Index No _____

GOVERNMENT OF MALTA
MINISTRY FOR EDUCATION, SPORT, YOUTH
RESEARCH AND INNOVATION
DEPARTMENT OF EXAMINATIONS

Candidate's name must NOT be written on any sheet of the examination paper.
Index Number must be written once ONLY above the perforation.

Qualifying Examination for Supply Learning Support Educators

June 2025

Subject: **Mathematics**

Date: **26th June 2025**

Time: **One hour and thirty minutes**

Instructions to candidates:

- Answer ALL questions.
- Write your answers in the space available on the examination paper.
- Show clearly all the necessary steps, explanations, and construction lines in your working.
- Unless otherwise stated, diagrams are drawn to scale.
- The use of non-programmable scientific calculators with statistical functions and of mathematical instruments is allowed.
- Candidates are allowed to use transparencies for drawing transformations.
- This paper carries a total of 100 marks.

Question No.	1	2	3	4	5	6	7	8
Mark								

Question No.	9	10	11	12	13	14	15	16	Total
Mark									

1. (a) Fill in:

	Statement	Answer
(i)	A square number smaller than 30.	
(ii)	A multiple of 8 between 50 and 60.	
(iii)	A prime number between 20 and 30.	
(iv)	The value of 4^3.	

(b) Work out: $36 - 4 \times 6 + 18 \div 3$

Ans: _____

(5 marks)

2. The scale of a map is 1 : 30 000.

(a) What is the actual distance, in metres, represented by 3.2 cm on the map?

Ans: _____

(b) What distance on the map represents an actual distance of 4.8 km?
Give your answer in centimetres.

Ans: _____

(6 marks)

3. The cross-section of the prism shown is in the shape of a trapezium.

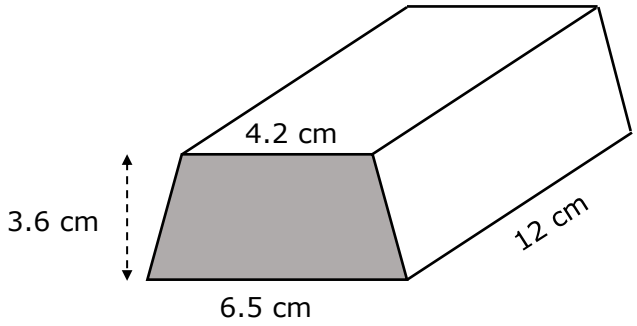

Diagram not drawn to scale

Calculate:

(a) the shaded cross-sectional area of the prism.

Ans: _____

(b) the volume of the prism.

Ans: _____

(4 marks)

4. A red and a green fair dice are tossed together.

(a) Complete the possibility space below to show all possible outcomes.

		Red dice					
		1	**2**	**3**	**4**	**5**	**6**
Green dice	**1**	(1, 1)				(5, 1)	
	2	(1, 2)	(2, 2)		(4, 2)	(5, 2)	
	3	(1, 3)	(2, 3)	(3, 3)	(4, 3)	(5, 3)	
	4	(1, 4)	(2, 4)	(3, 4)	(4, 4)	(5, 4)	
	5	(1, 5)	(2, 5)		(4, 5)	(5, 5)	
	6	(1, 6)				(5, 6)	

(b) What is the probability that:

(i) the same number appears on both dice?

Ans: _____

(ii) the sum of both numbers is 9 or more?

Ans: _____

(iii) an even number greater than 2 is obtained on the red dice?

Ans: _____

(5 marks)

5. Andrea works 40 hours per week, and she is paid at a basic rate of €12.00 per hour.

(a) (i) Work out Andrea's weekly wage.

Ans: _____

(ii) Andrea's national insurance contribution amounts to 10% of her income. How much national insurance does she pay **annually**?

Ans: _____

(b) Andrea is paid one and a half times the basic rate for overtime during weekends. In a particular week her pay amounts to €570.
How many hours of overtime did she work during that weekend?

