



DEPARTMENT OF
EDUCATION

SCHOOL
CERTIFICATE
EXAMINATIONS

MATHEMATICS

5th October 2010

Time allowed: 3 hours

Candidates are advised to fully
utilise the time allocated

MA 10

INSTRUCTIONS TO CANDIDATES:

(To be read out by the External Invigilator 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 Answer (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, name and school name in the space given on the **Answer Sheet**.

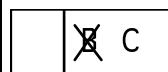
For each question in **PART A** choose the best answer and write its **LETTER** in the space given on the Answer Sheet.

For each question in **PART B and C** work out the answer(s) and write the answer(s) in the space(s) given 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 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.



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.

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: (Questions 1 to 25) : 1 mark each

For each question choose the best answer by writing A, B, C, D or E in the space provided on the ANSWER SHEET.

QUESTION 1

What is 12½% of 10 kg in grams?

- A. 1250
- B. 125
- C. 12.5
- D. 1.25
- E. 0.125

QUESTION 2

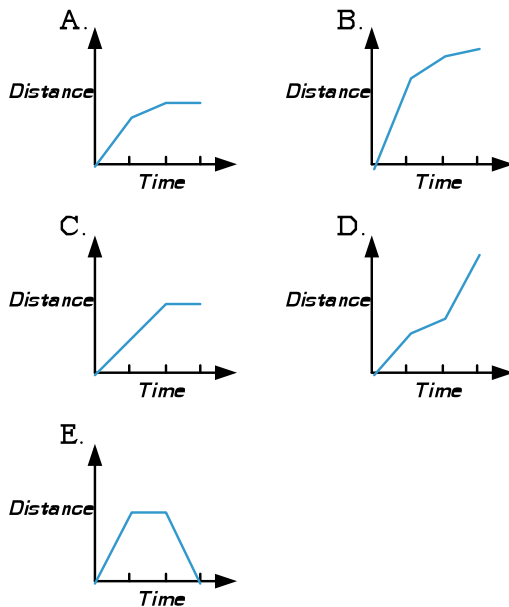
A discount of 20% is given on a TV set. This reduces the price by K190.00. What was the original price?

- A. K152
- B. K228
- C. K760
- D. K950
- E. K1140

QUESTION 3

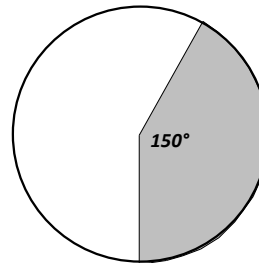
A lady in a car drives for three (3) hours averaging 80 km/hr, 60 km/hr and 90 km/hr respectively in each hour.

Which graph best represents her trip?



QUESTION 4

The area of the circle is 27 cm². What is the area of the shaded sector?



- A. 9 cm²
- B. 11.25 cm²
- C. 11.5 cm²
- D. 12.25 cm²
- E. 15.75 cm²

QUESTION 5

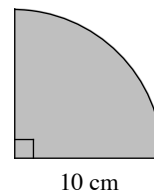
What is the next number in the following series?

27, -9, 3, -1, $\frac{1}{3}$, $\frac{-1}{9}$,

- A. $\frac{1}{27}$
- B. $\frac{-1}{27}$
- C. $\frac{2}{9}$
- D. $\frac{-2}{9}$
- E. $\frac{9}{2}$

QUESTION 6

Find the area of this quadrant. ($\pi = 3.14$)



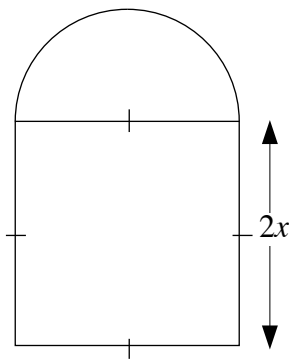
- A. 78 cm²
- B. 78.5 cm²
- C. 7.85 cm²
- D. 0.78 cm²
- E. 0.785 cm²

QUESTION 7

Susan ran 3000 m in exactly 8 minutes. What was her average speed in meters per second?

