DEPARTMENT OF EDUCATION

LOWER SECONDARY SCHOOL CERTIFICATE EXAMINATIONS

MATHEMATICS

Tuesday

02 October 2012

Time allowed: 3 hours

(8:30 am – 11:30 am)

Candidates are advised to fully utilise the time allocated

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 a total 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 (Questions 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** (Questions 1 to 25) choose the best answer by writing the letter A or B or C or D in the space provided 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 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.

	~~B~~ C

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: MULTIPLE CHOICE

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

QUESTION 1

Written in decimal, 125% is

A. 0.0 125 B. 0.125

C. 1.25 D. 12.5

QUESTION 2

104.4 grams written in kilogram is

A. 104 400 B. 10.44

C. 1.044 D. 0.1044

QUESTION 3

Ranu is to pay K1200 for his school fee for the year. His father decides to pay K300 in term 1.

What percentage of the total was paid?

A. 25% B. 33%

C. 66% D. 75%

QUESTION 4

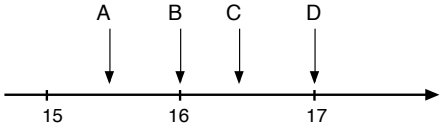
What is the simple interest earned on a deposit of K3000 at 8% per annum for 5 years?

A. K240 B. K960

C. K1200 D. K1800

QUESTION 5

Where on the number line would you find $\sqrt{270}$?



QUESTION 6

A tank holding 5000 litres of water is leaking at a rate of 3 litres per hour.

How many litres of water will be in the tank after one day?

A. 4997 B. 4976

C. 4952 D. 4928

QUESTION 7

Given that $x = 3$ and $y = 3$, find the value of Z in the expression; $Z^2 + \frac{8x}{2y} = 8$

A. 4 B. 2

C. 8 D. 16

QUESTION 8

The value of x when, $\frac{3x-1}{4} - \frac{x-2}{2} = 2$ is

A. 5 B. 7

C. 9 D. 11

QUESTION 9

Which equation represents a line that runs parallel to a line with the equation $y = 3x - 2$?

A. $y = 3x + 2$ B. $y = \frac{1}{3}x - 2$

C. $y = 2x - 2$ D. $y = 2x + 2$

QUESTION 10

A rectangular garden has a length of 2.5×10^4 metres and a width of 8×10^2 metres.

Work out the area of the garden in hectares.

(1 hectare = 10 000 m^2)

A. 2.0×10^3 B. 4.0×10^4

C. 4.0×10^6 D. 2.0×10^7

QUESTION 11

Simplify $\frac{64x^8}{(8x^{-4}y)^2}$

A. $8x^{16}y^{-2}$ B. $x^{12}y^{-2}$

C. $8x^{12}y^{-2}$ D. $x^{16}y^{-2}$

QUESTION 12

The ratio of dogs to cats is 2:3.

If there are 36 cats, what is the total number of dogs?

A. 5 B. 12

C. 24 D. 60

QUESTION 13

From the ***x*** and ***y*** table of values for a linear equation, find the gradient.

x	-3	-2	-1	0	1	2
y	-8	-5	-2	1	4	7

A. 5 B. 3

C. 2 D. -2

QUESTION 14

A bag contains 4 blue balls and 6 red balls.

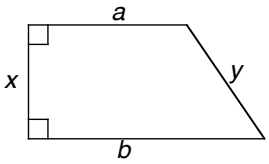
What is the probability of selecting at random 1 red ball?

A. $\frac{1}{10}$ B. $\frac{1}{6}$

C. $\frac{2}{5}$ D. $\frac{3}{5}$

QUESTION 15

What is the correct expression for the area of the trapezium?



A. $A = \frac{1}{2}(a+b)x$ B. $A = 2(a+b)x$

C. $A = \frac{1}{2}(a+b)y$ D. $A = 2(a+b)y$

QUESTION 16

Factorise $x(a+b) + y(a+b)$

A. $(a+x)(b+y)$ B. $(a+y)(b+x)$

C. $(a+b)(x+y)$ D. $a+b(x+y)$

Questions 17 and 18 refer to the information below.

