Weekly check: Year 9 part 3

Year 9 | Key Stage 3 | Part 3: the last third of the year | 20 questions, 53 marks

KS3 Maths weekly check

Scan for the solutions

Name: _____ **Date:** _____ **Score:** _____ **/ 53**

1 ABC is a triangle. The side BC is extended to the point D.

Angle BAC = a and angle ABC = b.

Prove that angle ACD = $a + b$.

Give a reason for each stage of your working.

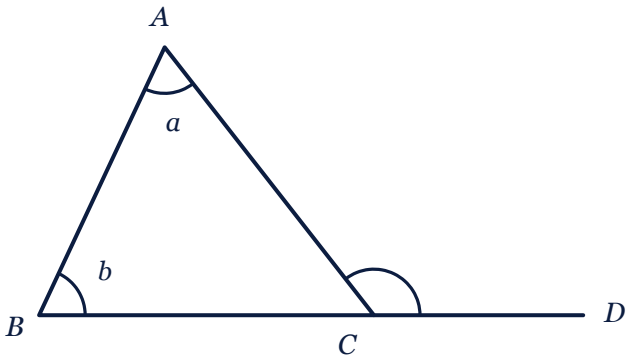


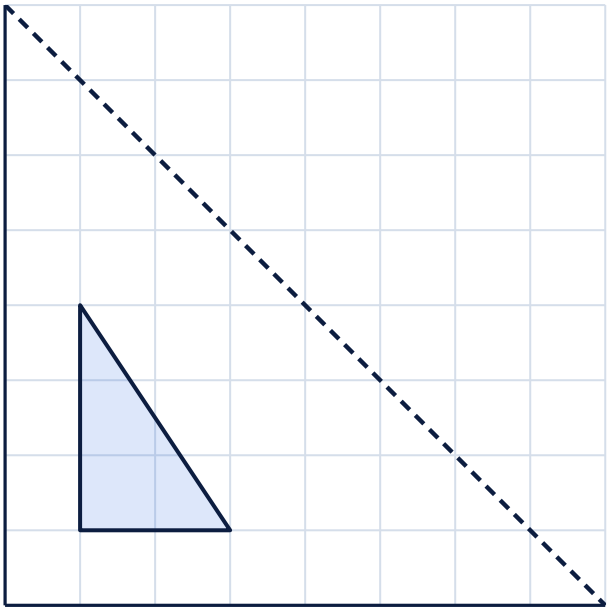
Diagram NOT accurately drawn

(3 marks)

Answer _____

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2 Reflect the shape in the mirror line.



(2 marks)

Answer _____

3 Rectangle A has vertices at (1, 1), (3, 1), (3, 2) and (1, 2).

Rectangle B has vertices at (2, 2), (6, 2), (6, 4) and (2, 4).

Describe fully the single transformation that maps rectangle A onto rectangle B.

(2 marks)

Answer _____

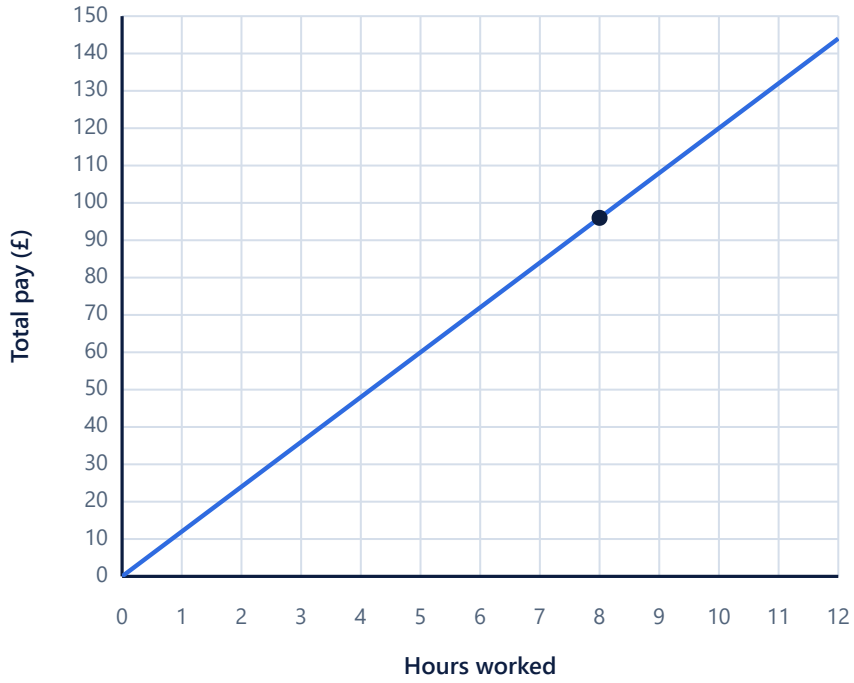
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4 A graph shows Kelly's total pay plotted against the number of hours she works.

