



DEPARTMENT OF
EDUCATION

CERTIFICATE OF
BASIC EDUCATION
EXAMINATIONS

MATHEMATICS

Tuesday
29 October 2013

Time allowed: 3 hours
(8:30am – 11:30 am)

NO EXTRA TIME
(NO OTHER TIME)

Candidates are advised to
fully utilise the allocated
time

M a

INSTRUCTIONS TO CANDIDATES:

(To be read out by the external invigilator to all candidates before the start of the examination)

There are **46** questions in this paper worth **50** marks. Attempt ALL questions, even if you are not sure of some of the answers.

The Examination is divided into three parts:

PART A: Multiple Choice (Questions 1 to 25)

PART B: Short Answers (Questions 26 to 45)

PART C: Extended Response (Question 46)

The Answer Sheet is part of the Examination Booklet. Take out the middle pages and remove the Answer Sheet by tearing along the perforation. You may use the blank sheet for rough work.

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

For each question in **PART A**, choose the correct answer and write its LETTER in the space provided on the **Answer Sheet**.

For each question in **PART B** and **PART C** 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 and go on with the rest of the paper. If you have time at 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 clear to the markers what your final answer is. Do NOT use correction fluid on your answer sheet.

Q.2	X B
-----	-----

Do NOT use calculators to work out your answers.

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

THE PENALTY FOR CHEATING OR ASSISTING OTHERS TO CHEAT IN NATIONAL EXAMINATIONS IS NON-CERTIFICATION.

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

PART A: MULTIPLE CHOICE 25 MARKS

Choose the correct answer for each question and write the letter A, B, C or D in the space next to the question number on the ANSWER SHEET.

QUESTION 1

How long in hours would you take to travel 120 km at a rate of 12 km every hour?

- A. 10
- B. 12
- C. 120
- D. 1 200

QUESTION 2

From a 2 litre drink, Kaupa and his friends drank 1.5 liters.

What fraction of the cordial did they drink?

- | | | | |
|----|---------------|----|---------------|
| A. | $\frac{1}{4}$ | B. | $\frac{3}{8}$ |
| C. | $\frac{5}{8}$ | D. | $\frac{3}{4}$ |

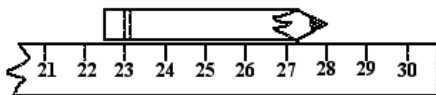
QUESTION 3

Simplify $-6 \times 3 + 9 \div (8 - 5) - 9$

- A. 12
- B. 4
- C. -12
- D. -24

QUESTION 4

Part of a broken ruler is used to measure a pencil. What is the length of the pencil in centimetres?



- A. 28.0 B. 22.5
C. 5.5 D. 5

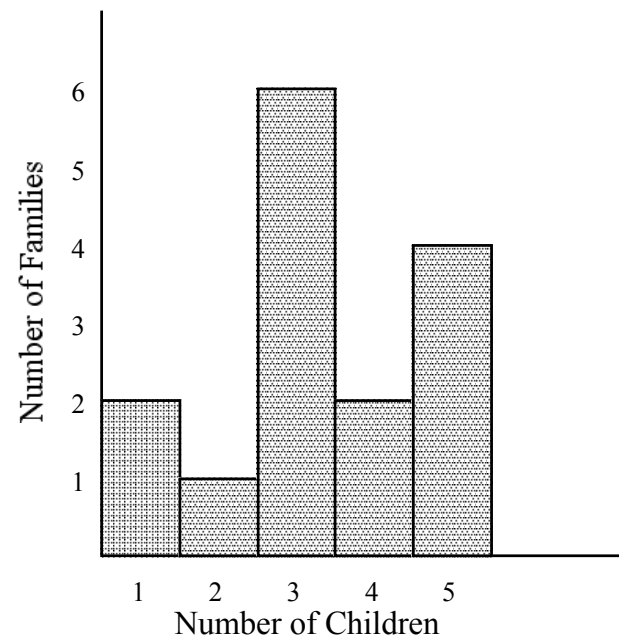
QUESTION 5

To the nearest whole number, what is 0.2×6.2 ?