Twenty students sat for a Mathematics quiz and the marks they scored are as shown.

mark	2	3	4	5	6	7	8	9	10
frequency	1	3	0	3	5	4	0	1	3

QUESTION 17

What is the mode of these marks?

A. 5 B. 6

C. 7 D. 8

QUESTION 18

What is the range of marks scored?

A. 5 B. 8

C. 10 D. 12

QUESTION 19

A right-angled triangle has a sine ratio of $\frac{3}{5}$ for one of its acute angle.

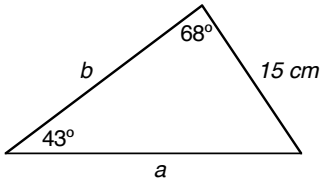
What is the sine ratio for the other acute angle?

A. $\frac{5}{3}$ B. $\frac{4}{3}$

C. $\frac{3}{4}$ D. $\frac{4}{5}$

QUESTION 20

Which expression represents the length of side ***a***?

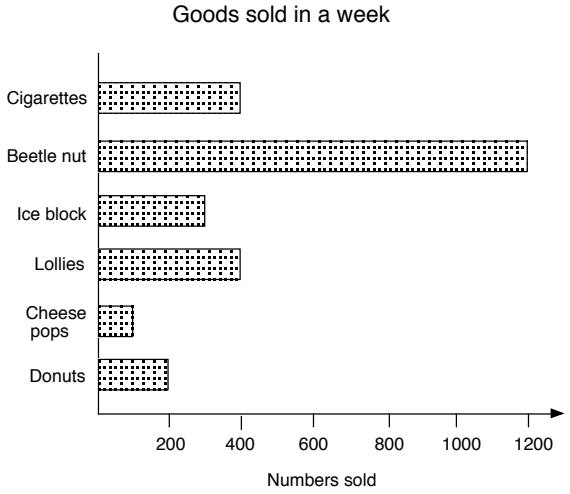


A. $a = \frac{15\sin 43°}{\sin 68°}$ B. $a = \frac{\sin 43°}{15\sin 68°}$

C. $a = \frac{15\sin 68°}{\sin 43°}$ D. $a = \frac{\sin 68°}{15\sin 43°}$

Questions 21 and 22 refer to the information below.

The graph below shows the goods sold at a particular market by a woman in a week. The prices of the items are shown in the table below the graph.



Item	Price
Cigarettes	1 Kina
Beetle nut	50 toea
Ice block	50 toea
Lollies	10toea
Cheese pops	1 Kina
Donuts	70 toea

QUESTION 21

Which two items together represent $\frac{2}{3}$ of the number of beetle nuts sold?

A. lollies and ice blocks

B. ice blocks and cigarettes

C. cigarettes and lollies

D. donuts and cigarettes

QUESTION 22

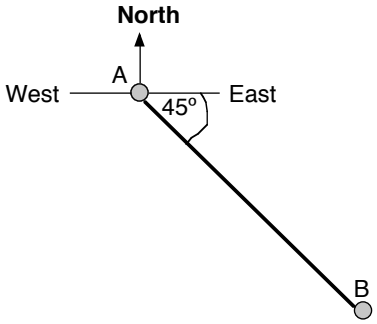
Which item earned the least amount of money?

A. lollies B. cheese pops

C. donuts D. ice block

QUESTION 23

What is the true bearing of point A from point B?



A. 045° B. 135°

C. 225° D. 315°

QUESTION 24

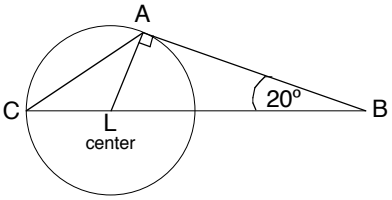
When the formula $v = ut + \frac{1}{2}at^2$ is rearranged with a as the subject, the formula becomes;

A. $a = \frac{2(v + ut)}{t^2}$ B. $a = \frac{2(v - ut)}{t^2}$

C. $a = \frac{2(v - ut^2)}{t}$ D. $a = \frac{2(v + ut^2)}{t}$

QUESTION 25

What is the value of ∠ACL in the given figure?



