DEPARTMENT OF EDUCATION

LOWER SECONDARY SCHOOL CERTIFICATE EXAMINATIONS

MATHEMATICS

Monday

10th October 2016

Time allowed: 3 hours

Candidates are advised to fully utilise the time allocated

MA

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 **1 mark each**. 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 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** choose the best answer and write its LETTER in the space given on the Answer Sheet.

For each question in **PART B** and **PART C** work out the answer and write the answer in the spaces 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 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.

2	~~A~~	B

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.

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PART A: **(Questions 1 to 25)** **1 mark each.**

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

QUESTION 1

2.3×10^{1} expressed as an ordinary number is

A. 230 B. 23

C. 2.3 D. 0.23

QUESTION 2

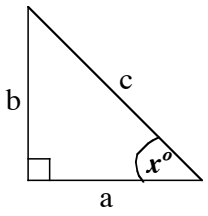
Expand $5(2a+3b-c)$

A. $7a+8b-4c$ B. $10a+15b-5c$

C. $20a+b-c$ D. $10a+15b+5c$

QUESTION 3

The tangent ratio of angle ***x*** in the right-angled triangle shown is



A. $\frac{c}{a}$ B. $\frac{b}{a}$

C. $\frac{a}{c}$ D. $\frac{b}{c}$

QUESTION 4

Simplify $\frac{20xy^2}{8x^2y^{-3}}$

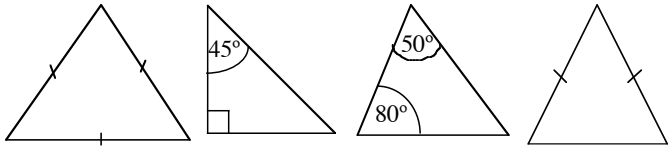
A. $10x^3y$ B. $\frac{5y^5}{2x}$

C. $\frac{5y}{2x}$ D. $\frac{y^5}{2x}$

Question 5

Which of the following triangles is scalene?

A. B. C. D.



QUESTION 6

A bag contains 3 green and 2 yellow marbles. If a marble is picked at random, what is the probability that it is a green marble?

A. 1.0 B. 0.6

C. 0.3 D. 0.2

QUESTION 7

Simplify $\left(-2y^3\right)^0$

A. $-3y^6$ B. $4y^3$

C. 0 D. 1

QUESTION 8

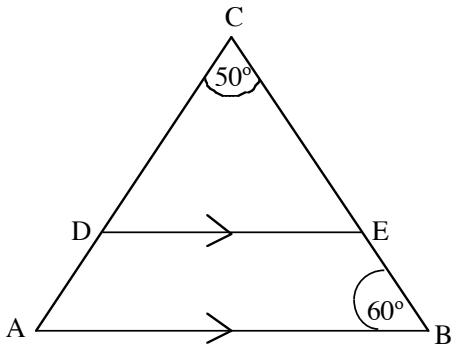
How many years will it take an investment of K4000 to earn K200 interest at a simple interest rate of 5% per annum?

A. 0.5 B. 1

C. 1.5 D. 2.0

QUESTION 9

In triangle ABC, DE is parallel to AB and $\angle ABE = 60°$.



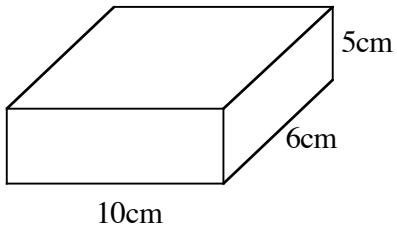
What is the size of $\angle CDE$?

A. 40° B. 50°

C. 60° D. 70°

QUESTION 10

What is the surface area of the solid below in centimetre squared?



A. 60 B. 140

C. 280 D. 300

QUESTION 11

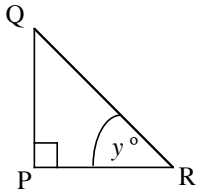
Simplify $a(2+c)-(2+c)+3a-5$

A. $7a+4ac+ac^2-5$ B. $6a-7$

C. $-a-4ac-ac^2-5$ D. $5a+ac-c-7$

QUESTION 12

Which equation is correct with regard to the triangle shown?



