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309/01

October/November 2024

2 hours

Candidates answer on the Question Paper.
Additional materials: Tracing paper (optional)

For Examiner's Use

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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Total	

2

1 Write down the mathematical name for

(a) a triangle with 2 equal sides,

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

(b) a polygon with 7 sides,

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

(c) an angle that is equal to 90° ,

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

(d) describing two polygons with the same shape and size.

Answer (d)..... [1]

2

(a) Write 2.5 metres in millimetres.

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

(b) Find the number of seconds in 1 hour.

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

3

- 3 (a) Round off 78 to the nearest 50.

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

- (b) Express $\frac{7}{8}$ as a decimal.

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

- (c) The length, l km, of a straight road is 20 km, correct to the nearest km.
Find the limits of accuracy for the length of the straight road.

Answer (c)..... $\leq l <$ [2]

- 4 Work out.

- (a) $35.125 - 11.83$

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

- (b) $\sqrt{91 - 3^3}$

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

- (c) $\frac{3}{5} \div \frac{2}{5}$

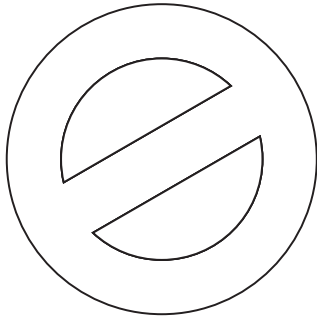
Answer (c)..... [2]

4

- 5 (a) Estimate the value of $\frac{17.625 \times 4.937}{9.6804}$ to **one** significant figure.

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

- (b) The diagram shows a shape.



- (i) On the diagram, draw all the lines of symmetry. [1]
(ii) Write down the order of rotational symmetry of the shape.

Answer (b)(ii) [1]

- 6 (a) List all factors of 36.

Answer (a) [2]

- (b) You are given the sequence of numbers.

3 7 11 15 19 ...

- (i) Find the next two terms of the sequence.

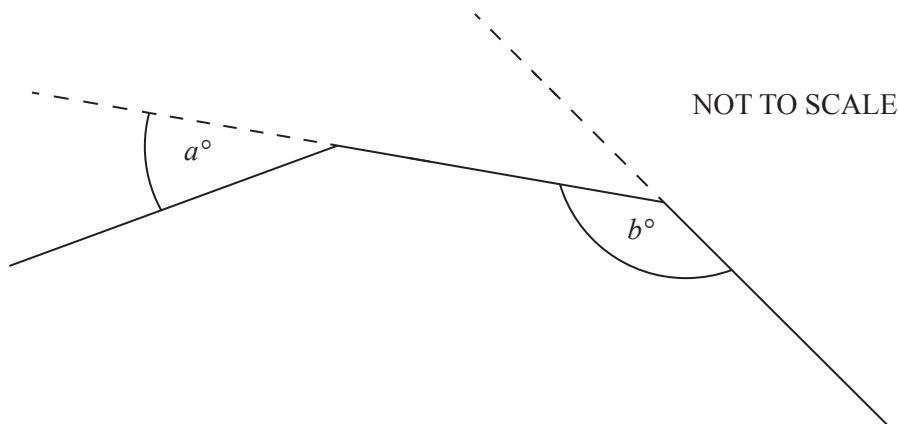
Answer (b)(i)..... [1]

- (ii) State the rule of the sequence.

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

5

- 7 The diagram shows part of a 12-sided regular polygon.



Find

(a) a ,

Answer (a)° [2]

(a) b .

Answer (b)° [1]

- 8 A cross boarder bus transports people from Manzini to Cape Town.
The bus departs Manzini at 0530 hrs on Monday.
It takes 28 hours on the road.
Along the way it makes 5 stops of 30 minutes each.

Find the time when the bus arrives in Cape Town.

