



1 Work out.

$$10 - 3 \times 2$$

Answer ..... [1]

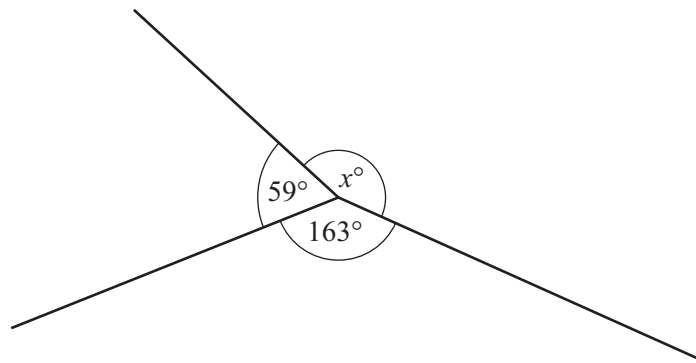
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2 Write down the prime numbers between 20 and 30.

Answer ..... [1]

---

3



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(a) Find the value of  $x$ .

Answer(a)  $x =$  ..... [1]

(b) One of the angles is  $163^\circ$ .

What type of angle is this?

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

---

4 A city has a population of five hundred and six thousand.

Write the size of the population

(a) in figures,

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

(b) in standard form.

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

---

5

$$p = \frac{4.8 \times 1.98276}{16.83}$$

(a) In the spaces provided, write each number in this calculation correct to 1 significant figure.

Answer(a)

$$\frac{\dots \times \dots}{\dots}$$

[1]

(b) Use your answer to **part (a)** to estimate the value of  $p$ .

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

6 Solve the equation.

$$\frac{n-8}{2} = 11$$

Answer  $n =$  ..... [2]

7

$$\mathbf{a} = \begin{pmatrix} 4 \\ -3 \end{pmatrix} \quad \mathbf{b} = \begin{pmatrix} -1 \\ 5 \end{pmatrix}$$

Work out  $\mathbf{a} - 2\mathbf{b}$ .

Answer  $\begin{pmatrix} \quad \\ \quad \end{pmatrix}$  [2]

8 The width,  $w$  cm, of a carpet is 455 cm, correct to the nearest centimetre.

Complete the statement about the value of  $w$ .

Answer .....  $\leq w <$  ..... [2]

9  $y = \frac{2}{x^2} + \frac{x^2}{2}$

Find the value of  $y$  when  $x = 6$ .

Give your answer as a mixed number in its simplest form.

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

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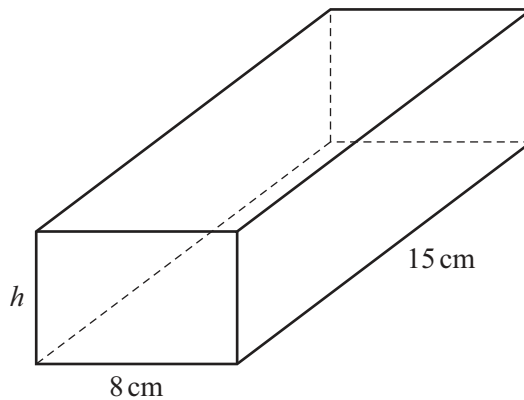
10 Use your calculator to work out  $\sqrt{\frac{3}{4}} + 2^{-1}$ .

Give your answer correct to 2 decimal places.

Answer  $\dots\dots\dots$  [2]

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11 The diagram shows a cuboid.



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The volume of this cuboid is  $720 \text{ cm}^3$ .