A. $PR=\dfrac{QR}{\tan y^{\circ}}$ B. $PR=\dfrac{PQ}{\tan y^{\circ}}$

C. $PR=\dfrac{PQ}{\cos y^{\circ}}$ D. $PR=\dfrac{QR}{\sin y^{\circ}}$

QUESTION 13

Lientel receives an annual salary of K19370. What is her weekly income?

A. K1, 616.17 B. K745

C. K403.54 D. K372.50

QUESTION 14

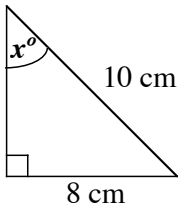
$\dfrac{42}{1000}\div 6$ is equal to

A. 7 B. 0.7

C. 0.07 D. 0.007

QUESTION 15

What is the correct equation to find the value of angle ***x*** in the triangle below?



A. $\sin x^{\circ}=\dfrac{8}{10}$ B. $\cos x^{\circ}=\dfrac{8}{10}$

C. $\tan x^{\circ}=\dfrac{8}{10}$ D. $\cos x^{\circ}=\dfrac{10}{8}$

QUESTION 16

The favourite fruits of 30 students were recorded in the table below.

FRUIT	FREQUENCY
Banana	3
Pineapple	6
Watermelon	12
Orange	5
Pawpaw	4

What would be the size of the angle represented by "watermelon' if the information in the table is shown using a pie graph?

A. 12º B. 33º

C. 120º D. 144º

QUESTION 17

Mary and John shared 24 oranges in the ratio of the number of children in each of their families. Mary is the only child in the family and John has two sisters.

How many oranges would John receive?

A. 18 B. 16

C. 8 D. 6

QUESTION 18

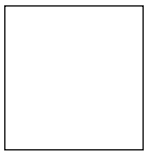
A coin is tossed twice. What is the probability of getting the same side facing upwards?

A. 1 B. 0.75

C. 0.50 D. 0.25

QUESTION 19

If the perimeter of the square below is 8 centimetres then what is the value of ***y***?



(y-3)cm

A. 15 B. 5

C. 3 D. 1

QUESTION 20

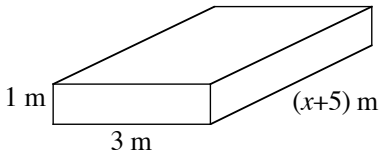
Simplify $\frac{8\times10^4}{2\times10^2}+\left(6.2\times10^3\times2.0\times10^{-2}\right)$

A. 4.8×10^2 B. 4.8×10^4

C. 5.24×10^2 D. 5.24×10^4

QUESTION 21

The volume of the prism shown below is 42 cubic metres.



Find the value of ***x***.

A. 57 B. 40

C. 25 D. 9

QUESTION 22

Given the data set {3, 3, 4, 4, 5, 5, 5, 6, 6, 6}

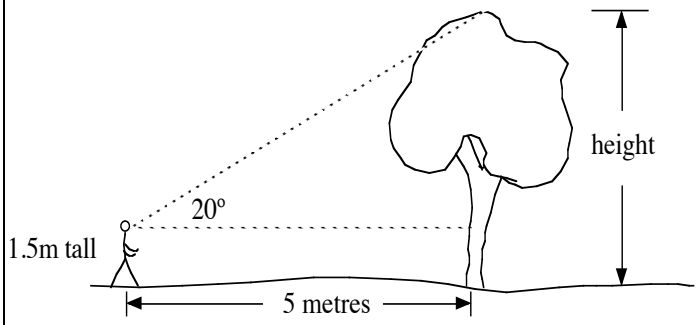
The inter-quartile range is

A. 6 B. 4

C. 3 D. 2

QUESTION 23

Bill is 1.5 metres tall and is observing the top of a tree as shown.