Answerhrs [3]

6

9 Complete the chart using some of the symbols and numbers below.

$<$, 0.020 , 2.5×10^{-1} , $=$, $>$, 0.2 , 2.5×10^1 , $\leq$

.....	=	20%
0.66		$\frac{2}{3}$
25	=	

[3]

10 Tickets are numbered from 1 to 20.

The tickets are mixed up and one ticket is drawn at random.

Find the probability that the ticket drawn has a number which is

(a) prime,

Answer (a) [1]

(b) a multiple of 3 or 5.

Answer (b) [2]

11 A pencil costs E_x and a pen costs $E5$ more than a pencil.

(a) Find the cost of a pen in terms of x .

Answer (a) [1]

(b) A pen and 2 pencils cost $E17$ in total.

Find the cost of one pencil.

Answer (b) E..... [3]

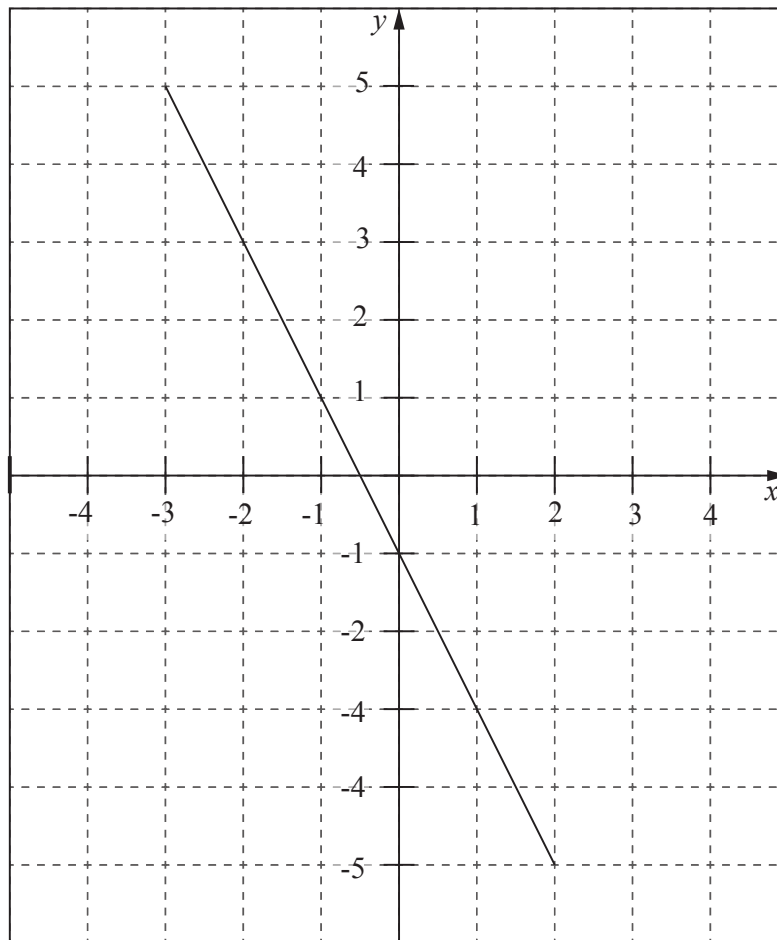
12 (a) Factorise $3x + 12y$.

Answer (a) [1]

(b) Expand and simplify $8a - 3(b - c + 2a)$.

Answer (b) [2]

13 The diagram shows a straight line.



Find the equation of the line.

Answer (a) [3]

14 (a) Work out.

$$0.005724 \times 10\,000$$

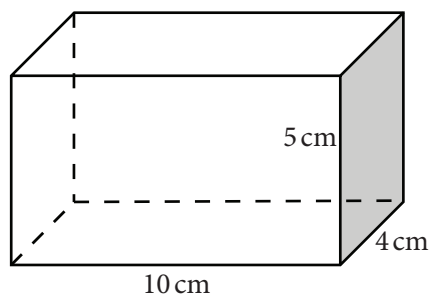
Answer (a) [1]

(b) Simplify.

$$\frac{1}{2} : 3$$

Answer (b) [1]

- 15 The diagram shows a solid cuboid.



