EXAMINATIONS COUNCIL OF ESWATINI
Junior Certificate Examination

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

MATHEMATICS **309/02**

Paper 2 **October/November 2025**

2 hours 30 minutes

Candidates answer on the Question Paper.

Additional materials required: Geometrical Instruments

READ THESE INSTRUCTIONS FIRST

Write your name, centre number and candidate number in the spaces provided.
Write in dark blue or black pen.
You may use a soft pencil for any diagrams, graphs or rough working.
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.

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1	
2	
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9	
10	
Total	

This document consists of **15** printed pages and **1** blank page.

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1 **(a)** Work out.

(i) 9.07 + 2.55

Answer (a)(i) …… [1]

(ii) $3^2 \times 3^3$

Answer (a)(ii) ……...……...……. [2]

(iii) $\frac{3}{4}$ of 100

Answer (a)(iii) ……..……...…...…. [1]

(b) Write down the **first four** integers that are greater (>) than –3.

Answer (b) ……..……...……...…. [2]

(c) Write down the square number between 60 and 70.

Answer (c) ……..……...……...…. [1]

(d) Find the highest common factor (HCF) 12 and 36.

Answer (d) ……..……...…...……. [1]

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2 The table shows the costs of sending parcels by surface mail from Eswatini at a particular year.

Mass	Within Eswatini	African Countries	Other Countries
0 – 100g	E0.90	E1.50	E2.00
101 – 250g	E2.00	E3.20	E4.50
251 – 500g	E3.40	E5.00	E7.00
501 – 750g	E4.60	E8.35	E12.70

(a) Find the cost of sending a 245 g parcel to South Africa.

Answer (a)……..……..…….. [1]

(b) Find the cost of sending a 637 g parcel to Russia.

Answer (b)……..……..…….. [1]

(c) A company wants to send parcels weighing 400 g each to Eswatini, Botswana and Japan. The ratio of the number of parcels to be sent to Eswatini, Botswana and Japan is 3 : 2 : 5.

If the number of parcels to be sent to Botswana is 40,

(i) find the number of parcels to be sent to Eswatini and Japan.

Answer (c)(i) Eswatini.....

Japan..... [3]

(ii) find the total cost of sending the parcels to these countries.

Answer (c)(ii) ……..……..…… [4]

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3 **(a)** State the number of terms in the expression.

$$3xy - 2x(5z + 3) + \frac{5yz}{x}$$

Answer (a) ……. [1]

(b) Solve

$4(2x + 9) = 4$.

Answer (b) ……. [3]

(c) Simplify.

(i) $3t - 7s - 5t + 11s$

Answer (c)(i) ……. [2]

(ii) $2y + \frac{5y}{3}$

Answer (c)(ii) ……. [2]

(iii) $\frac{3p^2}{4q} \times \frac{2q}{15p^3}$

Answer (c)(iii) ……. [2]

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4 **(a)** Work out.

$$2\begin{pmatrix} -3 & 4 \\ 0 & 1 \end{pmatrix}$$

Answer (a) ……..……..……..……. [1]

(b) Express 40 as a product of its prime factors.

Answer (b) ……..……..……..……. [2]

(c) Factorise $18x^3 - 30x^2$.

Answer (c) ……..……..……..……. [2]

(d) Solve.

(i) $3y - 1 = 7 - 5y$

Answer (d)(i) y = ..……..……..……. [2]

(ii) $\frac{3 - 2x}{3} \geq \frac{1}{2}$

Answer (d)(ii) ..……..……..……. [3]

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5 **(a)** A straight line passes through points A (–2, 13) and B (1, k).

The gradient of the line is –3.

(i) Find the value of k.

Answer (a)(i) ……..……..……..…… [3]

(ii) Find the equation of the line.

Answer (a)(ii) …..…….……..……. [2]

(b) Maxwell's brother Bheki is 8 years older than Maxwell.
Their father is 3 times as old as Bheki, and 32 years older than Maxwell.
Maxwell is x years old.

(i) Write down Bheki's age in terms of x.

Answer (b)(i) ……..……..……..……. [1]

(ii) Write down two expressions for the father's age in terms of x.

Answer (b)(ii) ……..……..……..……..

. ……..……..……..… [2]

(iii) Form an equation and solve it to find the value of x.

