



EXAMINATIONS COUNCIL OF ESWATINI
Junior Certificate Examination

CANDIDATE
NAME

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CENTRE
NUMBER

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CANDIDATE
NUMBER

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MATHEMATICS

Paper 1

309/01

October/November 2023

2 hours

Candidates answer on the Question Paper.

Additional materials: Geometrical Instruments
Tracing paper (optional)

READ THESE INSTRUCTIONS FIRST

Write your centre number, candidate number and name on the spaces provided.

Write in dark blue or black pen in the spaces provided on the Question Paper.

You may use a pencil for any diagrams or graphs.

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

Answer **all** questions.

All working should be clearly shown below each question.

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

Calculators should **not** be used.

If the degree of accuracy is not specified in the question, and if the answer is not exact, give the answer to three significant figures.

Give answers in degrees to one decimal place.

3-figure tables may be used in any question where necessary.

The total of the marks for this paper is 100.

For Examiner's Use

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This document consists of **17** printed pages and **3** blank pages.

- 1 (a) Round 395 to the nearest 10.

Answer (a)..... [1]

- (b) Write 0.15 as a fraction in its simplest form.

Answer (b).....[2]

- 2 Given that x and y are integers,

- (a) Find the value of y when $-9 < y < -7$.

Answer (a) $y =$ [1]

- (b) Find the value of x when $\frac{5}{8} < \frac{x}{16} < \frac{3}{4}$.

Answer (b) $x =$ [2]

- 3 A school has 400 learners.

The ratio of boys to girls is 9 : 11.

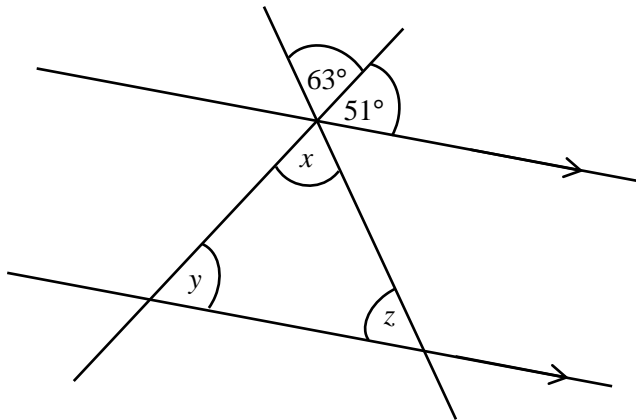
- (a) Find the number of boys.

Answer (a).....[2]

- (b) On a particular day, 50 boys and 50 girls were absent.
Find the ratio of boys to girls in school on that day.

Answer (b).....[2]

- 4 The diagram shows two parallel lines intersected by two straight lines.



NOT TO SCALE

Find the value of angles x , y and z .

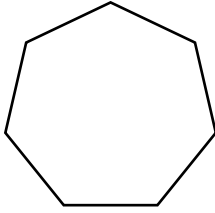
Answer $x =$

$y =$

$z =$ [3]

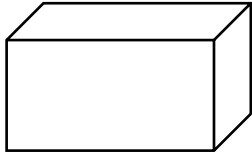
5 Use mathematical terms to complete the statements.

(a)



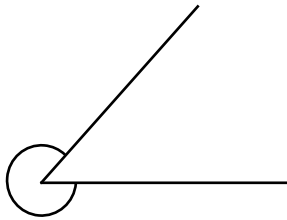
The name of the polygon is..... [1]

(b)



This prism is a [1]

(c)



The type of angle marked is [1]

6 Simplify

(a) $36t^3 \div 9t^5$,

Answer (a).....[2]

(b) $(3xy^3)^3$.

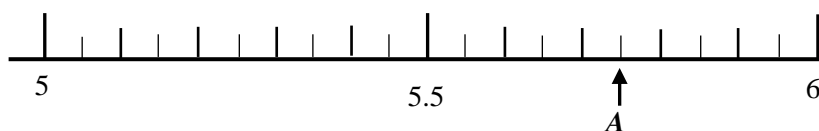
Answer (b).....[2]

7 Show that

$$2\frac{1}{2} \div \frac{5}{16} = 8.$$

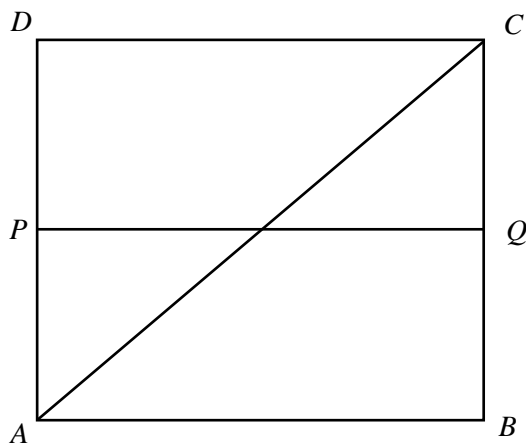
[2]