Calculate the surface area of the cuboid.

Answer [3]

- 16 (a) Express 5^{-3} as a fraction in its simplest form.

Answer (a) [2]

(b) Simplify

(i) $(m^2)^3$,

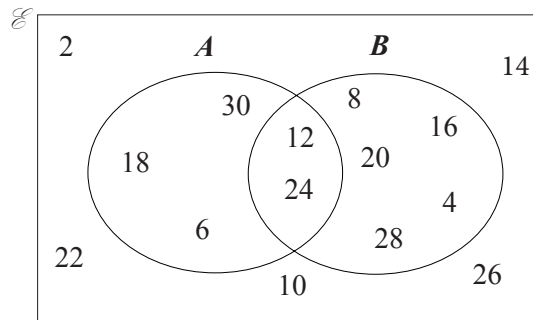
Answer (b)(i) [1]

(ii) $5p^2q \times pq^3$.

Answer (b)(ii) [2]

10

17 The Venn diagram shows sets A and B .



(a) List the members of the following sets

(i) B ,

Answer (a)(i) [1]

(ii) $A \cap B'$,

Answer (a)(ii) [1]

(b) Find $n(A \cap B)'$.

Answer (b) [1]

18 You are given the distribution of numbers.

7 6 5 9 3 4 7 4 6 8 7

(a) Find the range.

Answer (a) [1]

(b) Write down the mode.

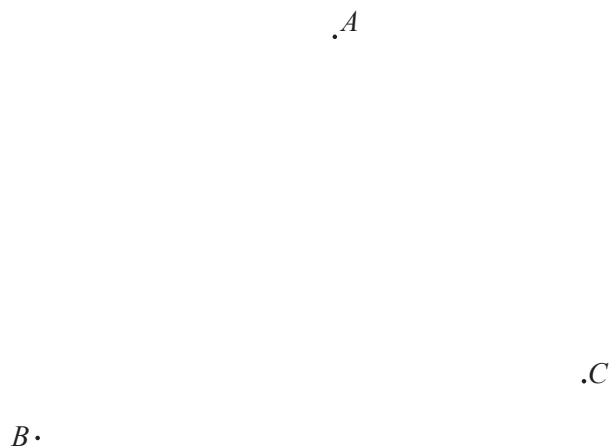
Answer (b) [1]

(c) Calculate the mean.

Answer (c) [2]

11

19 The positions of three points A , B and C are shown.



- (a) Using a **ruler and a compass**, construct the locus of points which are
- (i) equidistant from A and B , [2]
 - (ii) 3 cm from C . [2]
- (b) Mark a point X , which is 3 cm from C and equidistant from A and B . [1]

20 (a) Given that $p = 3 - 2q$,

Find the value of p , when $q = -3$.

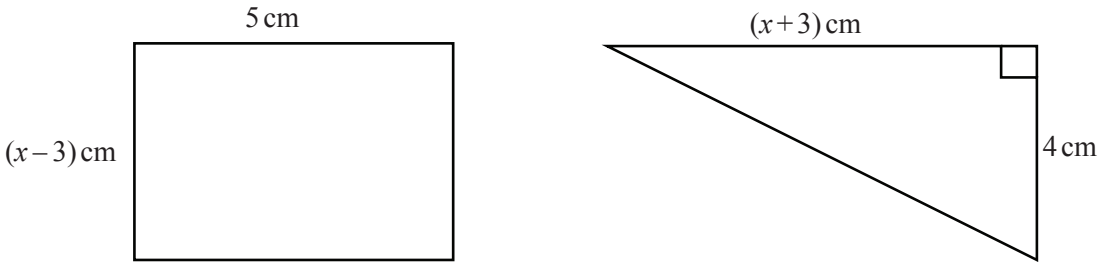
Answer (a) [2]

(b) Linda invested E500 in a bank at 5 % simple interest per annum.