A. 110° B. 70°

C. 35° D. 30°

PART B: SHORT ANSWER QUESTIONS

Work out your answers and write them in the spaces provided on the ANSWER SHEET.

QUESTION 26

Jane got a personal loan of K5000 from a commercial bank. She is to repay the loan at the rate of K220 per fortnight for a period of 1 year. What is the interest rate charged by the bank on the loan?

QUESTION 27

A car costing K19 000 depreciates at a rate of 5% every year.

What will be its value at the end of the second year?

QUESTION 28

A sum of K400 was given to Henry, Felix, David and Anton. David got 25% while the rest was shared between the other three boys. From the remaining amount, Henry got $\frac{1}{3}$ and Felix got $\frac{1}{4}$.

How much money did Anton get?

QUESTION 29

In 2002 the number of visitors to a resort was 5000. This was 25% more than the number of visitors in 2001.

What was the number of visitors in 2001?

QUESTION 30

A mother is twice the age of her daughter and together their ages total 63 years.

How old is the mother?

QUESTION 31

One banana and two mangos cost K1.30. Five bananas and four mangos cost K3.50.

Find in toea the cost of one mango.

QUESTION 32

If $\frac{a}{3} = 2$, then what is $2a^2 - 10$?

QUESTION 33

If $(x + 4)(x - 5) = x^2 - Ax - 20$, what is the value of A?

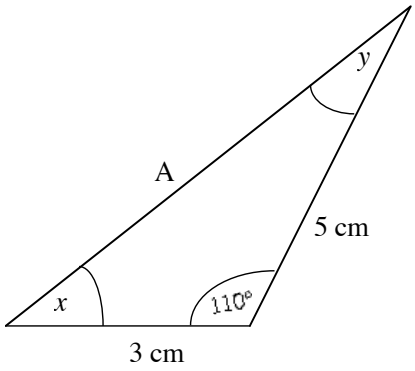
QUESTION 34

The numbers 2, 5, 6, 7 and N are arranged in ascending order.

If the mean of the numbers is equal to the median, what is N?

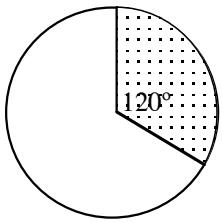
QUESTION 35

What rule would you use to calculate side **A**.



QUESTION 36

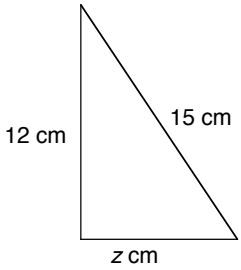
The circle below has a sector 120° shaded.



Find the area of the shaded sector. Use $\pi = \frac{22}{7}$ and give your answer correct to 1 decimal place.

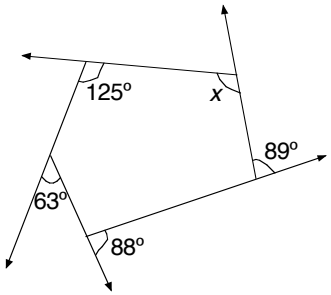
QUESTION 37

Find the length of the unknown side z.



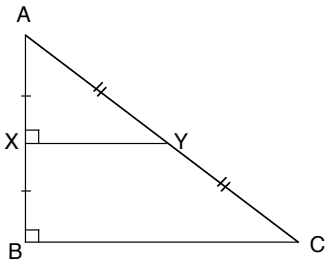
QUESTION 38

What is the size of angle x?



Questions 39 and 40 refer to the diagram below.

AB = 6cm and AC = 10cm.



QUESTION 39

Find XY.

QUESTION 40

What is the simple ratio of the areas ABC:AXY?

QUESTION 41

A fast food shop makes 650 flour balls to sell in a day. The shop closes on Sundays.

How many would be made in two weeks?