- A. 1 B. 2
C. 12 D. 13

For question 6 and 7 refer to the information below.

The bar graph shows the number of children per family in a small village.



QUESTION 6

How many families have 4 children each?

- A. 2 B. 4
C. 5 D. 6

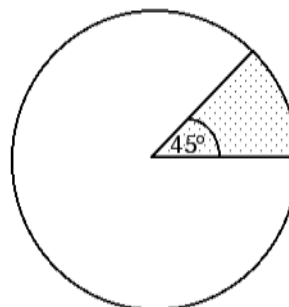
QUESTION 7

Out of the total number of children, what percentage has no brothers or sisters?

- A. 4 B. 10
C. 20 D. 40

QUESTION 8

What fraction of the circle is shaded?



- A. $\frac{1}{4}$ B. $\frac{1}{3}$
C. $\frac{1}{8}$ D. $\frac{1}{5}$

QUESTION 9

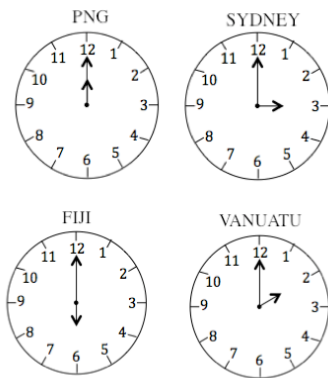
16 can be expressed in index form as

- A. 2^1 B. 2^3
C. 2^4 D. 2^2

QUESTION 10

Four clocks with times for 4 different countries were displayed in a lobby of a hotel.

What would be the time in Fiji if you were in Sydney at 5 o'clock?



- A. 5 o'clock
B. 7 o'clock
C. 8 o'clock
D. 9 o'clock

QUESTION 11

Simplify $3ab(2b - 3a + 4ab)$

- A. $5ab^2 - 6a^2b + 7a^2b^2$
B. $12ab - 18ab + 48ab$
C. $6ab^2 - 9a^2b + 12a^2b^2$
D. $6ab - 9a^2b + 12a^2b^2$

QUESTION 12

Simplify $(4a^3)^2$

- A. $8a^5$ B. $8a^6$
C. $16a^6$ D. $16a^5$

QUESTION 13

Billy and Bob picked mangos from a tree in the ratio 3:5 respectively.

If they collected 16 mangoes altogether then how many did Bob pick?

- A. 3 B. 5
C. 6 D. 10

QUESTION 14

Which 24-hour time is closest to 7 pm?

- A. 0630 B. 0800
C. 1830 D. 2000

QUESTION 15

An ant climbed a 3-metre pole starting at the bottom. After some time it had climbed up 75 % of the pole.

What distance has it climbed up in metres?

- A. 2.25 B. 2.5
C. 3.25 D. 3.5

QUESTION 16

Simplify $\frac{3^0 \times 4^2}{2^3 \times 3}$

- A. 0 B. $\frac{1}{2}$
C. $\frac{2}{3}$ D. $\frac{8}{9}$

QUESTION 17

Five scores 11, 20, 19, 14 and x were recorded.

If the sum of the scores is 80, find x .

- A. 16 B. 17
C. 18 D. 19

QUESTION 18

Ali, Bob and Dan worked in the school canteen for a week for 2, 3 and 4 hours respectively and were paid a total of K918.00.

If the money was divided according to the number of hours worked, how much did Ali collect?

- A. K500 B. K408
C. K306 D. K204

QUESTION 19

Study the map of PNG and give the approximate direction of Mendi from Port Moresby.



- A. North of Port Moresby
- B. Northwest of Port Moresby
- C. Northeast of Port Moresby
- D. East of Port Moresby

QUESTION 20

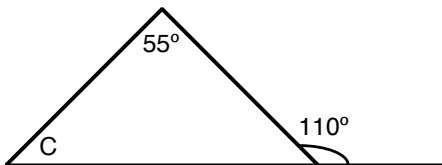
On a map the scale is 1 mm = 50 m.

If the distance measured between two points on a map is 25 mm, then what is the actual distance in metres between the two locations located on the map?

- A. 125
- B. 1,250
- C. 12,500
- D. 125,000

QUESTION 21

What is the value of the angle marked C?

