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0178/02
May/June 2025
1 hour 30 minutes
Marks: 70

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 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 **13** printed pages and **3** blank pages.



Examinations Council of Lesotho

- 1 Round off 0.997 correct to one decimal place.

.....[1]

- 2 (a) Express 605 as a product of its prime factors.

.....[2]

- (b) Find the smallest value of n such that $605n$ is a cube number.

..... [2]

- 3 Evaluate.

$$\left(\frac{81}{49}\right)^{-\frac{1}{2}}$$

..... [2]

- 4 Write $33\frac{1}{3}\%$ as a fraction in its simplest form.

..... [2]

5 Given a sequence 4, 6, 10, 16, 24, ...

(a) write the next term,

(b) find the n th term.

..... [1]

..... [3]

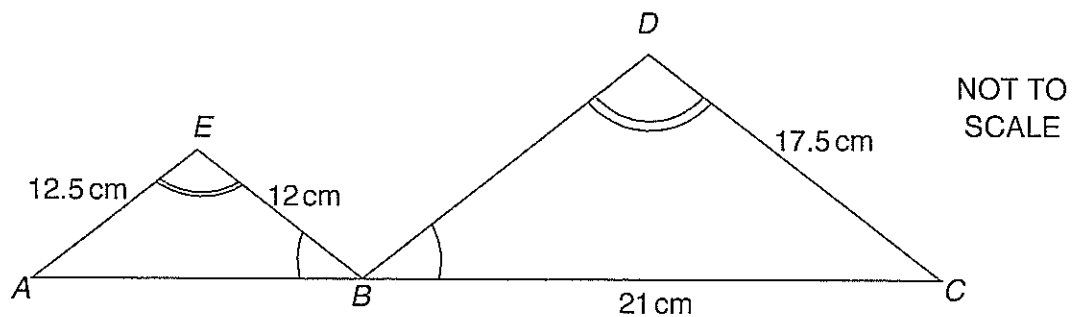
6 Solve and list the integer values of x which satisfy the inequality $1 < 2x - 1 \leq 6$.

..... $< x \leq$ [2]

..... [1]

- 7 The diagram shows two similar triangles ABE and CBD .

$AE = 12.5\text{ cm}$, $EB = 12\text{ cm}$, $BC = 21\text{ cm}$ and $DC = 17.5\text{ cm}$.



Calculate AB .

.....cm [3]

- 8 E varies directly as the square of v .

When $E = 40$, $v = 2$.

Find the value of v when $E = 1440$.

$E =$ [3]

- 9 A car travels 75 km in 1 hour 15 minutes.

Calculate the speed of the car in km/h.

.....km/h [3]

10 $v^2 = u^2 + 2ax$.

- (a) Find the value of v when $u = 8$, $a = 4$ and $x = 10$.

$v =$ [2]

- (b) Make a the subject of the formula.

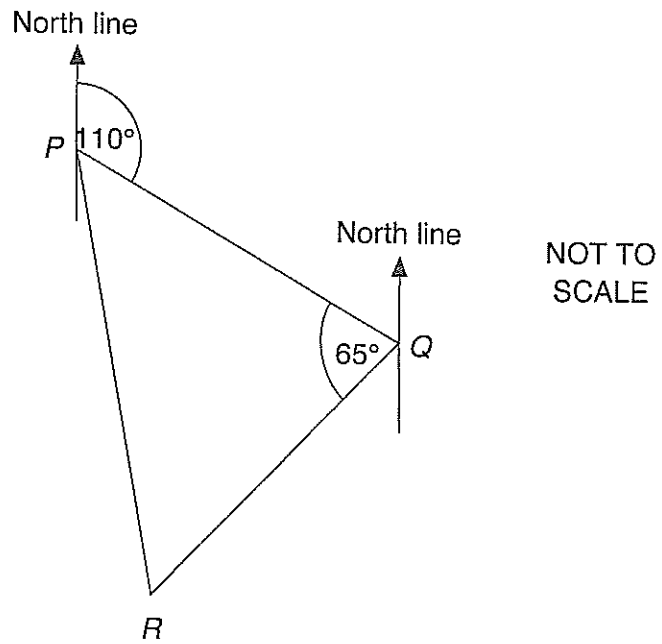
$a =$ [2]