- A. 3.75
- B. 6.25
- C. 16.0
- D. 37.5
- E. 62.5

QUESTION 8



A formula for the area of this figure is

- A. $\frac{1}{2}\pi x^2 + 2x^2$
- B. $\pi x^2 + 6x$
- C. $\frac{1}{2}\pi x^2 + 4x^2$
- D. $\pi x^2 + 4x^2$
- E. $2\pi x^2 + 2x^2$

Find the value of x when $3x - 4 = 2x + 6$.

- A. 2
- B. 4
- C. 6
- D. 8
- E. 10

QUESTION 10

In a right angled triangle, the opposite side length is 118 m and the angle is 76° .

Which of the following can be used to find the length of the adjacent side?

- A. $118 \tan 76^\circ$
- B. $\frac{118}{\tan 76^\circ}$
- C. $\frac{\tan 76^\circ}{118}$
- D. $\frac{\tan 14^\circ}{118}$
- E. $118 \tan 76^\circ$

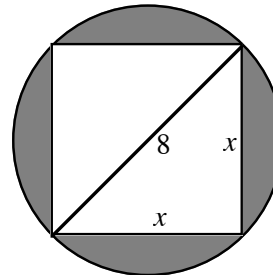
QUESTION 11

What is the gradient of the line passing through (3, -4) and (5, 8)?

- A. 2
- B. -2
- C. -6
- D. 6
- E. $\frac{1}{6}$

QUESTION 12

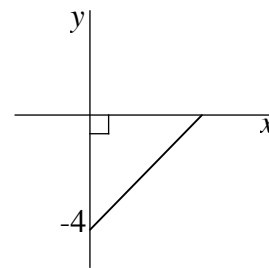
A square shaped object with a diagonal of 8 cm is fitted into a cylindrical pipe. What is the area of the shaded region? (Use $\pi = 3.14$)



- A. 5.675 cm^2
- B. 8.224 cm^2
- C. 18.24 cm^2
- D. 82.24 cm^2
- E. 182.4 cm^2

QUESTION 13

The diagram shows an isosceles right-angled



triangle on a set of axes.

What is the equation of the hypotenuse?

- A. $y = -x - 4$
- B. $y = x - 4$
- C. $y = 4 + x$
- D. $y = 4 - x$
- E. $y = x - (-4)$

QUESTION 14

Abigail, Bridget and Clive are to share 420 oranges such that Bridget gets twice as many as Abigail and Clive half as many as Bridget. How many does Clive get?

- A. 60
- B. 105
- C. 110
- D. 120
- E. 210

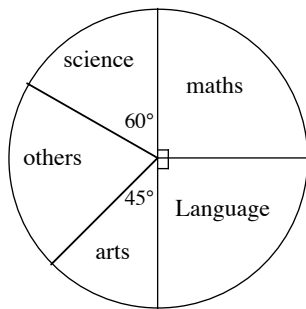
QUESTION 15

7.05 kg, expressed in kilograms and grams is

	kilograms	grams
A.	70	5
B.	70	50
C.	7	500
D.	7	50
E.	7	5

QUESTION 16

The pie chart below shows the number of passes in examinations in various subjects.



Out of 240 students, how many passed in Maths?

- A. 48
- B. 60
- C. 90
- D. 180
- E. 216

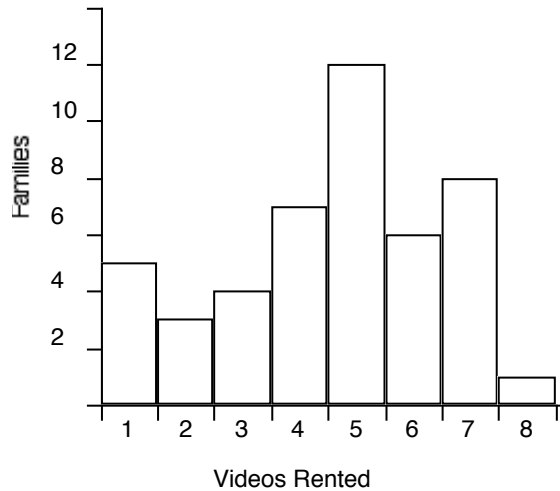
QUESTION 17

Which of the following is equal to p^{-4} ?