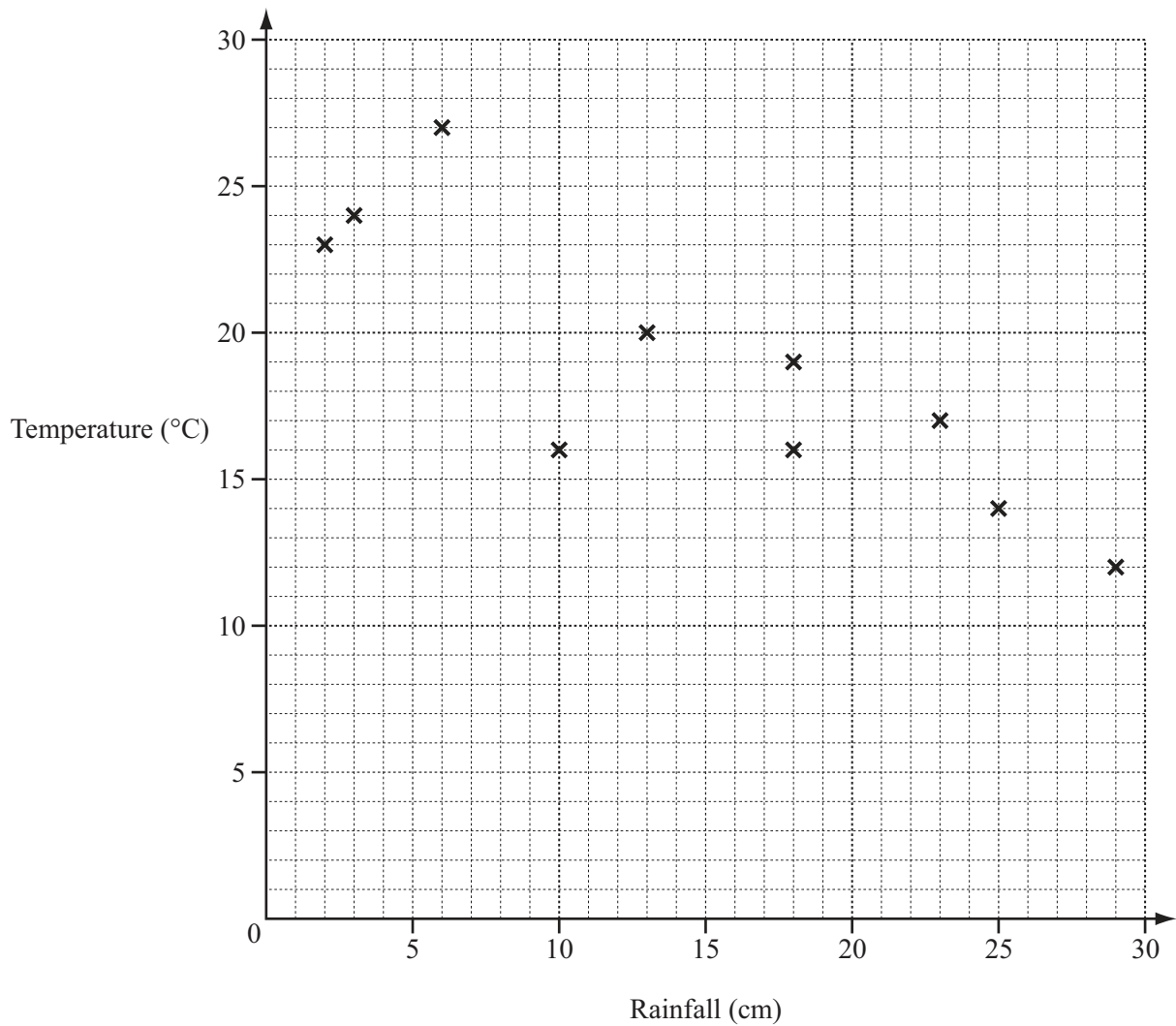
The width is 8 cm and the length is 15 cm.

Calculate  $h$ , the height of the cuboid.

Answer  $h = \dots\dots\dots$  cm [2]

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- 12 The scatter diagram shows the rainfall and the average temperature in a city for the month of June, over a period of 10 years.