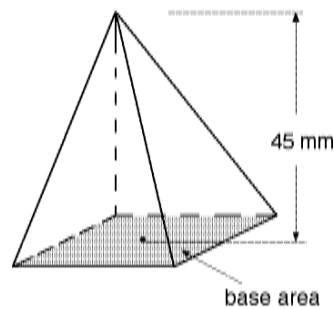


- A. 55°
- B. 70°
- C. 110°
- D. 125°

QUESTION 22

Calculate the base area of the rectangular pyramid in square millimetres if the volume is 36,000 mm³ and the perpendicular height is 45 mm.

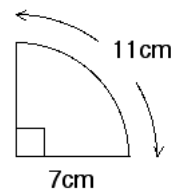
$$V = \frac{1}{3} \times \text{base area} \times \text{perpendicular height}$$



- A. 2,400
- B. 1,600
- C. 800
- D. 400

For question 23 and 24 refer to the figure shown.

A circular pie was cut into 4 equal sectors with 1 section as shown in the figure. The arc length of each section is 11 centimetres.

**QUESTION 23**

What was the circumference of the pie in centimetres before it was cut?

- A. 44
- B. 88
- C. 132
- D. 154

QUESTION 24

Using $\pi = \frac{22}{7}$, what is the area of the section shown?

- A. 269.5
- B. 154
- C. 77
- D. 38.5

QUESTION 25

A 500 millilitre water container is used to fill a 10 litre water storage cylinder.

How many fills of the 500 ml container will it take to fill up the cylinder?

- | | | | |
|----|----|----|----|
| A. | 5 | B. | 10 |
| C. | 20 | D. | 50 |

PART B: SHORT ANSWER 20 MARKS

For each question work out the correct answer and write it in the space provided on the ANSWER SHEET.

QUESTION 26

How many axis of symmetry does a square have?

QUESTION 27

A bottle of frozen water at a temperature of -11°C gets warmer by 19°C as it is brought out into room temperature.

What is the new temperature of the bottle of water in degrees Celsius?

QUESTION 28

To make a cake, 4 cups of flour, 3 tablespoons of sugar, 3 eggs and 2 cups of milk are needed. To make a larger cake of such, 6 eggs were used.

How many cups of flour were used?

QUESTION 29

Facing north, John makes a clockwise turn to face southwest.

By how many degrees does John turn?

QUESTION 30

Simplify $4\left(2\frac{1}{4} + 5\frac{1}{2}\right)$

QUESTION 31

How many minutes are there in 1.25 hours?

QUESTION 32

If $y = 2$ then solve for x in $x = 6(y - 4)$.

QUESTION 33

Find the median of these numbers:

11, 4, 8, 9, 6, 3, 5 and 10.

QUESTION 34

Jenny bought a lolly packet containing 50 lollies at K3.50 from a store. She then sold each lolly for 10 toea at her roadside stall.

How much profit in kina did she make?

For question 35 and 36 refer to the figure shown

A group of boys competed in a heading ball competition. The distances they headed are recorded in the table.

Distance (m)	2-3	4-5	6-7	8-9
Number of headers	4	6	8	2

QUESTION 35

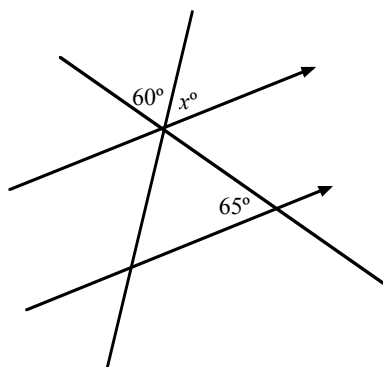
How many boys took part in the competition?

QUESTION 36

What percentage of the total number of boys headed the ball a distance over 8 metres?