Find the amount of interest after 4 years.

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

21 The diagram shows a rectangle and a triangle.



(a) Find an expression in terms of x , for the area of the triangle.

Answer (a) [1]

(b) The area of the rectangle is equal to the area of the triangle.

Form an equation and solve for x .

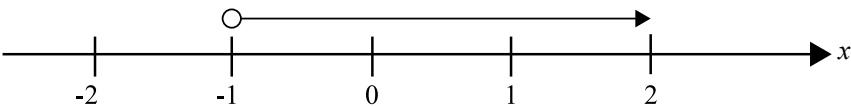
Answer (b) $x =$ [3]

22 (a) Solve.

$$3 = 5 + y$$

Answer (a) $y =$ [1]

(b) Write an inequality describing the values of x represented by the number line.



Answer (b) [1]

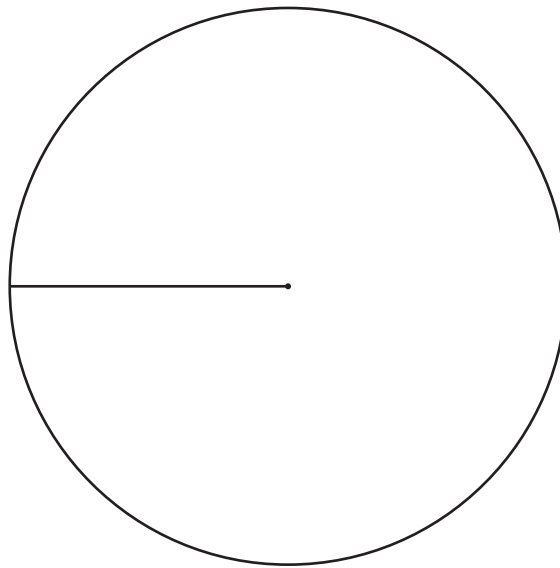
(c) Simplify $\frac{2}{x} - \frac{1}{2x}$.

Answer (c) [2]

23 The table shows fruit trees that a gardener has.

Fruit	Mango	Peach	Orange
Number of trees	15	6	9
Pie chart sector angle	180°	72°	

- (a) Complete the table. [1]
 (b) Complete the pie chart to show this information. [2]



14

24 The diagram shows the net of a solid.



(a) State the mathematical name of the solid.

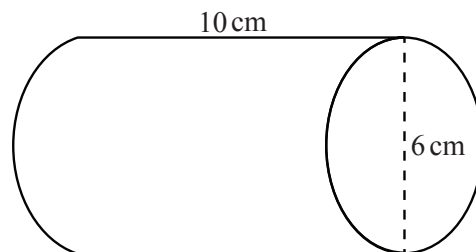
Answer (a) [1]

(b) Write down the number of edges of the solid.

Answer (b) [1]

25 The diagram shows a cylinder of diameter 6 cm and length 10 cm.

Calculate the volume of the cylinder. (Use $\pi = 3.14$)



Answer cm^3 [2]

15

- 26 (a) Construct parallelogram $PQRS$ with $PQ = 9\text{ cm}$, $QR = 5.5\text{ cm}$ and angle $PQR = 120^\circ$.

[3]

- (b) Using your diagram in (a),

- (i) Find angle SPQ .

Answer (b)(i) $^\circ$ [1]

- (ii) Measure the shortest distance from S to line PQ .