- A. p^4
- B. $-\frac{1}{p^4}$
- C. $\frac{1}{p^4}$
- D. $\frac{4}{p}$
- E. $\frac{p}{4}$

QUESTION 18

The graph below shows the number of videos rented by different families in a week.



How many families rented 4 or more videos per week?

- A. 31
- B. 19
- C. 18
- D. 12
- E. 6

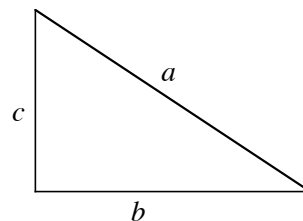
QUESTION 19

Which of these numbers can be evenly divided by 2, 3 and 5?

- A. 2390
- B. 2380
- C. 2370
- D. 2360
- E. 2350

QUESTION 20

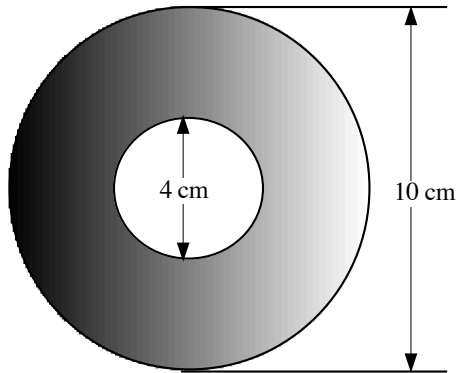
Which of the formulae below can be used to find the value of b ?



- A. $a = \sqrt{b^2 + c^2}$
- B. $b = \sqrt{a^2 - c^2}$
- C. $b = a^2 - c^2$
- D. $b = a - c$
- E. $b^2 = \sqrt{a^2 - c^2}$

QUESTION 21

Find the area of the shaded region. ($\pi = 3.14$)



- A. 263.76 B. 96.54
 C. 69.54 D. 65.94
 E. 50.24

QUESTION 22

What percentage of K25 is 25t?

- A. 10 B. 1
 C. 0.1 D. 0.01
 E. 0.001

Questions 23 and 24 refer to the following information.

The marks of ten students in a test are: 8, 4, 5, 10, 9, 8, 6, 5, 8 and 6.

QUESTION 23

What is the modal mark?

- A. 10 B. 8.5
 C. 8 D. 6.9
 E. 3

QUESTION 24

What is the median mark?

- A. 6 B. 7
 C. 8 D. 9
 E. 10

QUESTION 25

The selling price of a radio in January was K140.00. In June it was sold on a 20% discount price.

What is the new price?

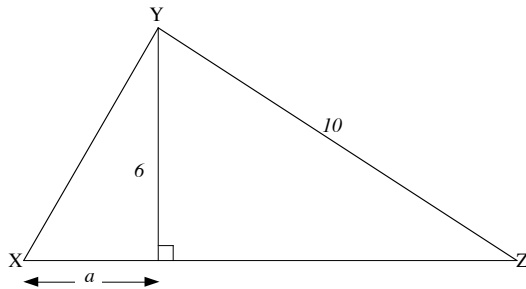
- A. K20 B. K28
 C. K112 D. K120
 E. K168

PART B (Questions 26 to 45) – 1 mark each.

Work out your answer and write it in the space provided in the ANSWER SHEET

QUESTION 26

The area of triangle XYZ is 36 cm^2 .



What is the value of 'a'?

QUESTION 27

A bag contains 3 red, 2 yellow, 1 green and 4 blue marbles. What is the probability of picking a yellow marble at random? (Give your answer as a decimal.)