8 Write the number represented by A on the metre scale.



Answerm [1]

9 The diagram shows a square $ABCD$.
 P is the mid-point of AD and Q is the mid-point of CB .
 AC is the diagonal of the square



(a) Shade the region in the square $ABCD$ that is closer to DC than AB , and closer to BC than DC . [1]

(b) The line PQ is the locus of points which are [1]

- 10 The diameter of a circle is 6 cm to the nearest centimetre.
Find the upper bound and lower bound of the diameter.

Answer upper bound..... cm

lower bound.....cm [2]

- 11 The number of people who bought tickets to a soccer match was 35 800
(a) Express 35 800 in standard form.

Answer (a).....[2]

- (b) The price for a soccer match ticket is E53.
Calculate the amount received if 35 800 tickets were sold out.

Answer (b) E.....[2]

- 12 (a) A box contains 5 red marbles and 4 green marbles.
A marble is chosen at random.

Find the probability of getting

- (i) a red marble,

Answer (a)(i).....[1]

- (ii) a marble,

Answer (a)(ii).....[1]

- (iii) a black marble.

Answer (a)(iii).....[1]

- (b) The probability that a school soccer team wins a soccer match is 0.67.
The probability that the soccer team loses the match is 0.25.

Find the probability that the team gets a draw.

Answer (b) [2]

-
- 13 Village B is due west of village A.

Find the bearing of

- (a) village B from village A,

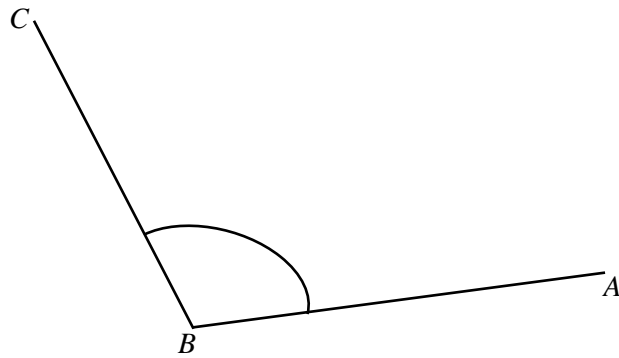
Answer (a).....[1]

- (b) village A from village B.

Answer (b).....[1]

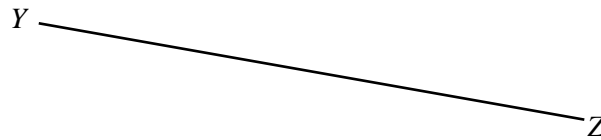
14 In this question, use a **ruler** and **compasses only**.

- (a) Construct the bisector of angle ABC .



[2]

- (b) Construct the perpendicular bisector of the line YZ .



[2]

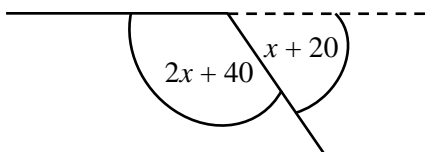
- 15 Ethan wants to travel 500 km on a business trip.
He hires a car from **Amazing – Ride**.
The chart shows the charge rate of **Amazing – Ride**.

<p>Amazing – Ride</p> <p>cost (E) = E220 + E15 for every 10 km travelled</p>

Calculate the cost of hiring a car from **Amazing – Ride** to travel 500 km.

Answer[3]

- 16 The diagram shows part of a regular polygon.



The interior angle of the polygon is $2x + 40$.
The exterior angle of the polygon is $x + 20$.

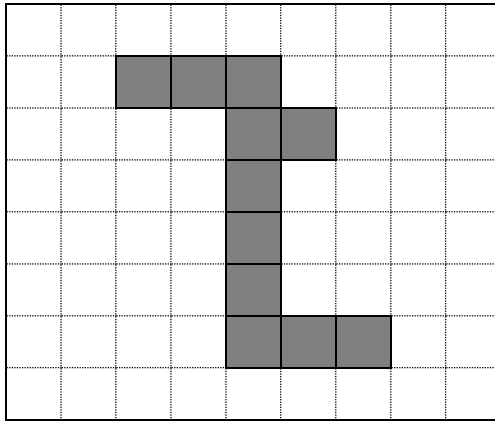
- (a) Find the value of x .

Answer (a).....[3]

- (b) Find the number of sides of the regular polygon.

