

EXAMINATIONS COUNCIL OF LESOTHO
Lesotho General Certificate of Secondary Education

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0178/02

Paper 2 (Extended)

October/ November 2024

1 hour 30 minutes

Marks: 70

Additional Materials: Geometrical Instruments
Tracing Paper (optional)

Candidates answer on the Question Paper.

READ THESE INSTRUCTIONS FIRST

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

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.

This document consists of 14 printed pages and 2 blank pages.



1 Work out.

(a) $0.02 + 1\%$

..... [1]

(b) $\left(\frac{27}{8}\right)^{-\frac{2}{3}}$

..... [2]

2 Estimate $\frac{4.15 \times \sqrt[3]{7.85}}{0.54}$.

..... [2]

3 Find the inverse of $\begin{pmatrix} 1 & -1 \\ 3 & 2 \end{pmatrix}$.

$\begin{pmatrix} & \\ & \end{pmatrix}$ [2]

- 4 The ordered pairs form a sequence.
(1,2), (2,5), (3,10), (4,17),...

Find

- (a) the next pair,

.....[1]

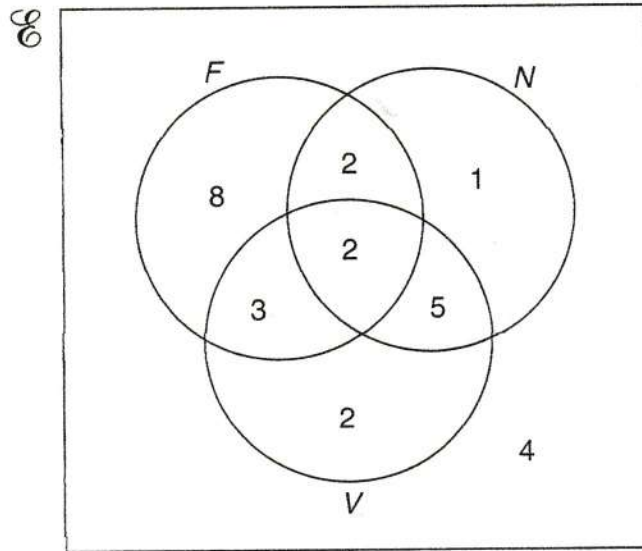
- (b) the 7th pair.

..... [2]

-
- 5 Given that $p = 1.646464\dots$,
write p in the form $\frac{a}{b}$ where a and b are integers.

..... [3]

- 6 The Venn diagram shows number of students who play football (F), netball (N) or volleyball (V).



Find

- (a) the number of students who play volleyball,

..... [1]

- (b) $n((F \cup N) \cap V')$.

..... [1]

- 7 In a circle, a sector of angle 60° has an area of 20 cm^2 .

Find the area of the circle.

..... cm^2 [2]

- 8 For $n > 2$ where $n \in \mathbb{Z}$, arrange the following in order, starting with the smallest.

$$n \qquad \frac{n}{2} \qquad 0.7n \qquad n^2 \qquad 2n$$

..... [2]

- 9 Factorise completely.

(a) $12x^2 - 75x$

..... [1]

(b) $2t^2 + 5t - 3$

..... [2]

- 10 Find the integer values of x which satisfy $5 \leq 2x < 10$.

..... [2]