tan 20°	0.36
sin 20°	0.34
cos 20°	0.94

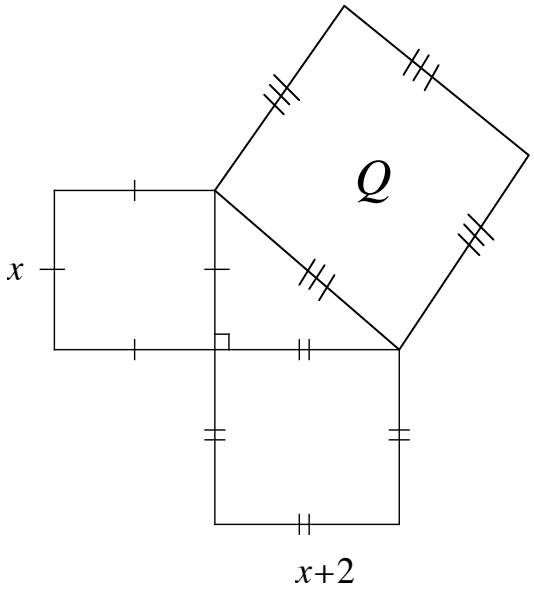
What is the height of the tree in metres if he is standing 5 metres away from the foot of the tree?

A. 1.8 B. 3.3

C. 3.8 D. 4.2

QUESTION 24

Determine an expression for the area of the square labelled Q.



A. x^2+4x+4 B. x^2+2x+4

C. $2x+4$ D. $2x^2+4x+4$

QUESTION 25

Simplify $\dfrac{5n^2 \times 5^2}{\left(\dfrac{10}{2n}\right)}$

A. $5^2 n^3$ B. $\dfrac{5}{2}n^2$

C. $5^2 n^2$ D. $\dfrac{5^2}{n^3}$

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

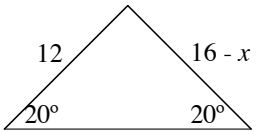
Work out your answer and write it in the spaces provided on the ANSWER SHEET

QUESTION 26

Express 0.065% as a decimal.

QUESTION 27

What is the value of ***x*** in the triangle below?



QUESTION 28

Find the median of this set of scores 5, 4, 10, 3, 3, 4, 6, 5

QUESTION 29

Simplify and write your answer in scientific notation the expression $2 \times 10^3 \div \dfrac{2 \times 10^3}{3.6 \times 10^{-2}}$.

QUESTION 30

Nancy bought a dress that cost K80.00 on higher purchase. She paid no deposit but made a fortnightly payment of K12.00 for 8 fortnights.

Find the interest she paid?

QUESTION 31

The table shows distance covered by Mark as he drives along at a steady rate on a country road.

Time (s)	0	2	4	6	8
Distance covered (m)	0	30	60	90	120

Calculate his speed in metres per second?

QUESTION 32

The interior angles of a quadrilateral are: 70°, 100°, 60° and ***x***°.

Find the size of angle ***x***.

QUESTION 33

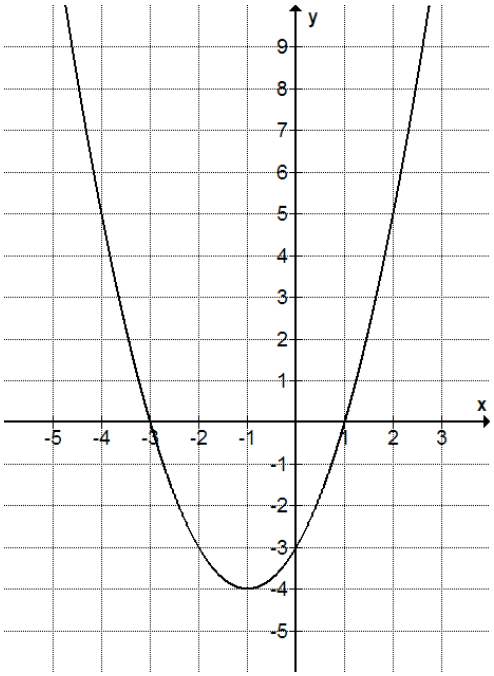
Solve for ***y*** in $-3y + 8 = -1$.

QUESTION 34

Byron buys a phone marked at K150.00 but was given a discount of 5%.

How much did he pay?

Questions 35 – 37 refer to the graph shown.



QUESTION 35

What is the coordinate of the turning point?

QUESTION 36

What is the y-intercept of the graph?

QUESTION 37

What is the equation of the graph?

QUESTION 38

A 25-seater bus bought at K120, 000.00 depreciates by 20% of its value at the start of each year.

What was its value at the start of the second year?