The graph is a straight line through (0, 0) and through the point (8, 96), where pay is in pounds.

a. Work out Kelly's hourly rate of pay.

b. Work out Kelly's total pay for working 11 hours.



(3 marks)

Answer _____

5 Triangle P has vertices at (2, 1), (5, 1) and (5, 3).

Triangle Q has vertices at (2, −1), (5, −1) and (5, −3).

Describe fully the single transformation that maps triangle P onto triangle Q.

(2 marks)

Answer _____

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6 a. A prism has a cross-section with an area of 24 cm^2. The prism is 15 cm long. Work out the volume of the prism.

b. Another prism has a volume of 540 cm^3. Its cross-section has an area of 72 cm^2. Work out the length of this prism.

(3 marks)

Answer _____

7 A cube has a volume of 64 cm^3.

Work out the total surface area of the cube.

(3 marks)

Answer _____

8 Find the equation of the straight line that is perpendicular to $y = 2x - 3$ and passes through the point (4, 1).

(3 marks)

Answer _____

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9 The diagram shows five sketch graphs, labelled **A**, **B**, **C**, **D** and **E**.

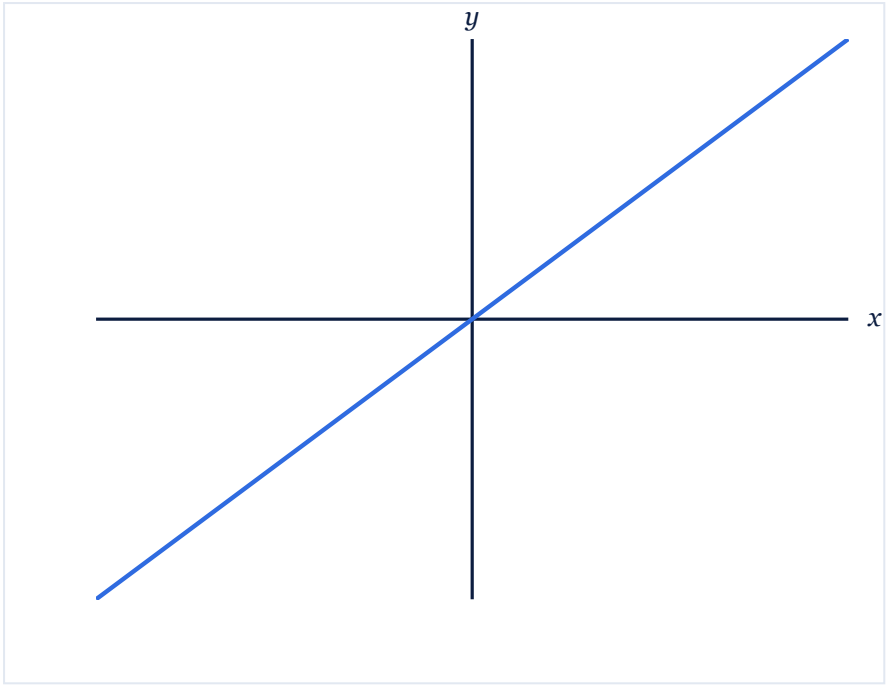
Match each equation below to the letter of its graph.

