Kingdom of Lesotho
Ministry of Education and Training

EXAMINATIONS COUNCIL OF LESOTHO
Lesotho General Certificate of Secondary Education

CANDIDATE NAME			
CENTRE NUMBER		CANDIDATE NUMBER	

MATHEMATICS
Paper 1 (Core)

0178/01
October/November 2025
1 hour
Marks: 60

Candidates answer on the Question Paper.

Additional Materials: Geometrical Instruments
Tracing paper (optional)

READ THESE INSTRUCTIONS FIRST

Write your name, centre number and candidate number in the relevant spaces provided at the top of this page.

Write in dark blue or black pen.

You may use an HB pencil for any diagrams or graphs.

Do not use staples, paper clips, glue or correction fluid.

Answer **all** questions.

ELECTRONIC CALCULATORS **MUST NOT** BE USED IN THIS PAPER.

If working is needed for any question, it must be shown below that question.

The number of marks is given in brackets [ ] at the end of each question or part question.

1 Work out.

$$1\frac{1}{5} + 2\frac{1}{3}$$

.....[2]

---

2 $m = 2 \times 3^a \times 7^b$ and $n = 3 \times 7^2 \times 11$

(a) Given that $m > 126$, find the smallest values of a and b which make m a multiple of 126.

$a =$ ..... [1]

$b =$ .....[1]

(b) Explain why $33n$ is a perfect square.

.....

.....[1]

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3 Arrange the following fractions, starting with the largest.

$\frac{6}{5}$, $\frac{3}{25}$, $\frac{121}{100}$, $\frac{51}{50}$

..... > ..... > ..... > ..... [2]

---

4 $\mathbf{M} = \begin{pmatrix} -2 & 1 \\ 3 & 4 \end{pmatrix}$ and $\mathbf{N} = \begin{pmatrix} 1 & 0 \\ 1 & -4 \end{pmatrix}$.

Find $\mathbf{M} + \mathbf{N}$.

..... [2]

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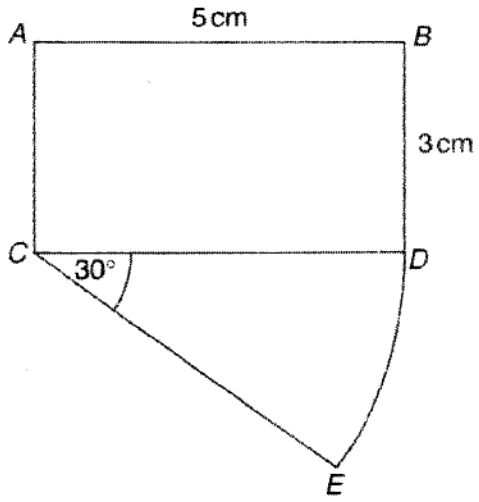
5 The diagram shows a shape made of a rectangle and a sector of radius 5 cm, centre C.
$AB = 5$ cm, $BD = 3$ cm and $D\hat{C}E = 30°$.



NOT TO SCALE

Express the area of the shape, in terms of π, in its simplest form.

.....cm^2 [3]

6 Evaluate.

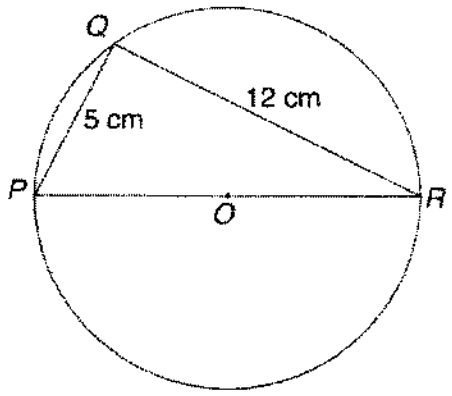
(a) $\frac{1}{9^{-2}}$

..... [2]

(b) $\sqrt{2\frac{1}{4}}$

..... [2]

7 The diagram shows a circle, centre O.
The points P, Q and R lie on the circle.
$PQ = 5$ cm and $QR = 12$ cm.



NOT TO SCALE

Calculate the radius of the circle.

.....cm [3]

8 M400 is increased by 15%.

Find the new amount.

M .....[2]

9 Given the shoe sizes 2, 7, 3, 4, 5, 3,

find

(a) the range,

..... [1]

(b) the mean shoe size.

..... [2]

---

10 The ratio of interior angle to exterior angle of a regular polygon is 5 : 1.

(a) Find the size of an exterior angle.

.....° [2]

(b) Calculate the number of sides of the polygon.

.....[2]

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11 A box contains 12 white balls, 3 red balls and 5 black balls.
All the balls are identical, except for their colours.