Ans: _____

(7 marks)

6. Refer to the sequence **11, 15, 19, 23, 27, …**

(a) Write the n^{th} term of the sequence.

Ans: _____

(b) Calculate the value of the 50^{th} term.

Ans: _____

(c) Show that 391 is a term in the above sequence.

Ans: _____

(5 marks)

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7. (a) Calculate the sum of the interior angles of a 7-sided polygon.

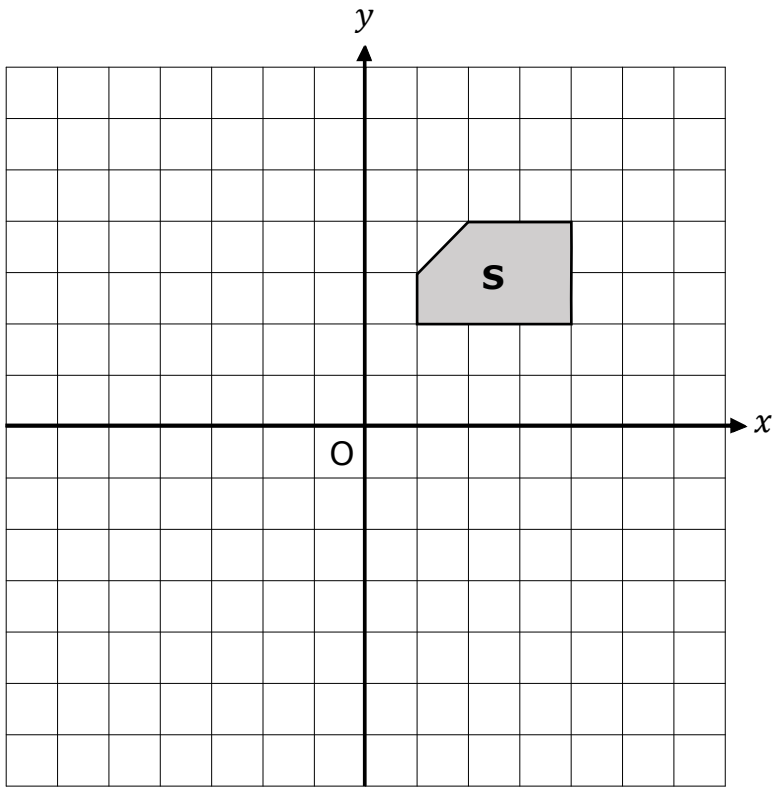
Ans: _____

(b) The angles of a 7-sided polygon are 74°, 133°, 146°, 150°, 160°, x° and $(2x)$°. Work out the value of x.

Ans: _____

(5 marks)

8.



On the grid above:

(a) Reflect shape **S** in the x-axis. Label the image **A**.

(b) Rotate shape **S** by 180° about O. Label the image **B**.

(c) Describe the single transformation that maps shape **A** to shape **B**.

Ans: _____

(6 marks)

9. (a) Expand and simplify: $13 - 4(x - 3) - 6x$

Ans: _____

(b) Factorise completely: $16x^2y + 32xy - 24x^3$

Ans: _____

(c) Solve the equation: $3(x + 5) = 2(6 - 3x) + 6$

Ans: _____

(7 marks)

10. (a) A straight line passes through two points with co-ordinates (1, 2) and (7, 20). Work out the gradient of this line.

Ans: _____

(b) The same line crosses the y-axis at the point with coordinates $(0, -1)$. Write the equation of the line.

Ans: _____

(3 marks)

11. (a) (i) Make x the subject of the formula: $p^2x - t = y$

Ans: _____

(ii) Work out the value of x when $y = -12$, $t = 8$ and $p = 5$.
Give your answer as a decimal.