11 Solve the equations.

(a) $(n + 5)^3 = 27$

$n = \dots\dots\dots [2]$

(b) $\frac{1}{2}x - 3y = 1$
 $x + 2y = 10$

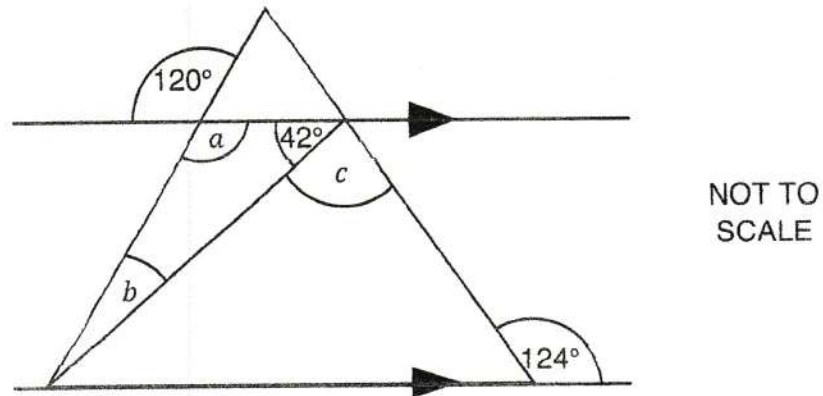
$x = \dots\dots\dots$

$y = \dots\dots\dots [3]$

(c) $x^2 - 5x - 24 = 0$

$x = \dots\dots\dots$ or $x = \dots\dots\dots [2]$

12 The diagram shows parallel lines with transversals.



Find the size of angles marked with letters.

$$a = \dots\dots\dots^\circ [1]$$

$$b = \dots\dots\dots^\circ [2]$$

$$c = \dots\dots\dots^\circ [1]$$

13 $p = qr^3 - 2t$.

(a) Find the value of p when $r = 2$, $q = 3$ and $t = -3$.

$$p = \dots\dots\dots [2]$$

(b) Make r the subject of the formula.

$$r = \dots\dots\dots [2]$$

14 $f(x) = 3x + 2$

Find.

(a) $f^{-1}(x)$

$$f^{-1}(x) = \dots\dots\dots [2]$$

(b) $g(x)$ if $fg(x) = 6x - 13$

$$g(x) = \dots\dots\dots [2]$$

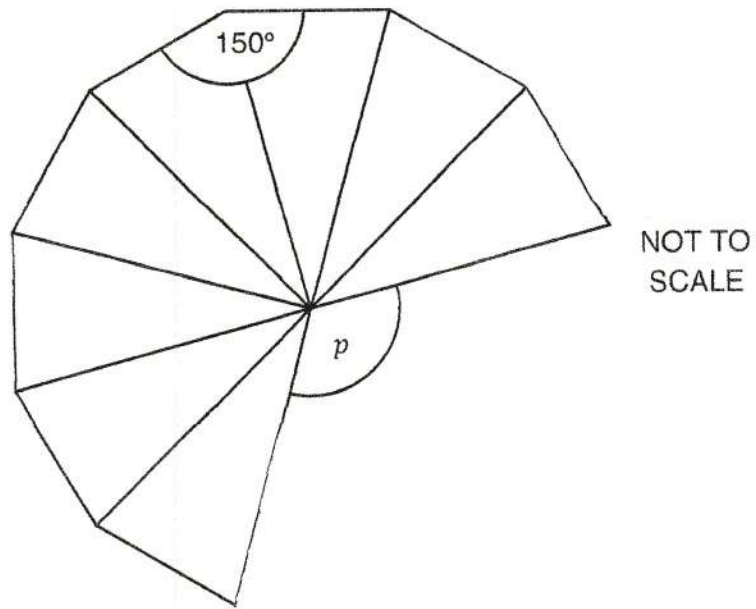
15 y varies inversely as $x + 2$.

When $y = 9$, $x = 6$.

Find y when $x = 16$.

$$y = \dots\dots\dots [2]$$

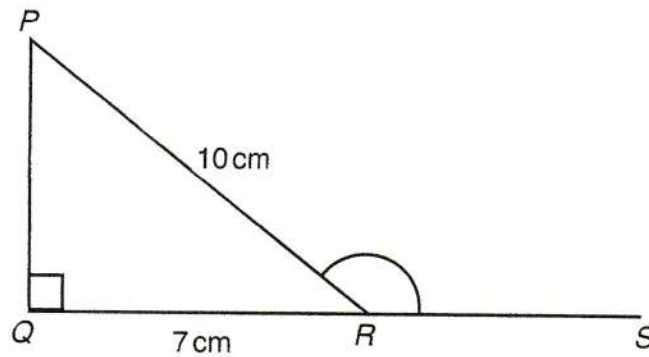
- 16 The diagram shows part of a regular polygon whose interior angle is 150° .