a. $y = -x^2$

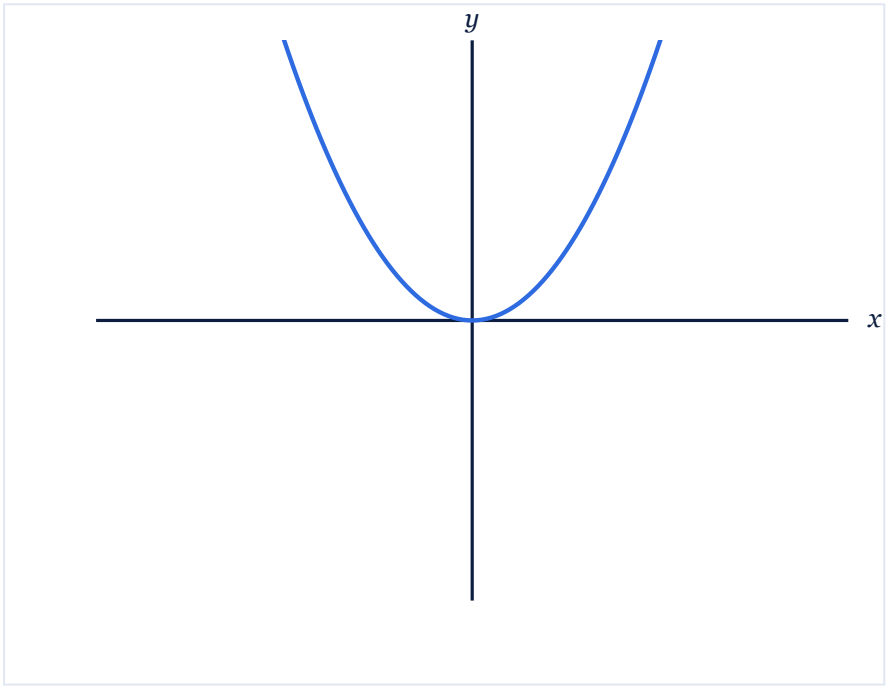
b. $y = x^3$

c. $y = \frac{5}{x}$

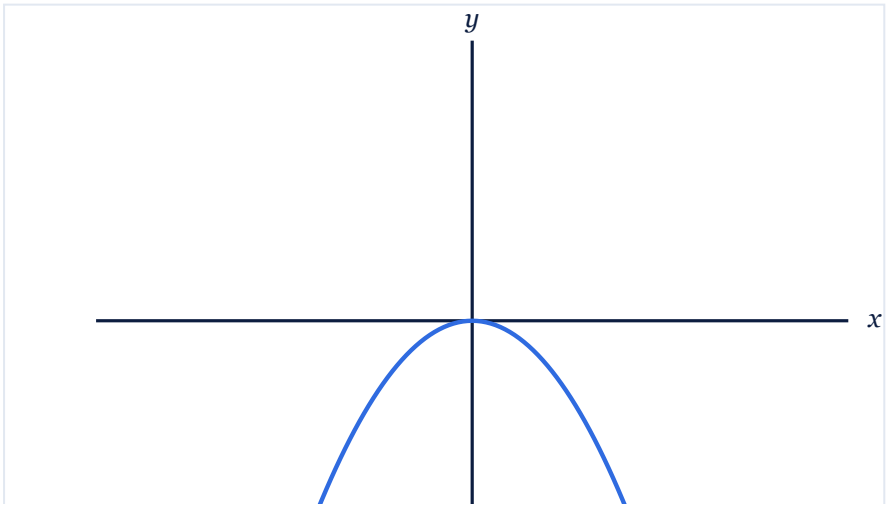
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A



