUESTION 25**

Nindi worked 3 hours and Wale worked 2 hours at the school. The headmaster pays them K15.00 to share according to the hours they worked.

How much will Wale receive?

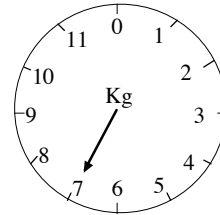
- A. K3.00
- B. K6.00
- C. K9.00
- D. K12.00

**SECTION B: (Questions 26 to 45)**

Write the correct answer next to the question number on your ANSWER SHEET. All rough work must be done on a separate answer sheet.

**QUESTION 26**

The scale shows the weight of Peter's oranges.



How much will Peter receive if the price of oranges is K3.50 per kg?

For Questions 27 and 28, refer to the information below.

MONTH	RAINFALL (mm)	TEMPERATURE (°C)
JANUARY	103.4	18.5
FEBRUARY	111	18.6
MARCH	129.7	14.6
APRIL	123	11.4
MAY	129.2	9.2
JUNE	131	11.4

**QUESTION 27**

What is the wettest month for Goroka?

**QUESTION 28**

What is the difference in temperature between the wettest and the driest month?

**QUESTION 29**

The distance between Bou and Garo village is 20 km. A truck travels along that road at a speed of 80 km per hour.

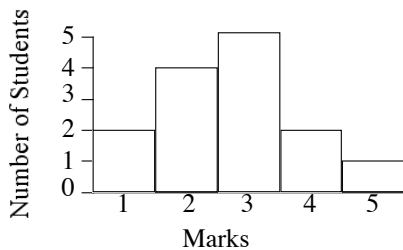
How many minutes will it take the truck to travel from Bou to Garo?

**QUESTION 30**

John Bought a carton (48 tins) of tinned fish for K132.00. He sold each tin of fish for K5.00.

How much profit did John make from selling all the tinned fish?

Questions 31, 32 and 33 refer to the graph below.



**QUESTION 31**

How many students sat for the test?

**QUESTION 32**

What is the mode for the test?

**QUESTION 33**

What is the mean of the test?

**QUESTION 34**

From a 1.5 Litre bottle of coke, Moses drank three quarters of it in the morning.

How many millilitres of coke was left?

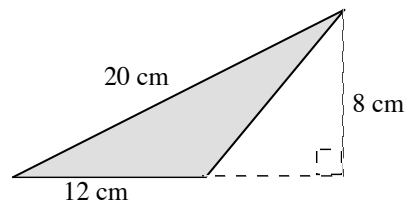
**QUESTION 35**



What percentage of the rectangle above is shaded?

**QUESTION 36**

Calculate the area of the shaded triangle below and give your answer in  $\text{cm}^3$ .



For QUESTIONS 37 and 38, refer to the table below

The table shows how much Gana spent at the market.

ITEM	QUANTITY	COST
Coconut	8	K4.00
Taro	10	K10.00
Bananas	20	K2.00

**QUESTION 37**

What is the unit price of a coconut?

**QUESTION 38**

Adam decides to by 1 coconut and 2 taros only.

How much would he spend?

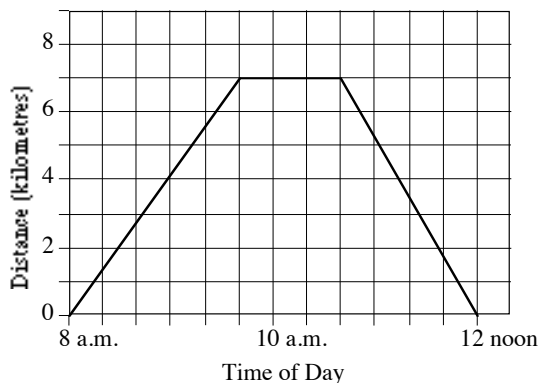
**QUESTION 39**

$\frac{3}{x}$  and  $\frac{27}{45}$  are equivalent fractions.

What is the value of  $x$ ?

Questions 40 and 41 refer to the travel graph below.

The travel graph shows Loi's trip from his town to his village and back.



**QUESTION 40**

What was the total distance in km travelled by Loi?

**QUESTION 41**

How many minutes did it take for Loi to return to town?

Questions 42 and 43 refer to the information in the table below.

The table below shows the number of students in Grade 8 in Asasha Primary School.

Class	number of boys	number of girls
8 A	20	26
8 B	30	24

**QUESTION 42**

What is the total number of grade 8 students in the school?

**QUESTION 43**

What percentage of the grade 8 students are 8A girls?

**QUESTION 44**

Given that:

4 leaves = 1 stick and 3 sticks = 1 stone.

How many leaves are equal to 3 stones?

**QUESTION 45**

Wanawa is two years older than Aulong. Hafal is 17 years younger than Aulong.

If Hafal is 34 years old, how old is Wanawa?

**SECTION C: EXTENDED RESPONSE**

This question is worth 5 marks.

**QUESTION 46**

The table below shows the number of children in 5 families in a small village.

Families	A	B	C	D	E
No. of children	3	5	4	2	1

Draw a column graph on your answer sheet to show the above information.

Marks will be awarded for:

1. Families on x axis
2. Number of children on y axis
3. Correctly plotting the data
4. What is the total number of children in the village?
5. What is the average number of children per family?

**END OF EXAMINATION**

# MATHEMATICS – ANSWER SHEET

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**MARKER 1**

YEAR		PROV.		SCHOOL			CAND NO.		
1	0								

SEX	AGE

<b>NAME</b>	
<b>SCHOOL</b>	

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**MARKER 2**

**PART A: (QUESTIONS 1 to 25)** Write the letter of your answer next to each question number below.

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	

**PART B (QUESTIONS 26 to 45)** Write your answer next to each question number below.

26	
27	
28	
29	
30	

31	
32	
33	
34	
35	

36	
37	
38	
39	
40	

**PART C (QUESTION 46)**

41	
42	
43	
44	
45	




**DO NOT WRITE ON THIS PAGE**

**YOU MAY DO YOUR ROUGH WORK ON THIS PAGE**

**CAREFULLY TEAR ALONG THIS PERFORATION**

**YOU MAY DO YOUR ROUGH WORK ON THIS PAGE**