Answer (b)..... sides [2]

17 Shade a box such that the figure has a rotational symmetry order 2.



[1]

18 Given the following set of numbers,

2 8 3 7 2 5

Find

(a) the mode,

Answer (a).....[1]

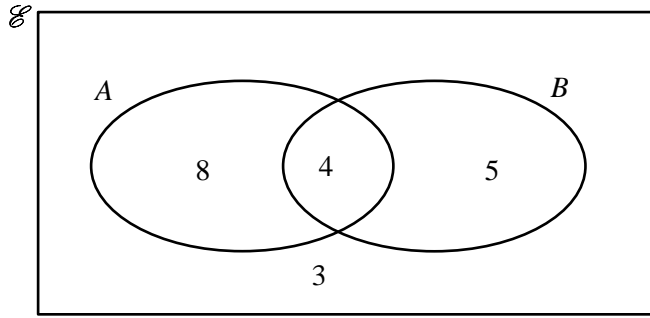
(b) the median,

Answer (b).....[2]

(c) the mean.

Answer (c).....[2]

- 19 The Venn Diagram shows sets A and B .
The number of elements are indicated in each region.

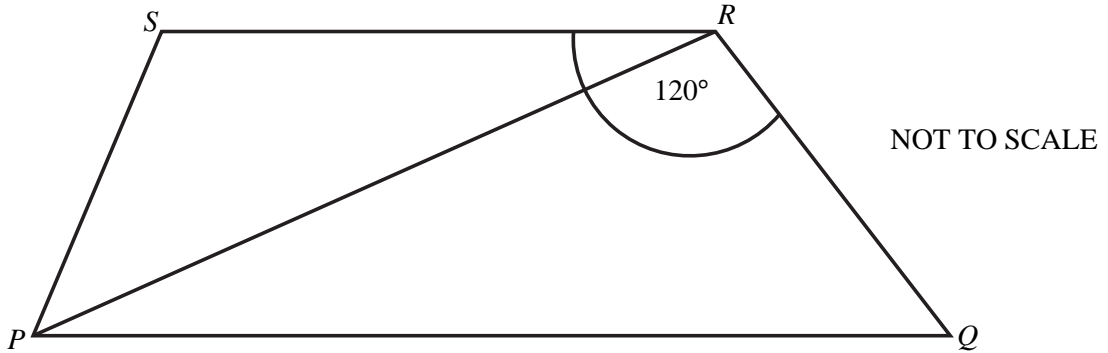


- (a) Find $n(A' \cap B)$.

Answer (a).....[1]

- (b) On the Venn Diagram above, shade $(A \cap B)'$. [1]

- 20 The diagram shows a trapezium $PQRS$.
 SR and PQ are parallel.
 Angle $QRS = 120^\circ$.
 Angle QRP to angle $PRS = 2 : 1$.
 Line PR is a diagonal of the trapezium.



- (a) Calculate angle PRS .

Answer (a).....[2]

- (b) Calculate angle PQR .

Answer (b).....[2]

- 21 (a) Simplify.

$$7(y - 1) - 3(y + 2)$$

Answer (a).....[2]

- (b) Solve.

$$16 - 2x \leq 6 + 3x$$

Answer (b).....[2]

- 22 (a) Work out.

$$15 - 36 \div 9 + \frac{1}{2} \text{ of } 10$$

Answer (a).....[3]

- (b) (i) Express 900 as a product of its prime factors.

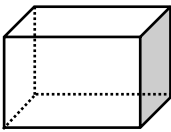
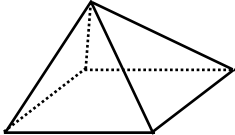
Answer (b)(i).....[2]

- (ii) Hence or otherwise, find

$$\sqrt{900}$$

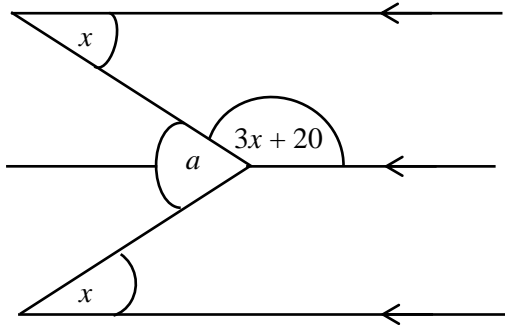
Answer (b)(ii).....[1]

23 Fill in the table below.

Solid	Number of vertices	Number of faces	Number of edges
(a) 			
(b) 			

[6]

24 The diagram shows three parallel lines.



NOT TO SCALE

(a) Find the value of x .

Answer (a) $x = \dots\dots\dots$ [3]

(b) Hence find angle a .

Answer (b) $a = \dots\dots\dots$ [2]

25 (a) Express 195 minutes in hours.