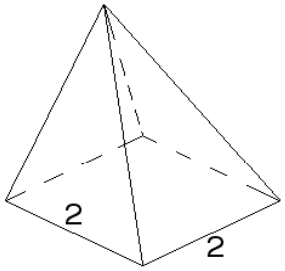
QUESTION 42

The two sides of a coin are known as 'head' and 'tail'. What is the probability of obtaining 2 heads if two coins are tossed at the same time? (Give your answer in simplest fraction form)

QUESTION 43

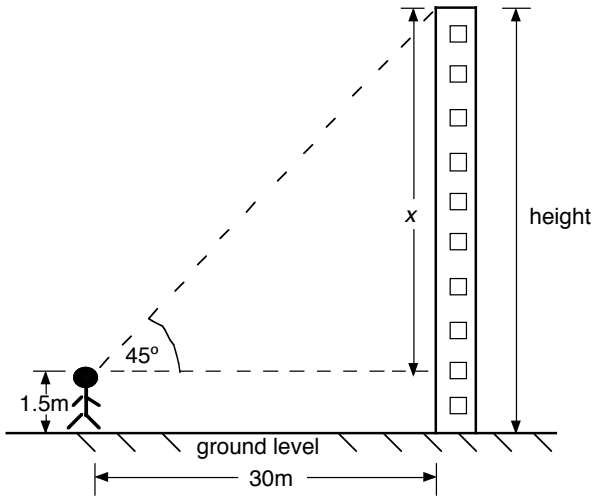
The diagram shows a square based pyramid. The pyramid has a height of 6cm. All dimensions are in centimetres.

Find the volume of the pyramid.



QUESTION 44

A man who is 1.5m tall stands 30m away from a tower and looks up to the top of the tower. The angle of elevation of his line of sight is 45°.



Trigonometry Table

Angle	sin	cos	tan
45°	0.7071	0.7071	1

What is the height of the tower in metres?

QUESTION 45

Ethel's bank account had a balance of K215 at the end of April and showed the following transactions for May.

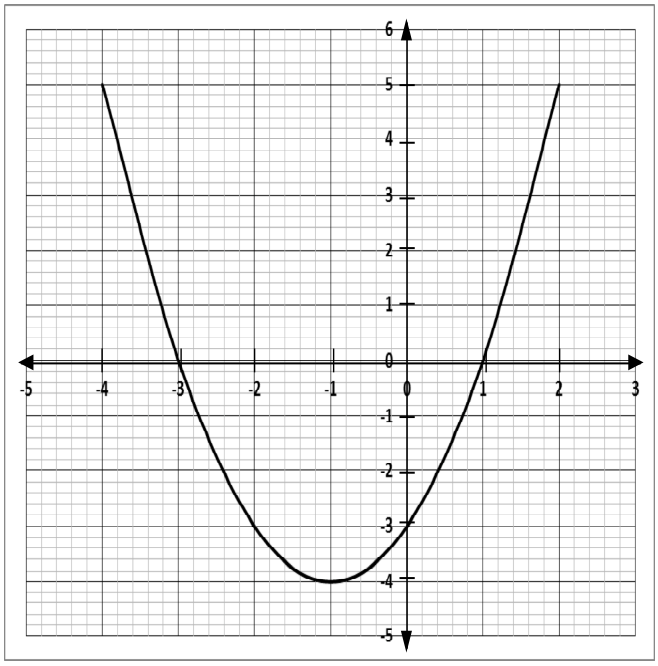
3 May	K50 deposit
14 May	K80 withdraw
22 May	K95 deposit
27 May	K120 withdraw

What is the balance of Ethel's account at the end of May?

PART C: EXTENDED RESPONSE 5 MARKS

QUESTION 46

Study the graph below and answer the questions that follow.



(a) Write the equation of the parabola in the form $y = ax^2 + bx + c$ (2 marks)

(b) What is the equation of the axis of symmetry? (1 mark)

(c) If a straight-line graph of $y = x - 1$, was drawn on the same grid.

What would be the co-ordinates of the points of intersection of the two graphs?

(2 marks)

END OF EXAMINATION