Answer (b)(ii) cm [1]

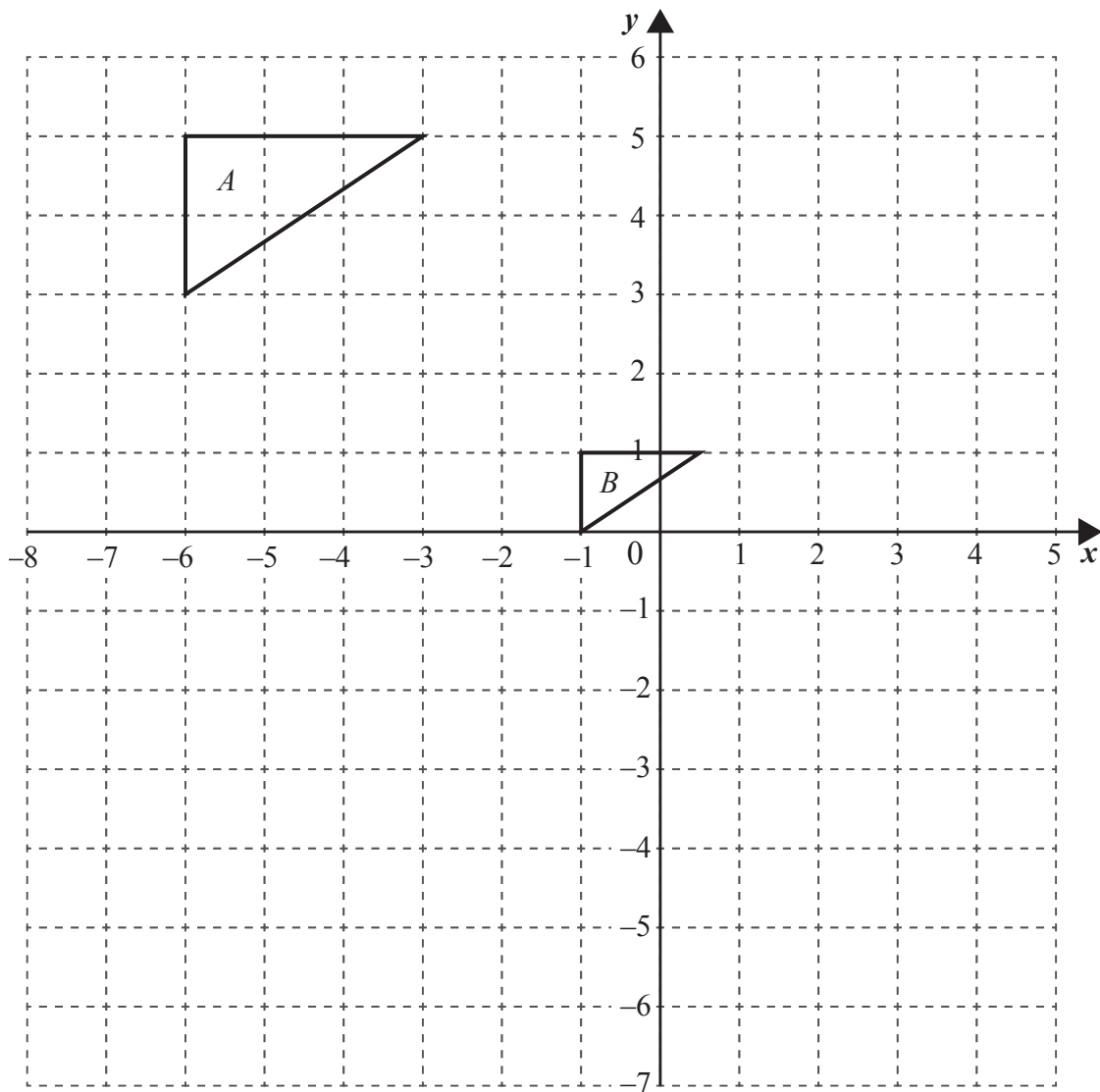
- 27 The scale of a map is 1 : 1 000 000.

Two towns are 115 km apart.

Find the distance between the towns on the map.

Answercm [3]

28 The grid shows triangle A and triangle B .



(a) Triangle A is mapped onto triangle B .

Describe the single transformation that maps triangle A onto triangle B .

.....

 [3]

(b) Draw triangle C , the image of triangle A after a translation, vector $\begin{pmatrix} 0 \\ -8 \end{pmatrix}$. [2]