QUESTION 37

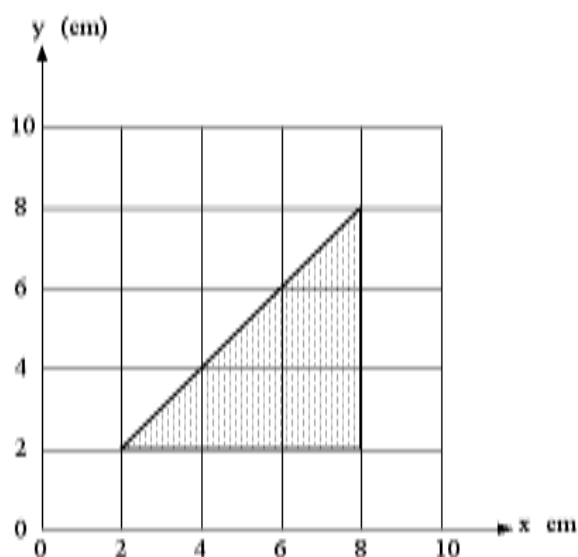
What is the value of angle x ?



QUESTION 38

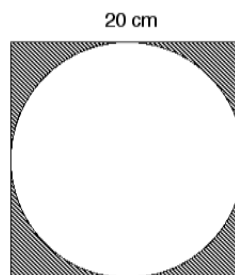
A triangle is placed on an $x - y$ plane as shown.

What is the area of the shaded triangle in square centimetres?



QUESTION 39

A circle is drawn inside a square of sides 20cm as shown. The area of the circle is 314cm^2 .



What is the area of the shaded part?

QUESTION 40

How many cubes of volume 8 cm^3 can fit exactly into a box of length 6 cm, width 4 cm and height 4 cm?

QUESTION 41

Jack weighs 30kg. Peter weighs twice Jack's weight and John weighs two third that of Peter's weight.

What is John's weight in kilogram?

QUESTION 42

Mary is paid K2.50 an hour as a security officer.

How many hours did she work if she was paid K65.00?

QUESTION 43

John had 120 marbles. He gave 60% of the marbles to his friends Nancy and Peter. Nancy got 32 marbles

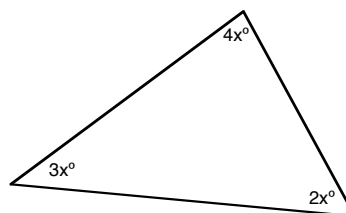
How many marbles did Peter get?

QUESTION 44

Solve for y in, $3y + 3 = 12$

QUESTION 45

What is the value of x ?

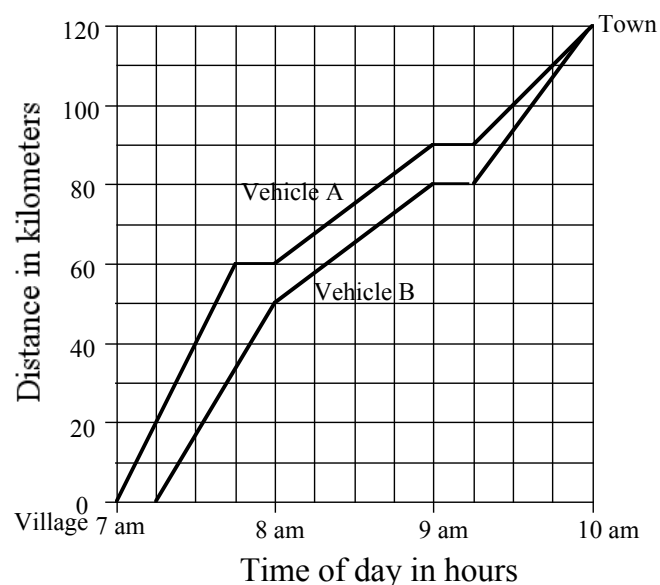


PART C: EXTENDED RESPONSE 5 MARKS**Question 46**

Refer to the information given below and write your answers in the spaces provided on the ANSWER SHEET.

In a village there are two PMVs that carry passengers and cargo daily into town except on Sundays.

Their journey in the morning into town on a particular day is shown on the distance time graph below.



- What time did Vehicle B start its journey?
- How far in kilometres had Vehicle A travelled by 7:30 am?
- How far apart in kilometres are the vehicles at 9 am?
- Vehicle A made two stops. In total how long were the stops?
- In the time interval from 8 am to 9 am, what was Vehicle B's average speed in kilometres per hour?

END OF EXAMINATION