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.

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, or D in the space provided on the ANSWER SHEET.

**Question 1**
2.3 \times 10^3 \text{ 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. \(20a+6b-3c\)  
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 \(\frac{10x^2y^3}{8x^2y^2}\)
A. \(10x^3y\)  
B. \(\frac{5y^3}{2x}\)  
C. \(\frac{5y}{2x}\)  
D. \(\frac{y^3}{2x}\)

**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. 0.6  
B. 0.3  
C. 0.7  
D. 0.2

**Question 7**
Simplify \((-2y^3)^6\)
A. \(-3y^5\)  
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 \(\angle ABE = 60^\circ\).

\[\angle CDE = ?\]
A. \(40^\circ\)  
B. \(50^\circ\)  
C. \(60^\circ\)  
D. \(70^\circ\)

**Question 45**
The angle of depression of a boat from the top of the cliff is 35°.

\[\tan 35^\circ = 0.7\]  
\[\tan 55^\circ = 1.4\]

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

**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.

<table>
<thead>
<tr>
<th>Test Scores of Students in Maths Quiz</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

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
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 \(\frac{1}{5} + \frac{1}{4} + \frac{1}{5}\).

LSSCE MA 16

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.

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QUESTION 10
What is the surface area of the solid below in centimetre squared?

\[
\text{Surface Area} = 2(5 \times 10) + 2(5 \times 6) + 2(10 \times 6)
\]

A. 600 B. 1400 C. 2800 D. 3600

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?

\[
\tan y = \frac{QR}{PR} \quad \frac{PQ}{PR} = \frac{QR}{\sin y}
\]
A. \(PR = \frac{QR}{\tan y}\) B. \(PR = \frac{PQ}{\tan y}\)
C. \(PR = \frac{PQ}{\cos y}\) D. \(PR = \frac{QR}{\sin y}\)

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
\(\frac{42}{1000} + \frac{6}{1000}\) 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?

\[
\sin x = \frac{8}{10} \quad \cos x = \frac{8}{10} \quad \tan x = \frac{10}{8}
\]
A. \(\sin x = \frac{8}{10}\) B. \(\cos x = \frac{8}{10}\)
C. \(\tan x = \frac{10}{8}\) D. \(\cos x = \frac{10}{8}\)

QUESTION 16
The favourite fruits of 30 students were recorded in the table below.

<table>
<thead>
<tr>
<th>FRUIT</th>
<th>FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banana</td>
<td>3</td>
</tr>
<tr>
<td>Pineapple</td>
<td>6</td>
</tr>
<tr>
<td>Watermelon</td>
<td>12</td>
</tr>
<tr>
<td>Orange</td>
<td>5</td>
</tr>
<tr>
<td>Pawpaw</td>
<td>4</td>
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</tbody>
</table>

What would be the size of the angle represented by "watermelon" if the information in the table is shown using a pie graph?
A. 12° B. 33°
C. 120° D. 144°

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
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QUESTION 23
Bill is 1.5 metres tall and is observing the top of a tree as shown.

\[ \tan 20^\circ = 0.36 \]
\[ \sin 20^\circ = 0.34 \]
\[ \cos 20^\circ = 0.94 \]

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.

\[ A. x^2 + 4x + 4 \]
\[ B. x^2 + 2x + 4 \]
\[ C. 2x + 4 \]
\[ D. 2x^2 + 4x + 4 \]
### LOWER SECONDARY SCHOOL CERTIFICATE EXAMINATION – 2016

**MATHEMATICS – ANSWER SHEET**

<table>
<thead>
<tr>
<th>YEAR</th>
<th>PROV.</th>
<th>SCHOOL</th>
<th>CANDIDATE NO.</th>
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<tr>
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**NAME**

**SCHOOL**

### 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  |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|   |     |     |     |     |     | 6   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

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

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

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<thead>
<tr>
<th></th>
<th>a)</th>
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