- 11 Solve.

$$x^2 - 2x - 35 = 0$$

$x =$ $x =$ [3]

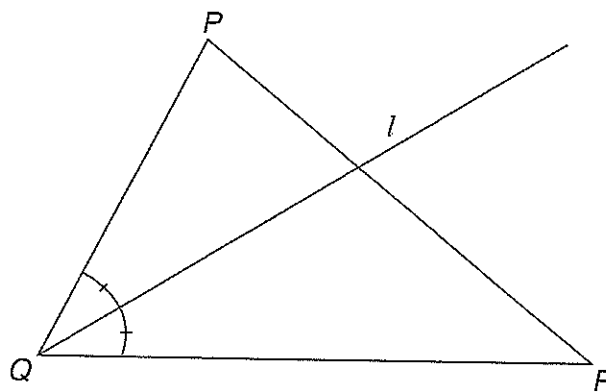
- 12 The diagram shows the bearing of Q from P as 110° .
 $\widehat{PQR} = 65^\circ$.



Calculate the bearing of R from Q .

.....° [3]

- 13 The diagram shows triangle PQR and line l .



Describe the locus represented by line l .

.....
 [2]

- 14 Express $\frac{3^{x^2}}{9^x} = 81$ in the form $ax^2 + bx + c = 0$ where a, b and c are integers.

.....[3]

- 15 Polo, Qalo and Ralo are writing a test.
The probability that Polo and Qalo pass the test is the same.
The probability that each of them pass is twice that of Ralo.

Find the probability that

- (a) Ralo passes the test,

.....[2]

- (b) Polo and Qalo pass the test.

.....[1]

- 16 Solve the simultaneous equations.