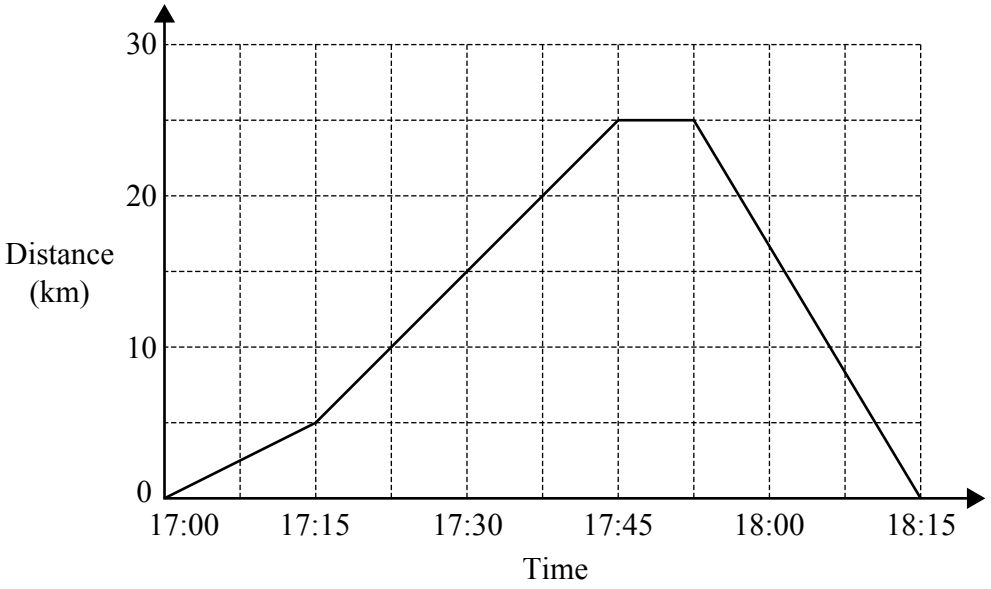
Answer (b)(iii) ……..……..……. [3]

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6 Veli and his brother Zakhe went for a bike ride.

They left home at the same time and took different directions.

(a) The graph below shows Veli's journey.



(i) Find the total distance Veli covered.

Answer (a)(i) ……..……..…..……... km [1]

(ii) Write down the duration of time when Veli was stationary in minutes and seconds.

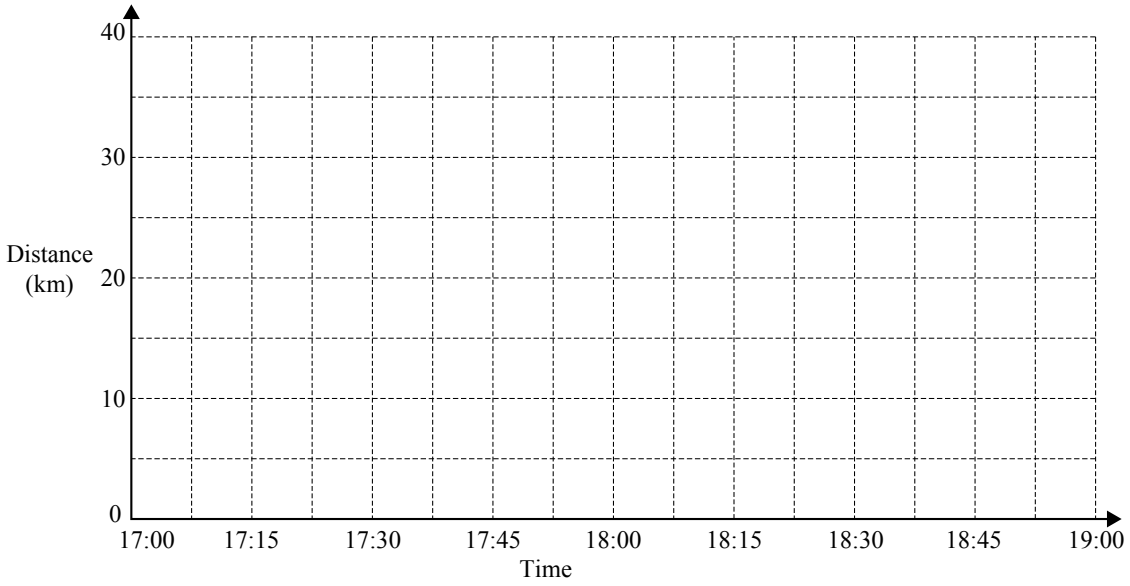
Answer (a)(ii) ……..…….. minutes ……...…..…… seconds [2]

(iii) Calculate his average speed in km/h between 17:15 and 17:45.