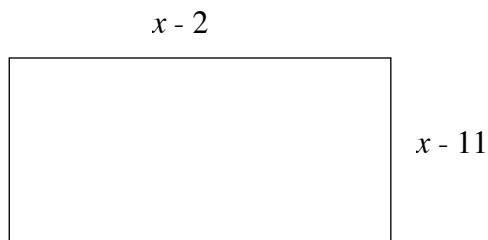
QUESTION 28

An isosceles triangle has sides of length 10 cm and a base of length 12 cm.

Calculate the area of the triangle in cm^2 .

QUESTION 29

Find the length of the rectangle below if its area is 22 cm^2 .

**QUESTION 30**

If $p = 4$, $q = -2$ and $r = 3$.

Find the value of $\frac{p-2q+2r}{p+r}$

QUESTION 31

What is the answer in positive indices for

$$3m^{-3}n^5 \div 18m^5n^3$$

QUESTION 32

Lynette and Renée receive 45 text messages in the ratio 5:4. How many text messages does Lynette receive?

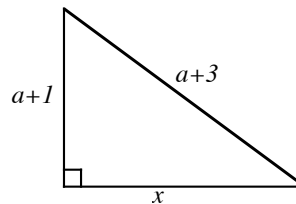
QUESTION 33

$$(x-5)(x-2) = x^2 - Rx + 10$$

What is the value of R?

QUESTION 34

Douglas starts watching a video at 7.55 pm. The video runs for 135 minutes. At what time will the video finish?

QUESTION 35

The diagram shows a right-angled triangle with sides as indicated.

What is the value of x^2 if $a = 3$?

QUESTION 36

A principal of K1250 earns K100 simple interest over two (2) years.

What is the rate of interest per annum?

QUESTION 37

Find the mean from the frequency distribution table below.

x	f
1	5
2	4
3	4
4	5
5	3
6	1

QUESTION 38

A quadrilateral has diagonals of the same length and they bisect at right angles.

What is the name of the quadrilateral?

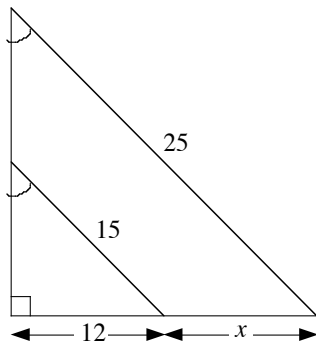
QUESTION 39

A certain number (x) is divided by 3 and then subtracted from 8. The result is 4.

What is the number?

QUESTION 40

Using similar triangles, find the value of x in the diagram



QUESTION 41

The points in the table lie on a straight line.

What is the y intercept of the line?

x	3	5	6
y	5	9	11

QUESTION 42

What is the value of ' m ' when

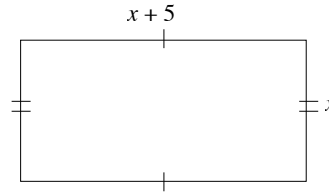
$$\frac{2m}{5} - \frac{m}{3} = 4$$

QUESTION 43

The total surface area of a cube is 216 cm^3 .
What is the length of each side?

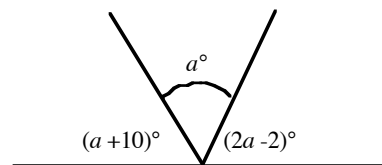
QUESTION 44

Find the value of x if the perimeter of the figure below is 50.



QUESTION 45

Find the value of a .



PART C (Question 46): 5 marks.

Work out your answer and write it in the space provided in the ANSWER SHEET.

QUESTION 46

A boat travels 30km due North from point A to point B and then travels another 40 km due East from point B to point C. The total time taken for the boat to travel from point A to point C is 14 hours.

- Correctly draw a diagram to illustrate the above information. (1)
- What is the average speed of the boat in travelling from A to B to C? (1)
- Calculate the distance from point A directly to point C. (1)
- How long will the boat take to travel directly from point C to point A, if it travels at the same average speed? (1)
- The boat uses 2L fuel per hour. If the cost of fuel is K4.50 per litre. What will be the cost of the fuel needed to travel from A to B to C and back to A again? (1)

END OF EXAMINATION