Ans: _____

(b) Solve the simultaneous equations:

$$3x + 7y = 57$$

$$2x - 3y = 15$$

Ans: x = _____; y = _____

(8 marks)

12. Points A, B, C and D lie on a circle centre O. ∠ABD = 27° and ∠BCD = 74°. DA is produced to E.

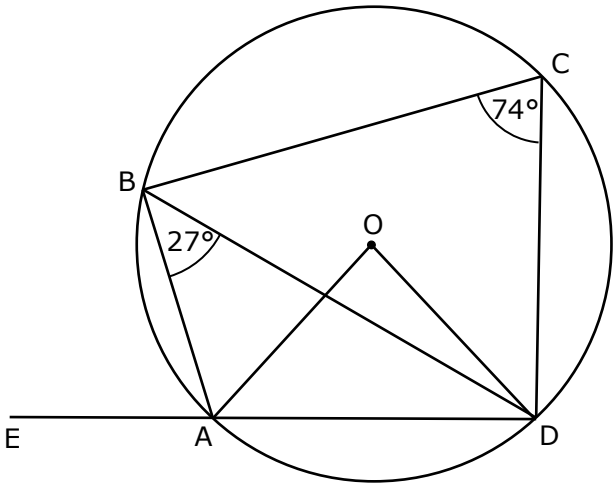


Diagram not drawn to scale

Calculate the size of the following angles, giving reasons for your answers.

(a) ∠AOD

Ans: _____

Reason:_____

(b) ∠ADO

Ans: _____

Reason:_____

(c) ∠BAD

Ans: _____

Reason:_____

(d) ∠BAE

Ans: _____

Reason:_____

(8 marks)

13. Thirty Year 6 students were asked about the number of pets they have.

The table shows the result of this survey.

Pets	Frequency
0	10
1	6
2	8
3	4
4	2

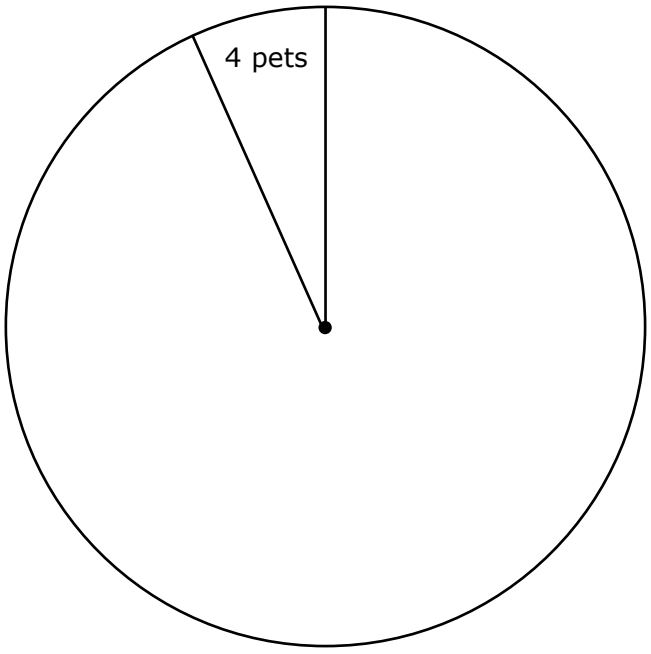
(a) What percentage of the students have more than two pets?

Ans: _____

(b) Work out the mean number of pets.

Ans: _____

(c) Complete and label the pie chart below to represent the frequency table.