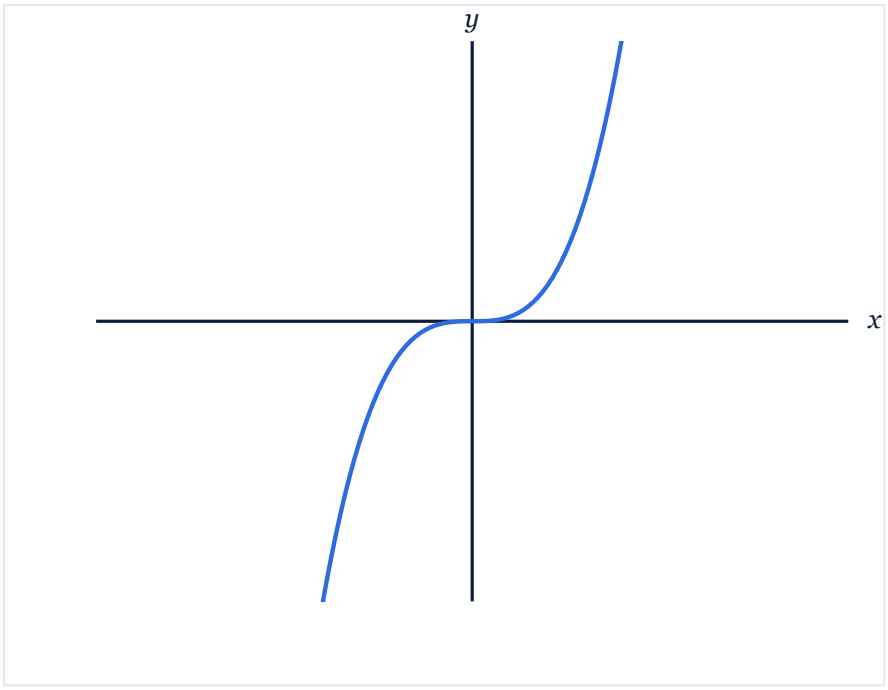
B



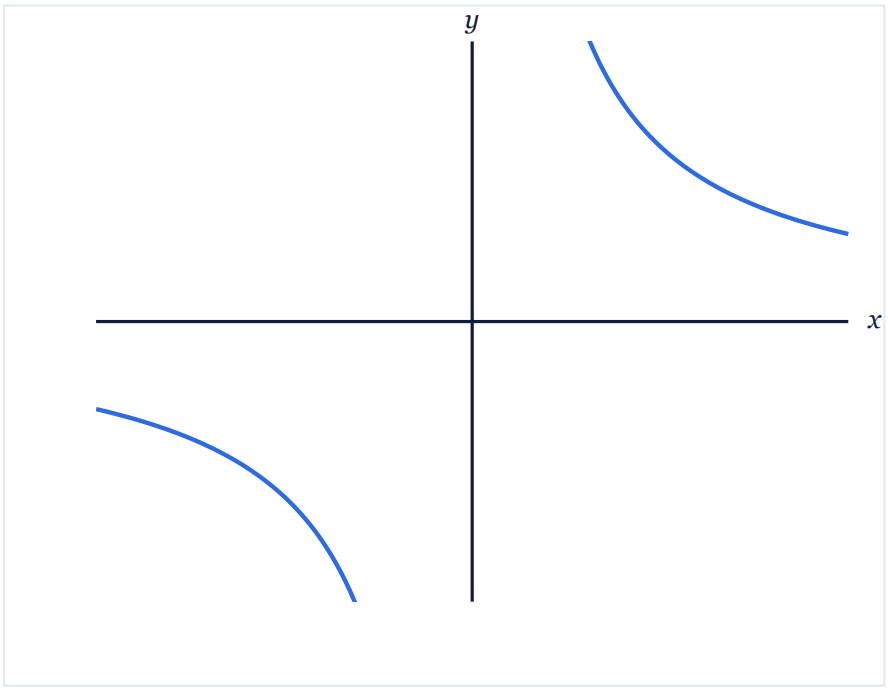
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C