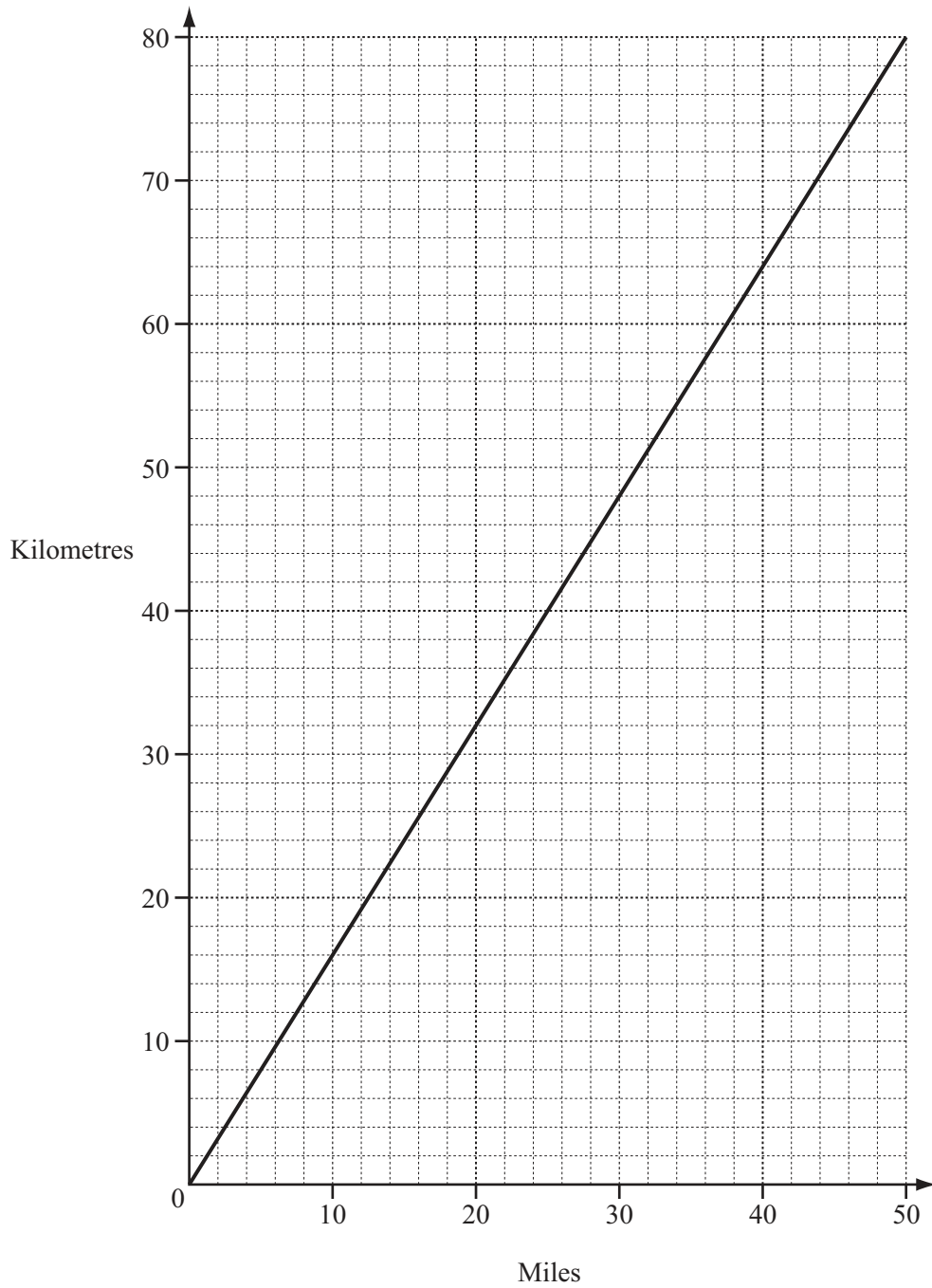
- (a) What type of correlation does this scatter diagram show?

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

- (b) Describe the relationship between the rainfall and the average temperature.

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

13 The graph can be used to convert between miles and kilometres.

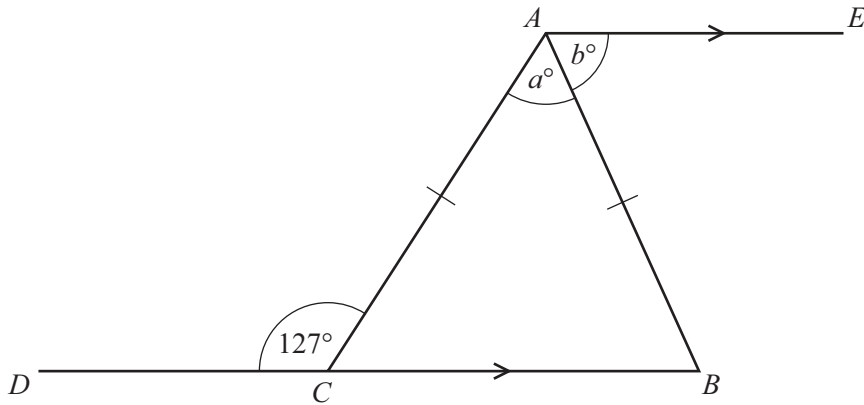


A train travels 24 miles in 20 minutes.

Find its average speed in **kilometres per hour**.