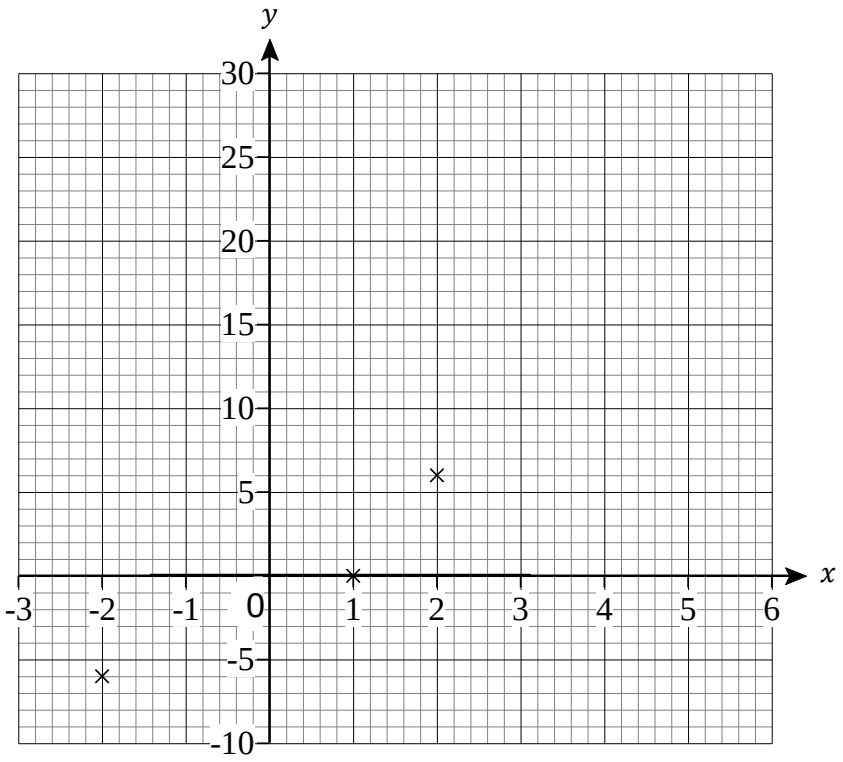


(10 marks)

14. (a) Complete the table for $y = x^2 + 3x - 4$ for the given values of x.

x	-3	-2	-1	0	1	2	3	4
x^2	9	4		0	1	4		
$+3x$		-6		0	3	6	9	
-4	-4	-4	-4	-4	-4	-4	-4	-4
y		-6		-4	0	6		24

(b) Plot the points and draw the graph of $y = x^2 + 3x - 4$.
Some points are done for you.



(c) Write down the coordinates of the minimum point of the graph.

Ans: (_____, _____)

(d) Use your graph to find:

(i) the value of y when x = 2.5.