D



E

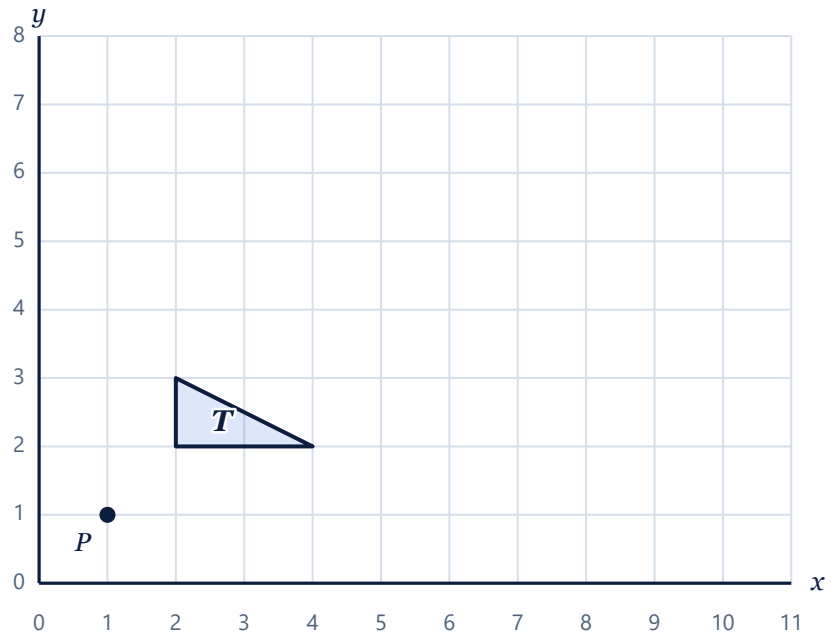
(3 marks)

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Answer

10 Triangle T and the point P (1, 1) are drawn on the grid.

Enlarge triangle T by scale factor 3, centre P.



(3 marks)

Answer

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11 Triangle PQR is a right-angled triangle with the right angle at Q.

PQ = 7 cm and QR = 9 cm.

Work out the length of PR.

Give your answer correct to 1 decimal place.

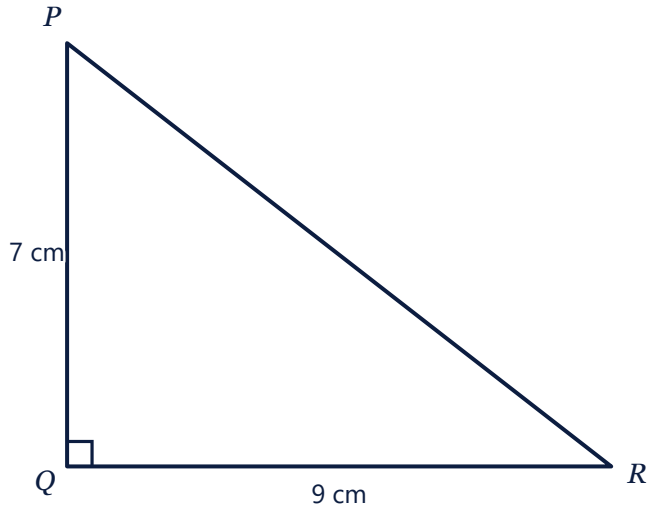


Diagram NOT accurately drawn

(2 marks)

Answer _____

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12 AB and CD are parallel lines. The line PQ crosses them at P and Q.

One of the angles at P is 62°, as shown.

a. Write down the value of x. Give a reason for your answer.

b. Write down the value of z. Give a reason for your answer.

c. Work out the value of y. Give a reason for your answer.