A ball is chosen at random from the box and replaced.

Find the probability that it is

(a) white,

..... [1]

(b) either black or red.

..... [2]

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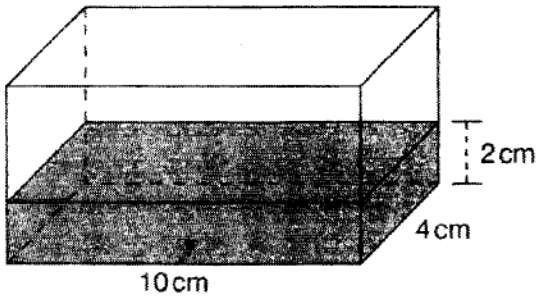
12 The diagram shows a cuboid of volume 300 cm^3 containing water to the depth of 2 cm.
The length and width of the cuboid are 10 cm and 4 cm respectively.



NOT TO SCALE

Calculate the height of the cuboid not in contact with water.

..... cm [3]

---

13 Construct the locus of all points that are 2 cm from line AB. [2]

14 **(a)** Factorise completely.

$(a - 1)^2 - b^2$

..... [2]

(b) Make R the subject of the formula.

$$\frac{a}{2} = \frac{R}{6} - \frac{b}{3}$$

R = ...[2]

15 $f(x) = 2x + 1$.

Find

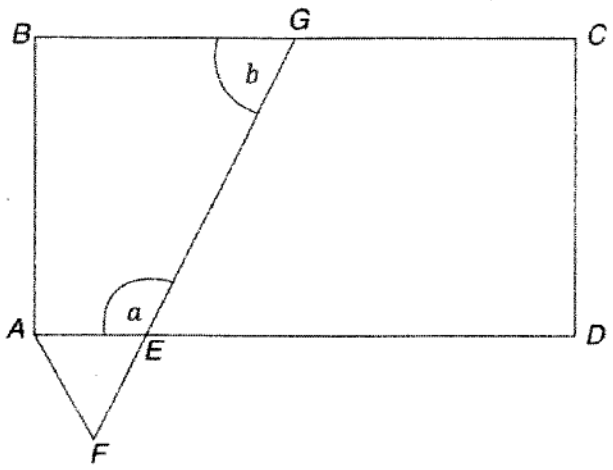
(a) $f(x) - 3$,

..... [1]

(b) the value of x when $f(x) = 7$.

x = ... [2]

16 The diagram shows rectangle *ABCD*.
AFE is an equilateral triangle and *FEG* is a straight line cutting line *AD* at *E*.



NOT TO SCALE

Calculate angles marked a and b.

$a =$ ..... ° [2]

$b =$ ..... ° [1]

17 Expand and simplify.

$(x - 1)^2 - (x^2 - 5)$

..... [3]

18 By rounding each number to one significant figure, estimate $\frac{\sqrt{8.7} \times 0.25}{0.87}$.

..... [2]

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19 Mpoetsi and Jesi are partners in business and shared their profit in the ratio 12 : 8.
Jesi received M300.

(a) Write the ratio 12 : 8 in its simplest form.

..... [1]

(b) Calculate the total profit they shared.

M..... [2]

---

20 $\overrightarrow{AB} = \begin{pmatrix} -8 \\ 6 \end{pmatrix}$.

Find $|AB|$.

.....units[2]

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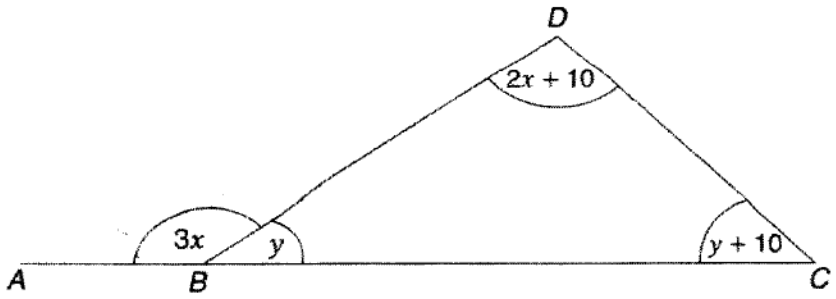
21 The diagram shows triangle BCD.
The line CB is extended to A and angle $ABD = 3x°$, angle $DBC = y°$, angle $BCD = (y + 10)°$ and angle $BDC = (2x + 10)°$.



(a) Some of the angles in the diagram are connected by the equation $3x + y = 180$.

Show that some angles are connected by $x + y = 80$. [2]

(b) Find the value of x.

$x =$.....[2]

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