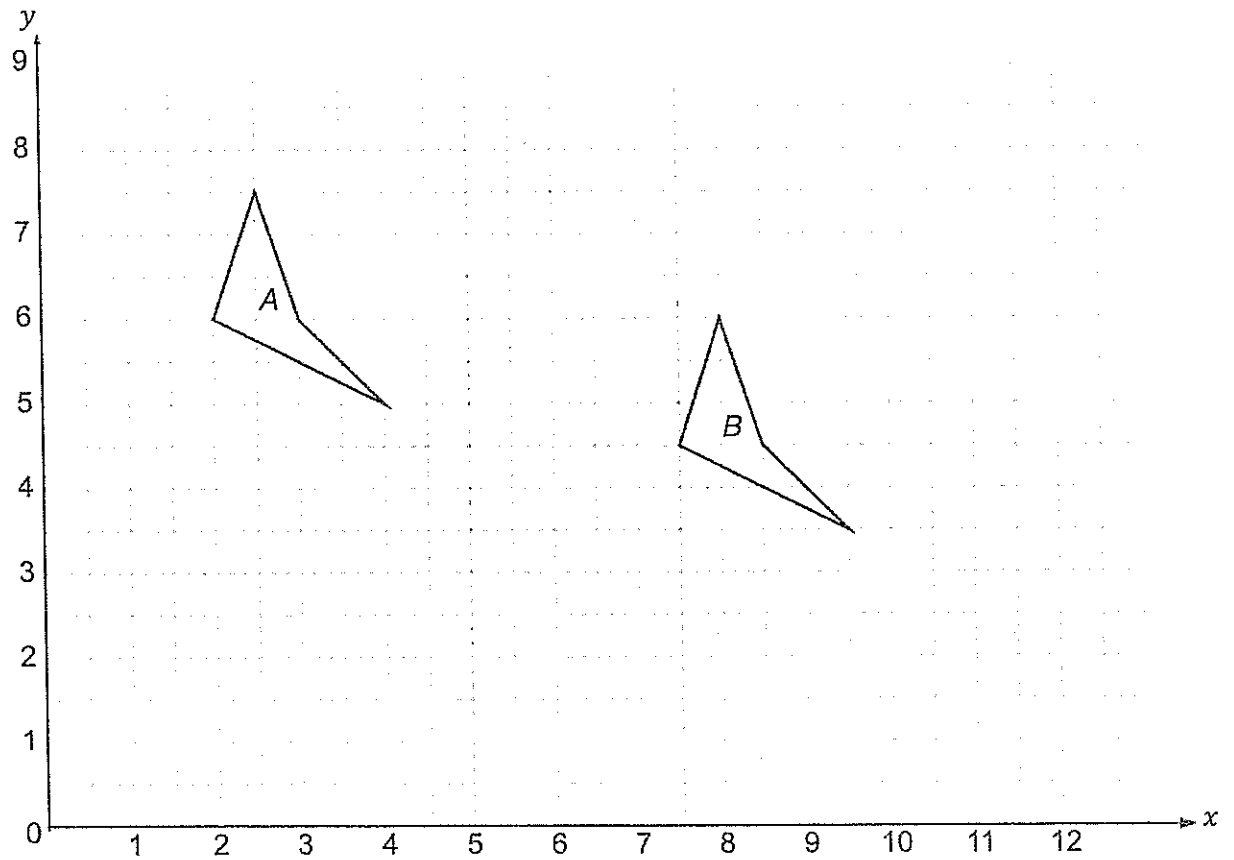
$$2x = \frac{1}{3}y$$

$$y = 9x - 3$$

$$x = \dots\dots\dots$$

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

17 The diagram shows polygons A and B .



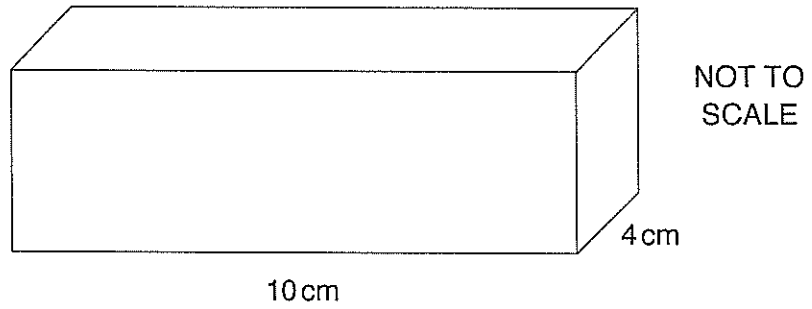
(a) Describe fully a single transformation which maps A onto B .

.....
 [2]

(b) Rotate polygon B through $+90^\circ$ about $(6, 1)$.

[2]

- 18 The diagram shows a cuboid of length 10 cm and width 4 cm.
The total surface area of the cuboid is 248 cm^2 .



Calculate

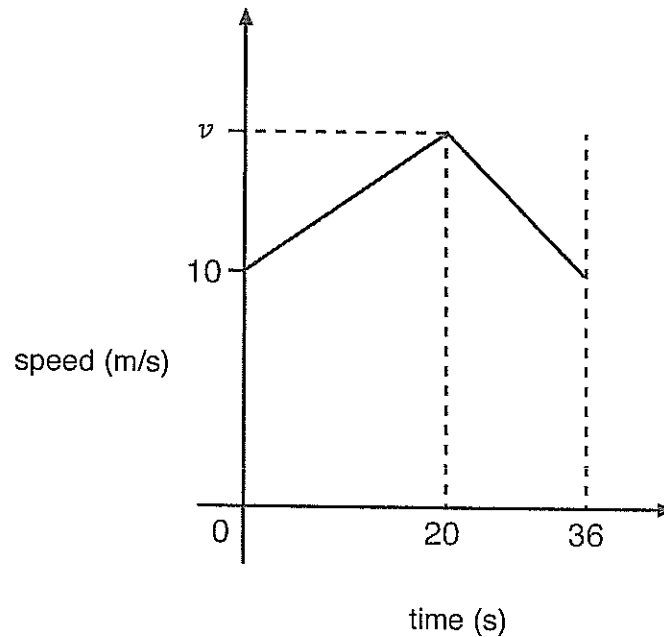
- (a) the height of the cuboid,

- (b) the volume of the cuboid.

..... cm [3]

..... cm^3 [1]

- 19** The speed-time graph shows movement of a particle for 36 seconds.
 The particle started from a speed of 10 m/s and accelerated constantly to reach maximum speed v m/s.
 It then decelerated for 16 seconds until it reached 10 m/s and stopped immediately.