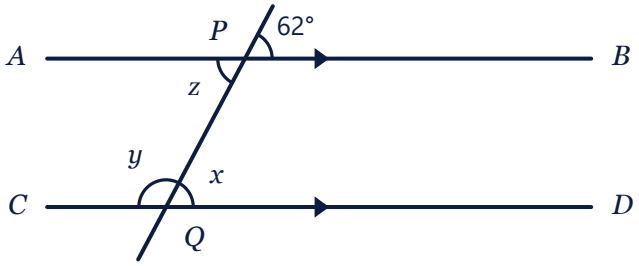


Diagram NOT accurately drawn

(3 marks)

Answer _____

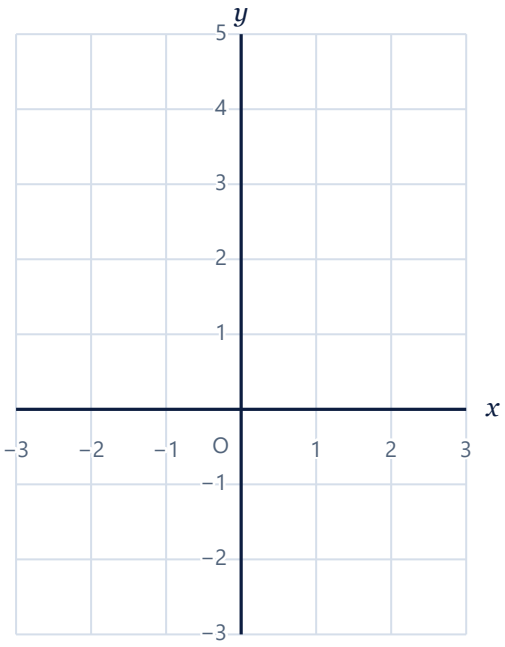
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13 Here is a table of values for $y = x^3 - 4x + 1$

x	−2	−1	0	1	2
y	1		1		

a. Complete the table.

b. On the grid, draw the graph of $y = x^3 - 4x + 1$ for values of x from −2 to 2



(4 marks)

Answer _____

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14 Triangle ABC is a right-angled triangle with the right angle at B.

AB = 6 cm and BC = 8 cm.

Work out the length of AC.