Answer (a)(iii) ……..……..…....…. km/h [3]

(b) Zakhe rode a distance of 30 km in 1 hour.
He stopped for 30 minutes at a shopping centre.
Zakhe then returned home riding at an average speed of 60 km/h.

Show Zakhe's journey on the grid below.



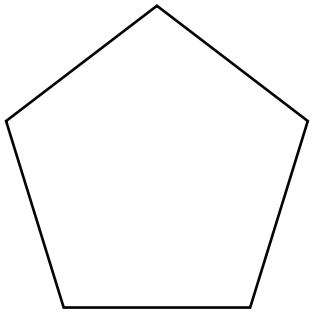
[3]

(c) At what time did Zakhe return home?

Answer (c) ……..……..……..…… [1]

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7 **(a)** The diagram shows a regular polygon.



(i) Write down the name of the polygon.

Answer (a)(i) ……..……..……..……. [1]

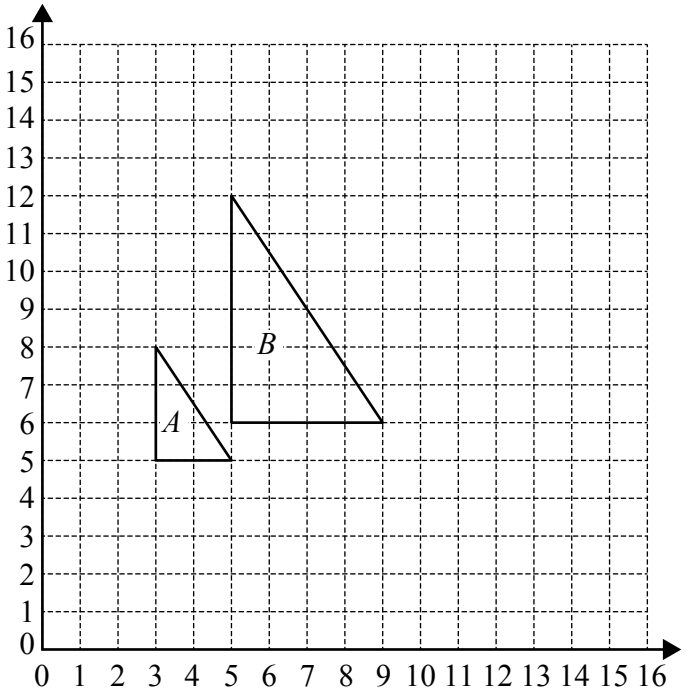
(ii) Calculate the size of an interior angle of the polygon.

Answer (a)(ii) ……..…….....……..……...° [3]

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(b) The grid shows triangle A and triangle B.



(i) On the grid, draw the image of tringle A after a reflection in line $x = 8$. [2]

(ii) On the grid, draw the image of tringle A after a translation, vector $\begin{pmatrix} -2 \\ -4 \end{pmatrix}$. [2]

(iii) Describe fully the single transformation that maps triangle A onto triangle B.

Answer (b)(iii) ……

……

…… [3]

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8 A teacher asked a group of 200 students to register their sport.
The results are to be shown in a pie chart.
The table shows some of the information.

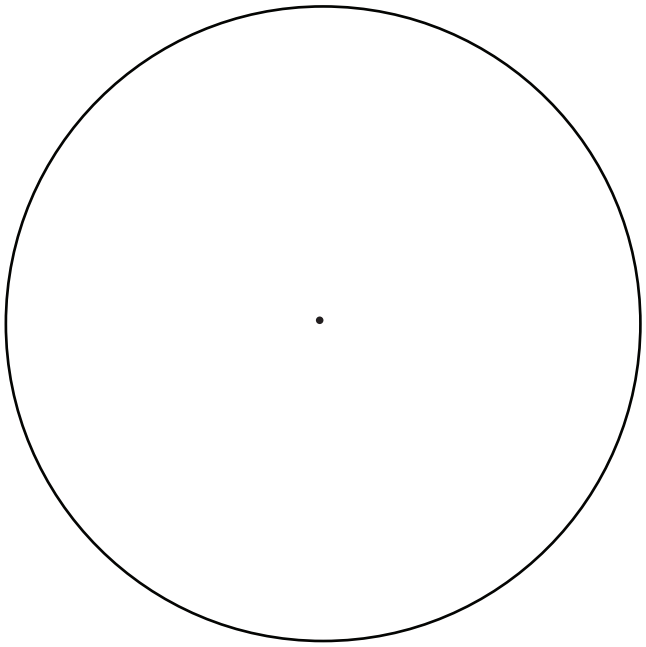
Sport	**Number of Students**	**Sector angle**
Soccer	30	54°
Swimming	25	
Volleyball		135°
Basketball		

(a) Complete the table. [4]

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(b) Use the circle to draw a pie chart representing this information.