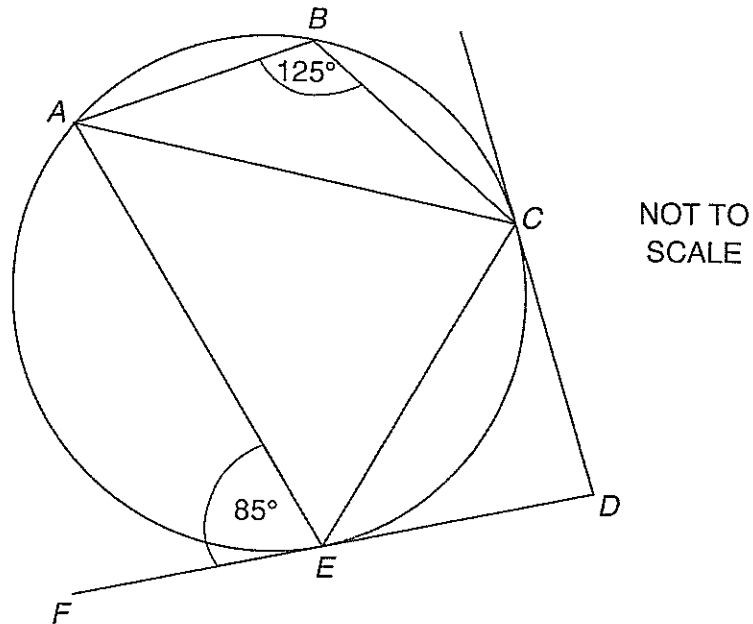
- (a)** Write, in terms of v , an expression for the acceleration at 20 seconds.

..... [1]

- (b)** Given that the distance covered in the first 20 seconds is 280 m, find the value of v .

.....m/s [3]

- 20 The diagram shows a circle with a cyclic quadrilateral $ABCE$.
Tangents at C and E meet at D .
 $\widehat{ABC} = 125^\circ$ and $\widehat{AEF} = 85^\circ$.



Find

- (a) the size of $\widehat{ACE}$ and give a reason for your answer,

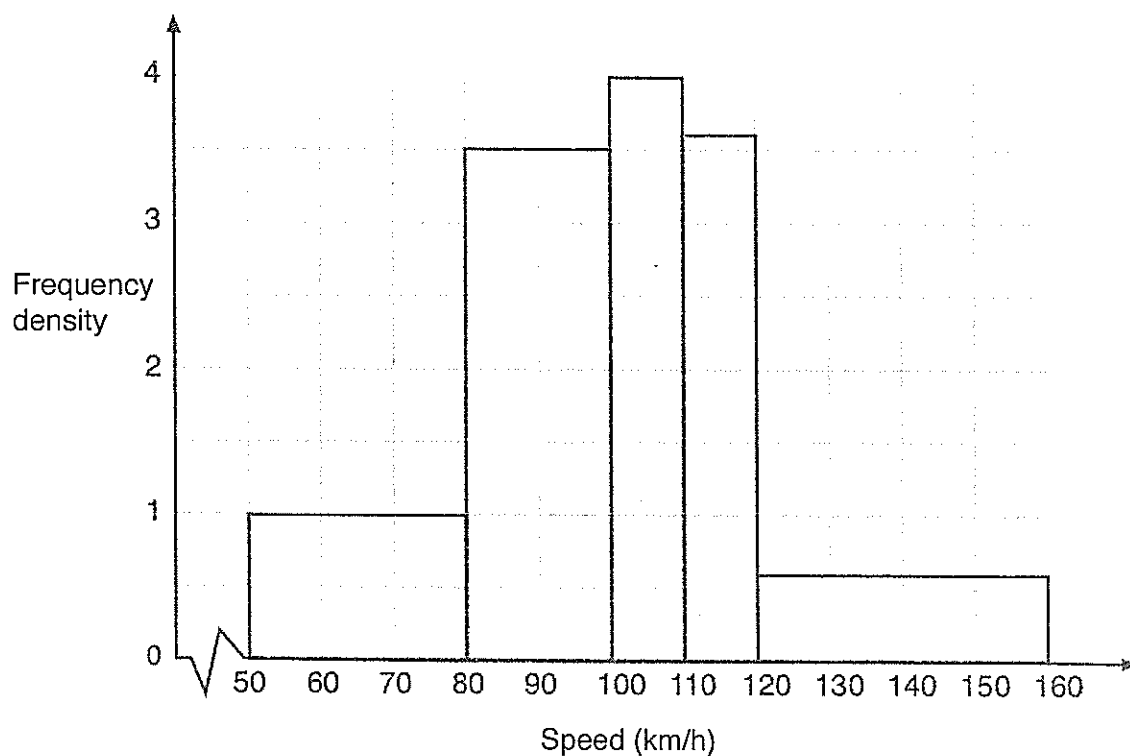
$$\widehat{ACE} = \dots\dots\dots^\circ [1]$$