QUESTION 39

Calculate $1\frac{1}{5} \div \frac{1}{4} + \frac{1}{5}$

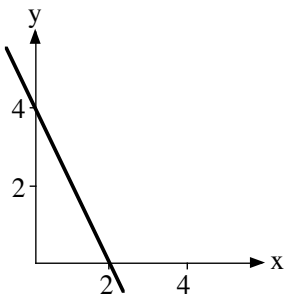
QUESTION 40

A card was randomly picked from a pack of playing cards. What is the probability that the card is **not** a spade?

Write your answer in fraction form.

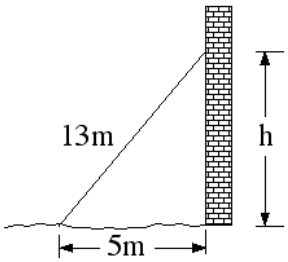
QUESTION 41

Write the equation of the graph illustrated below in the form y = mx + c.



QUESTION 42

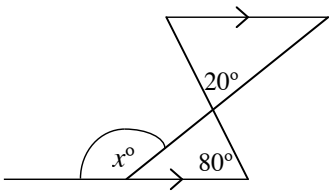
A ladder 13 metres long leans against a wall and the foot of the ladder is 5 metres away from the base of the wall.



How far up the wall will the ladder reach?

QUESTION 43

Determine the value of angle ***x*** in the diagram below.



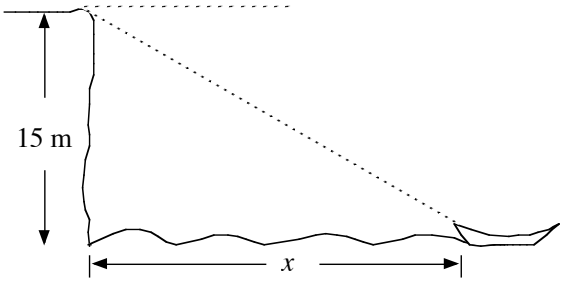
QUESTION 44

Bray earns K110.00 per week plus 15% commission on his sales.

What will be his earnings for the week if his total sale is K2, 050.00?

QUESTION 45

The angle of depression of a boat from the top of the cliff is 35°.



tan 35° = 0.7
tan 55° = 1.4

Calculate the value of x, the distance from the base of the cliff to the boat in metres correct to two decimal places.

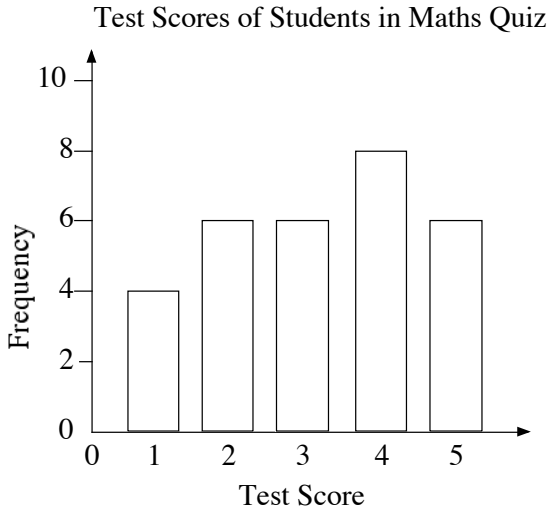
PART C: Extended Response Question 5 marks

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

QUESTION 46

Study the graph below and answer questions that follow.

The results of a Maths Quiz out of 5 for students in a class were displayed on a column graph as shown.



a) How many students are in the class?

b) What is the mean score?

c) What is the median score?

d) If the information were to be presented on a pie chart, what sector angle will be covered by the score of 4?

e) What percentage of students scored 2 marks?

END OF EXAMINATION

LOWER SECONDARY SCHOOL CERTIFICATE EXAMINATION – 2016

MATHEMATICS – ANSWER SHEET

MARKER 1

YEAR		PROV.		SCHOOL			CANDIDATE NO.		
1	6								

NAME	
SCHOOL	

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	
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11	
12	
13	
14	
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16	
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21	
22	
23	
24	
25	

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

26	
27	
28	
29	
30	K

31	m/s
32	^{o}
33	
34	K
35	

36	
37	
38	K
39	
40	

41	
42	m
43	^{o}
44	K
45	m

PART C: **QUESTIONS 46** Write your answer next to each question number below.

a)	
b)	
c)	
d)	^{o}
e)	%

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