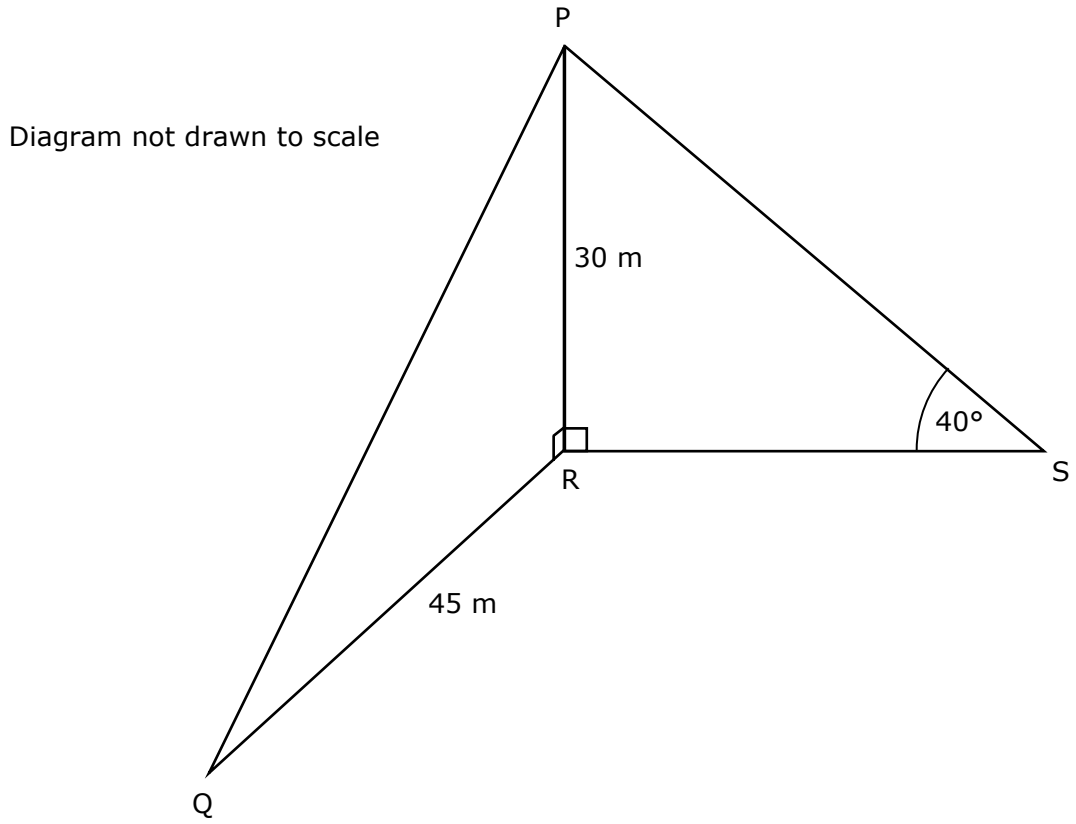
Ans: y = _____

(ii) the value of x when y = 18.

Ans: x = _____

(9 marks)

15. Q, R and S are three points on a horizontal plane.
Point Q is due south of point R and point S is due east of point R.
The vertical pole, PR, is supported by two straight cables, PQ and PS.
PR = 30 m, QR = 45 m and ∠PSR = 40°. ∠PRQ = 90° and ∠PRS = 90°.



Give your answers correct to one decimal place.

(a) Work out the length of PS.

Ans: _____

(b) Calculate angle ∠PQR.

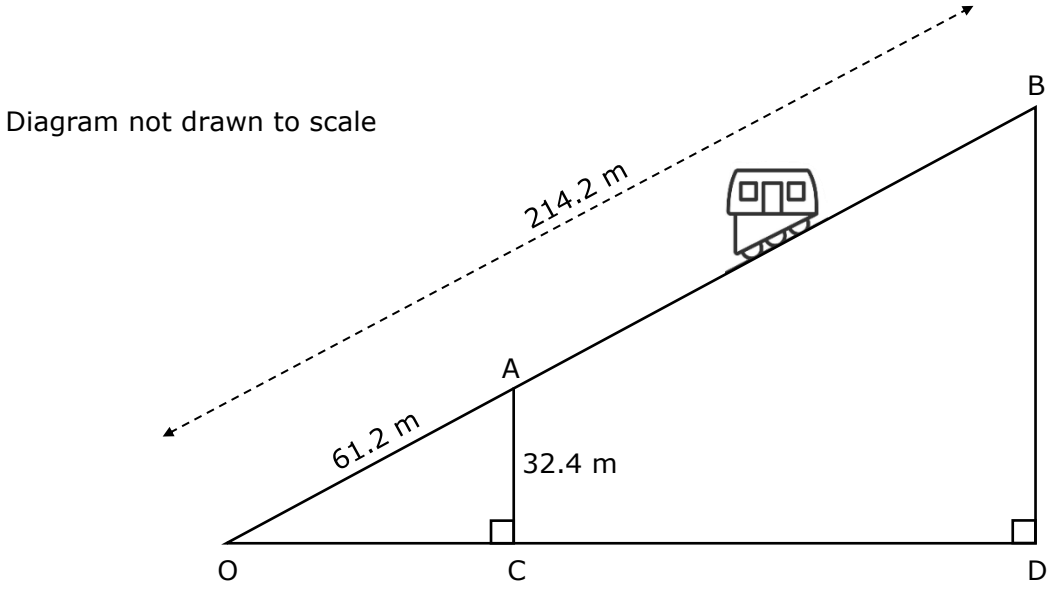
Ans: _____

(c) Work out the length of PQ.

Ans: _____

(7 marks)

16. The diagram below shows a funicular railway.
OA = 61.2 m and OB = 214.2 m and AC = 32.4 m.



(a) Prove that ΔOAC is similar to ΔOBD.

(b) Calculate the vertical height BD.

Ans: _____

(5 marks)

End of Paper

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