[3]

(c) A student is chosen at random from the group.

Find the probability of getting a student who plays

(i) soccer,

Answer (c)(i) ……...……..... [1]

(ii) volleyball or basketball,

Answer (c)(ii) ……...…...……. [2]

(iii) netball.

Answer (c)(iii) ……...……...……. [1]

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[Turn over

(d) The students who play soccer were also asked to register the sizes of their soccer boots. The table shows the information.

Soccer boot size	3	4	5	6	7	8	9
Number of students	0	3	4	7	9	5	2

(i) State the modal boot size.

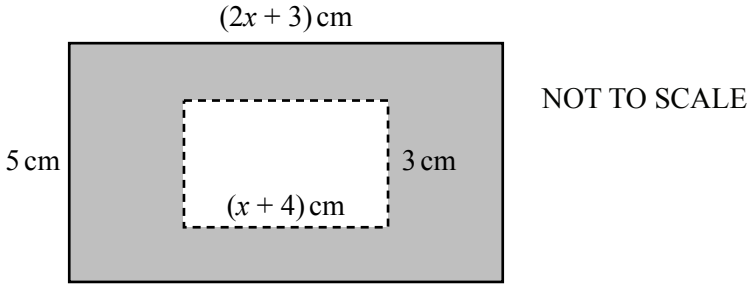
Answer (d)(i) ……...……...…….……. [1]

(ii) Calculate the mean boot size.

Answer (d)(ii) ……...……...…...……. [3]

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9 **(a)** The diagram shows a rectangle of width 5 cm and length $(2x + 3)$ cm.
A rectangle of width 3 cm and length $(x + 4)$ cm is cut from it.



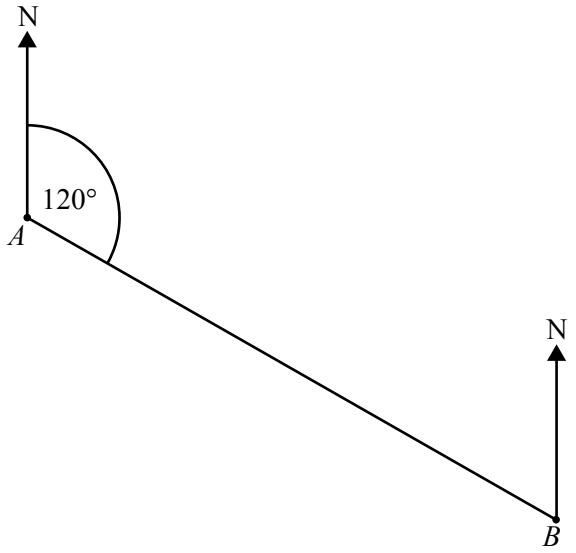
Find an expression for the area of the shaded part.

Give your answer in its simplest form.

Answer (a) ……..…...……....…… [3]

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(b) The diagram shows two towns A and B.
The bearing of town B from town A is 120°.



(i) Measure the length of AB.

Answer (b)(i) ……....….....…… [1]

(ii) Draw the perpendicular bisector of AB. [2]

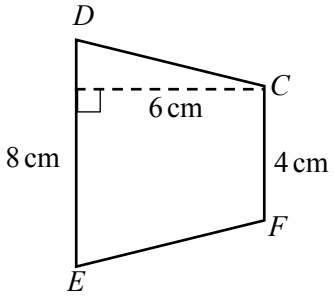
(iii) Town C is located due south of town A, where AC meets the perpendicular bisector of AB.

Mark the position of town C. [2]

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[Turn over

10 (a) The diagram shows a trapezium.
The trapezium is a cross-section of a prism of length 15 cm.
The height of the trapezium is 6 cm.
$DE = 8$ cm and $CF = 4$ cm.



NOT TO SCALE

(i) Calculate the area of the cross-section.

Answer (a)(i) ……..…….…. cm^2 [2]

(ii) Hence, calculate the volume of the prism.

Answer (a)(ii) ……..……..……..…. cm^3 [2]

(iii) The mass of the prism is 1350 g.

Calculate the density of the prism.

Answer (a)(iii) ……..……..……....…. g/cm^3 [2]

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(b) Calculate the surface area of a cylindrical water pipe of radius 3 cm and length 100 cm. (Use $\pi = 3.14$)

Answer (b) ……..…...…....……...…… [2]

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