Calculate the size of the angle marked p .

..... $^\circ$ [3]

- 17 The diagram shows the right-angled triangle PQR .
 $QR = 7\text{ cm}$ and $PR = 10\text{ cm}$.



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Calculate the value of $\cos PRS$.

..... [2]

- 18 A class of 40 students was asked the number of siblings they had.
 The table shows the results.

Number of siblings	0	1	2	3
Frequency	6	16	14	4

Find

- (a) the modal number of siblings,

..... [1]

- (b) the mean number of siblings.

..... [3]

- 19 Bag A contains 9 red apples and 3 green apples.
Bag B contains 8 red peaches and 7 yellow peaches.

A fruit is selected at random from each bag.

Find the probability of selecting a green apple.

..... [3]

- 20 Object A has area 24 cm^2 and length 12 cm .

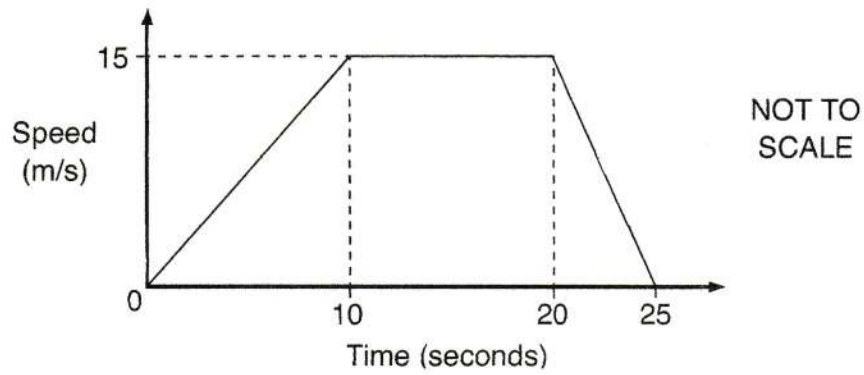
Object B has area 54 cm^2 .

The two figures are similar.

Find the length of object B.

..... cm [3]

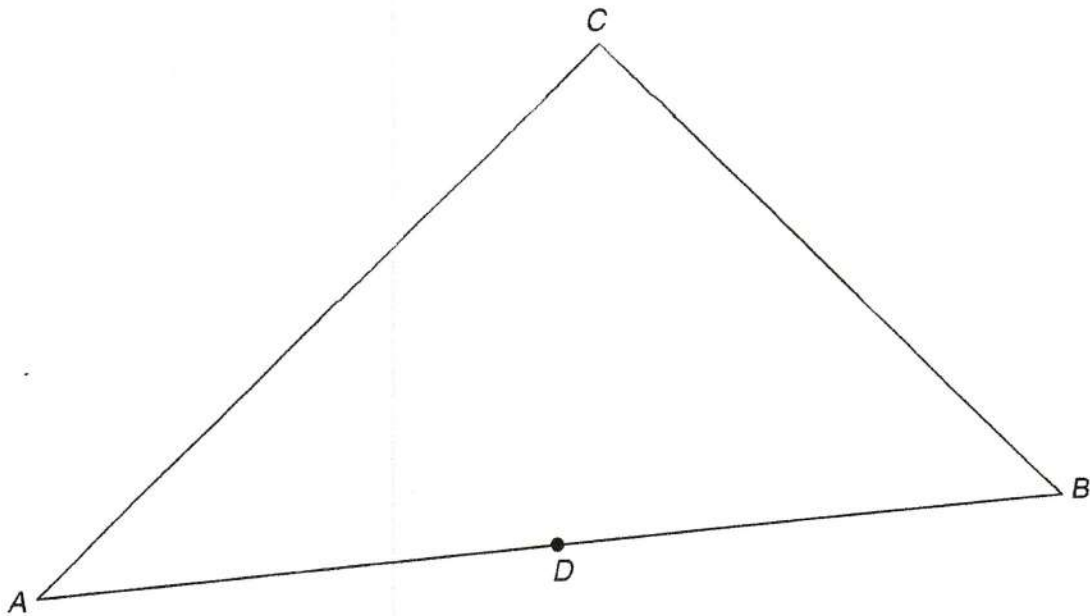
21 The diagram shows a speed-time graph of an object.