Answer (a).....hours [2]

(b) Express 3^{-3} as a fraction.

Answer (b).....[1]

26 (a) Construct a triangle XYZ using a ruler, protractor and compasses.

$XY = 10\text{ cm}$, $XZ = 7\text{ cm}$ and angle $YXZ = 60^\circ$.

•
X

[3]

(b) Measure line YZ.

Answer (b).....cm [1]

(c) State the name given to triangle XYZ.

Answer (c)..... [1]

27 (a) Simplify $\frac{2h}{9} \times \frac{3}{h^3}$.

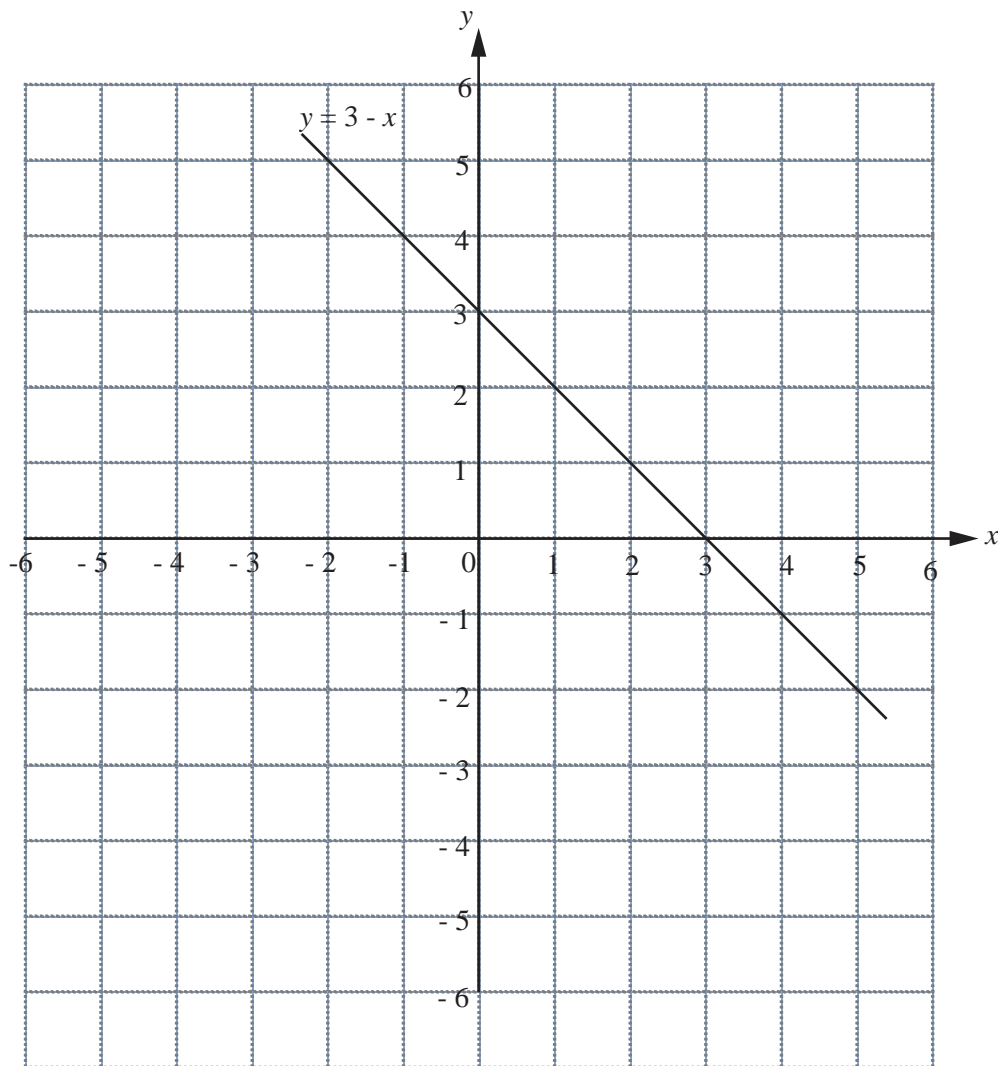
Answer (a).....[2]

(b) Convert 0.05 km to centimetres.

Answer (b).....cm [2]

28 The grid shows the graph of $y = 3 - x$.

(a) Complete the table for the equation $y = 2x - 3$.



x	-1	0	3
$y = 2x - 3$		-3	

(b) (i) On the grid, draw the graph of $y = 2x - 3$.

[1]

(ii) Hence, solve the equations

$$y = 3 - x$$

$$y = 2x - 3$$

[2]

Answer (b)(ii) $x = \dots\dots\dots$

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

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