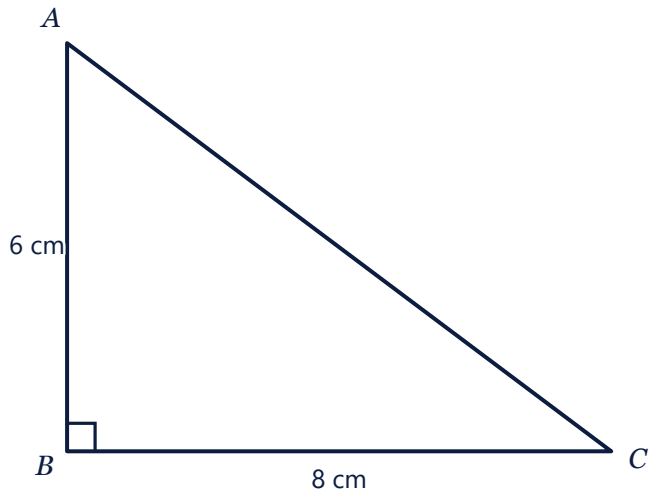


Diagram NOT accurately drawn

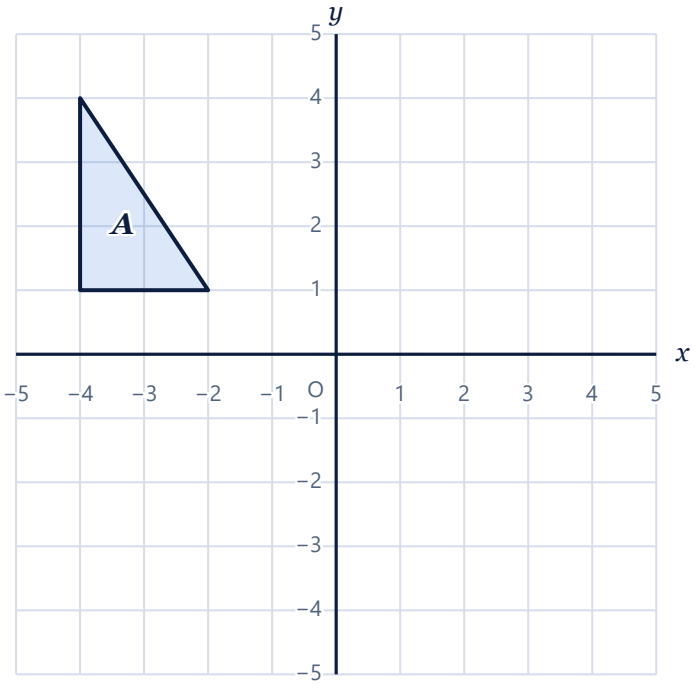
(2 marks)

Answer _____

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15 Triangle A is drawn on the grid.

Translate triangle A by the vector $\begin{pmatrix} 5 \\ -3 \end{pmatrix}$. Label the image B.



(2 marks)

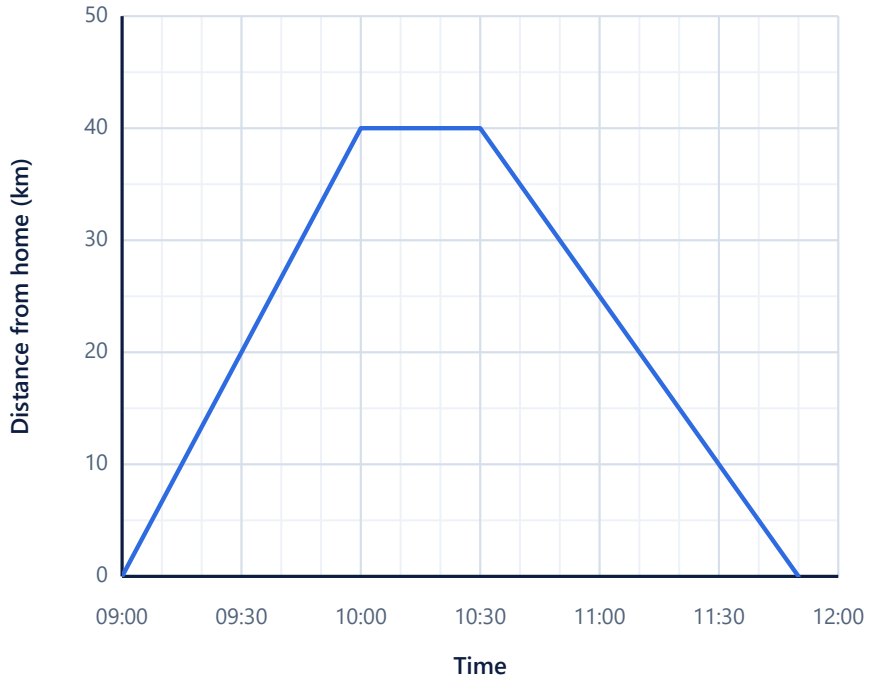
Answer _____

16 The distance-time graph shows Marek's car journey from home to a garden centre and back.

a. For how many minutes does Marek stay at the garden centre?

b. Work out his speed, in km/h, on the way to the garden centre.

c. Work out his speed, in km/h, on the way home.



(3 marks)

Answer _____

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17 In triangle ABC, AB = AC.

The point D lies on BC so that AD bisects angle BAC.

Prove that triangle ABD is congruent to triangle ACD.