reason
.....[1]

- (b) the size of $\widehat{CDE}$.

$$\widehat{CDE} = \dots\dots\dots^\circ [2]$$

- 21 The speed of cars was recorded as they pass a particular point.
The speed limit at this point is 120 km/h and 24 cars exceeded the speed limit.
The histogram shows the results.



- (a) Calculate the total number of cars which passed the point.

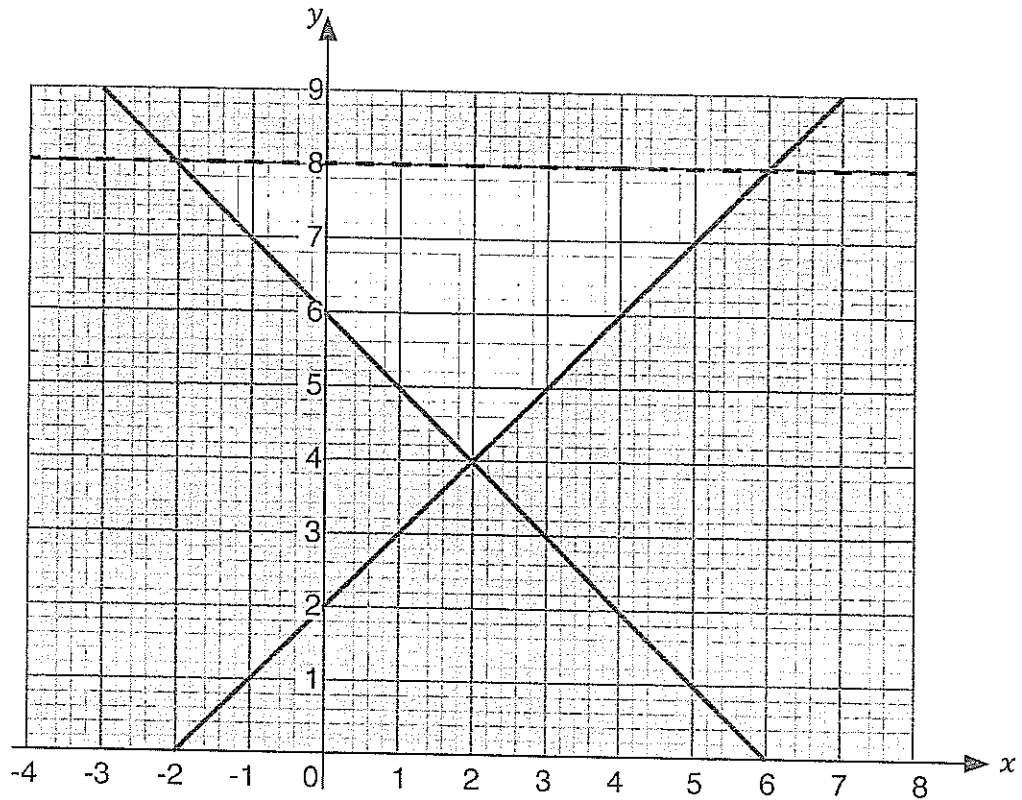
..... [3]

- (b) A car was chosen at random from the cars which passed the point.

Calculate the probability that the car exceeded the speed limit.

..... [1]

- 22 The diagram shows the unshaded region which is defined by three inequalities. One of the three inequalities is $x + y \geq 6$.



Find

- (a) the other two inequalities,

.....

- (b) the maximum value of $3x - 2y$.

..... [3]

..... [1]

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