Calculate the total distance travelled after 12 seconds.

.....m [3]

- 22 The diagram shows triangle ABC .
 D is the point on AB .

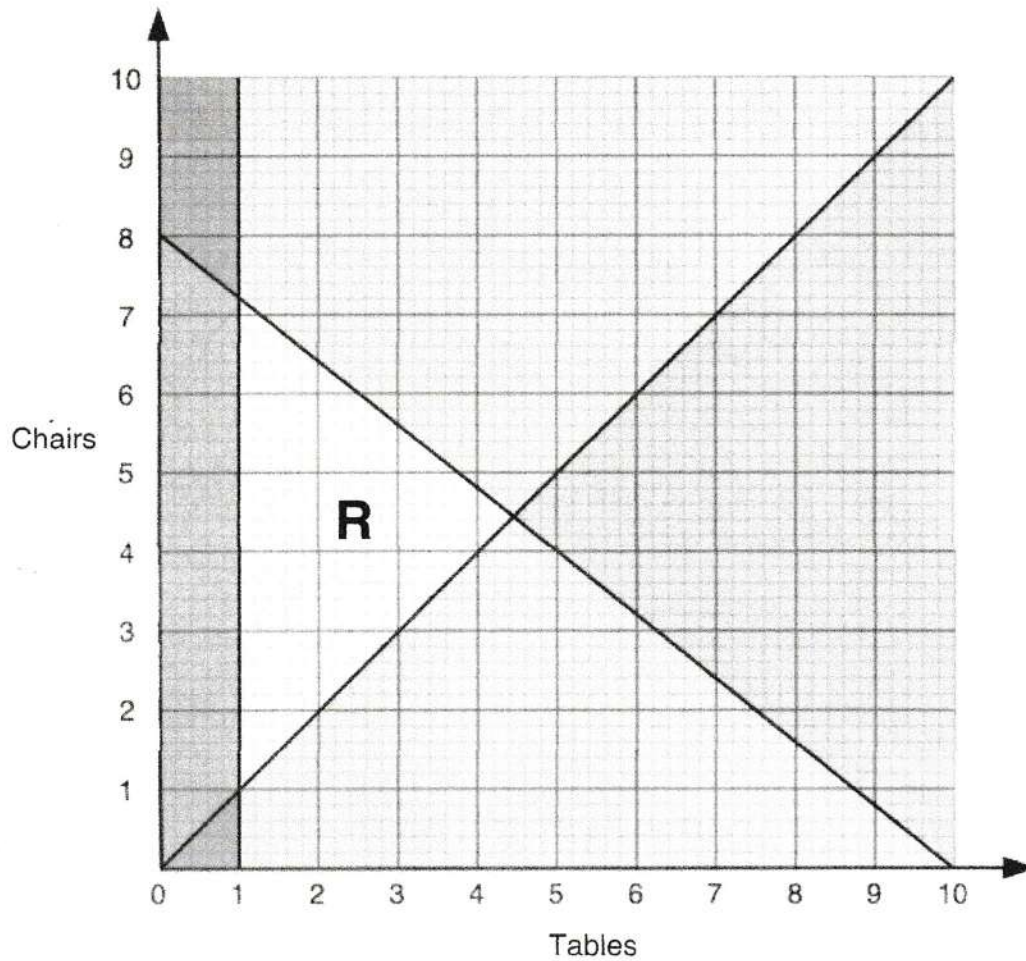


Construct the locus of points, inside triangle ABC , that are

- 3 cm from D ,
- equidistant from AC and AB .

[3]

- 23 A company makes x tables and y chairs to sell at M400 and M120 respectively. The region **R** represents possible number of tables and chairs made per day.



- (a) State the objective function.

.....[1]

- (b) Find the number of tables and chairs that make the maximum sales.
State this amount.

..... tables [1]

..... chairs [1]

Maximum amount M[1]

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