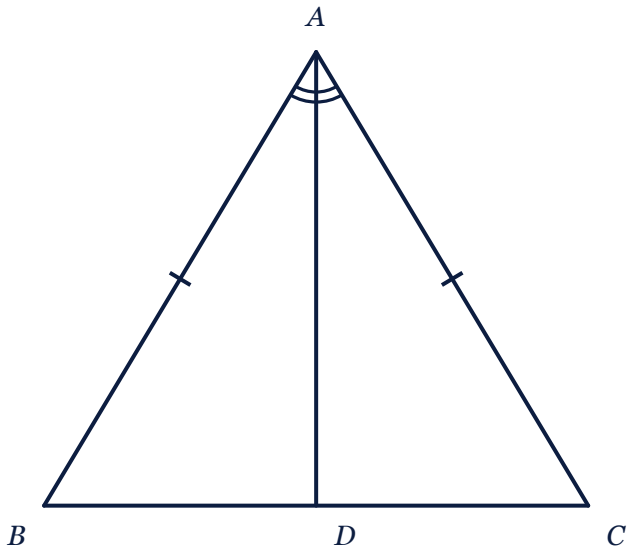


Diagram NOT accurately drawn

(3 marks)

Answer _____

18 The diagram shows a right-angled triangle PQR.

a. Write down the name of the side that is the hypotenuse.

b. Show that the three lengths fit Pythagoras' theorem.

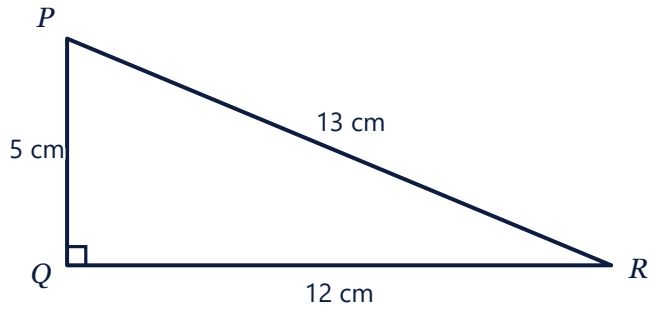


Diagram NOT accurately drawn

(2 marks)

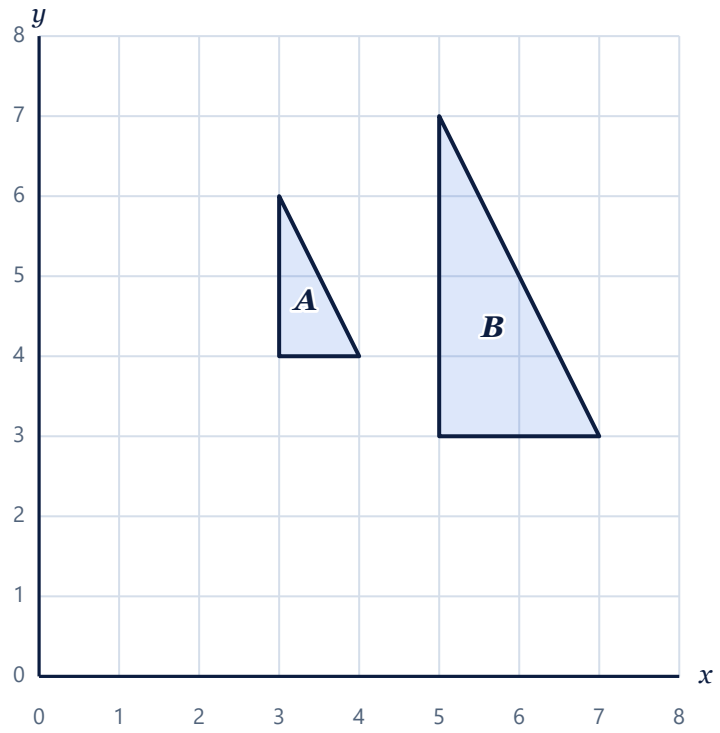
Answer _____

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19 Triangle B is an enlargement of triangle A.

a. Write down the scale factor of the enlargement.

b. Find the coordinates of the centre of the enlargement.



(3 marks)

Answer _____

20 A rectangle is 9 cm long and 6 cm wide.

Work out the length of a diagonal of the rectangle.

Give your answer correct to 1 decimal place.

(2 marks)

Answer _____

End of questions | Total 53 marks

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