Answer ..... km/h [2]

14

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The diagram shows an isosceles triangle  $ABC$ .  
 $DCB$  is a straight line and is parallel to  $AE$ .  
 Angle  $DCA = 127^\circ$ .

Find the value of

(a)  $a$ ,

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

(b)  $b$ .

Answer(b)  $b = \dots\dots\dots$  [1]

- 15 Carlo changed 800 euros (€) into dollars for his holiday when the exchange rate was €1 = \$1.50 .  
 His holiday was then cancelled.  
 He changed all his dollars back into euros and he received €750.

Find the new exchange rate.

Answer €1 = \$..... [3]

16 (a) Simplify the expressions.

(i)  $p^3 \times p^7$

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

(ii)  $t^5 \div t^8$

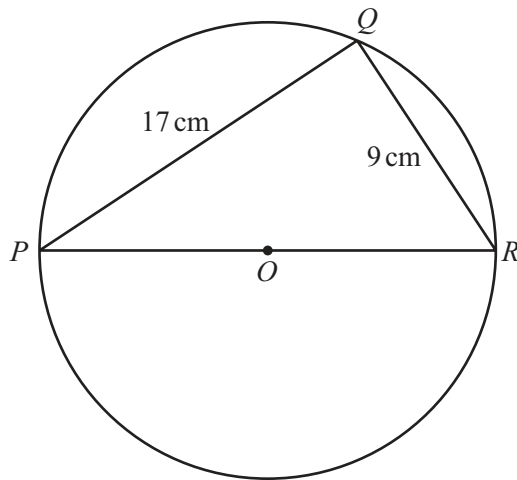
Answer(a)(ii) ..... [1]

(b)  $(h^3)^k = h^{12}$

Find the value of  $k$ .

Answer(b)  $k =$  ..... [1]

17



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The diagram shows a circle, centre  $O$ .  
 $P$ ,  $Q$  and  $R$  are points on the circumference.  
 $PQ = 17$  cm and  $QR = 9$  cm.

(a) Explain why angle  $PQR$  is  $90^\circ$ .

Answer(a) .....

..... [1]

(b) Calculate the length  $PR$ .

Answer(b)  $PR =$  ..... cm [2]



**18** In this question, do not use your calculator and show all the steps in your working.

(a) Show that  $3\frac{1}{5} - 2\frac{5}{8} = \frac{23}{40}$ .

*Answer(a)*

[2]

(b) Work out  $\frac{7}{8} \div \frac{23}{40}$ .

Give your answer as a mixed number in its simplest form.

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

**19** The table shows the average monthly temperature ( $^{\circ}\text{C}$ ) for Fairbanks, Alaska.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Temperature ( $^{\circ}\text{C}$ )	-23.4	-19.8	-11.7	-0.8	9.2	15.4	16.9	13.8	7.5	-5.8	-21.4	-21.8

(a) Find

(i) the difference between the highest and the lowest temperatures,

*Answer(a)(i)* .....  $^{\circ}\text{C}$  [1]

(ii) the median.

*Answer(a)(ii)* .....  $^{\circ}\text{C}$  [2]

(b) A month is chosen at random from the table.

Find the probability that its average temperature is below zero.

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

20 A bus company in Dubai has the following operating times.

Day	Starting time	Finishing time
Saturday	06 00	24 00
Sunday	06 00	24 00
Monday	06 00	24 00
Tuesday	06 00	24 00
Wednesday	06 00	24 00
Thursday	06 00	24 00
Friday	13 00	24 00

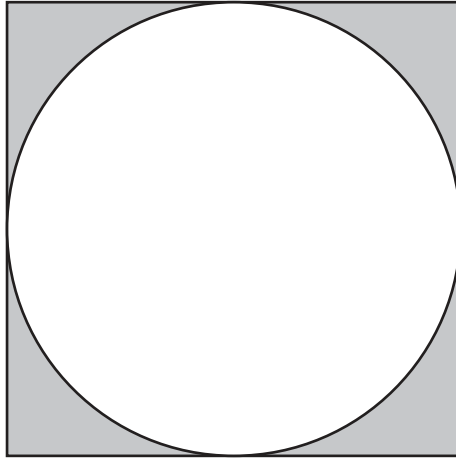
(a) Calculate the total number of hours that the bus company operates in one week.

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

(b) Write the starting time on Friday in the 12-hour clock.

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

21



The diagram shows a circle inside a square.  
The circumference of the circle touches all four sides of the square.

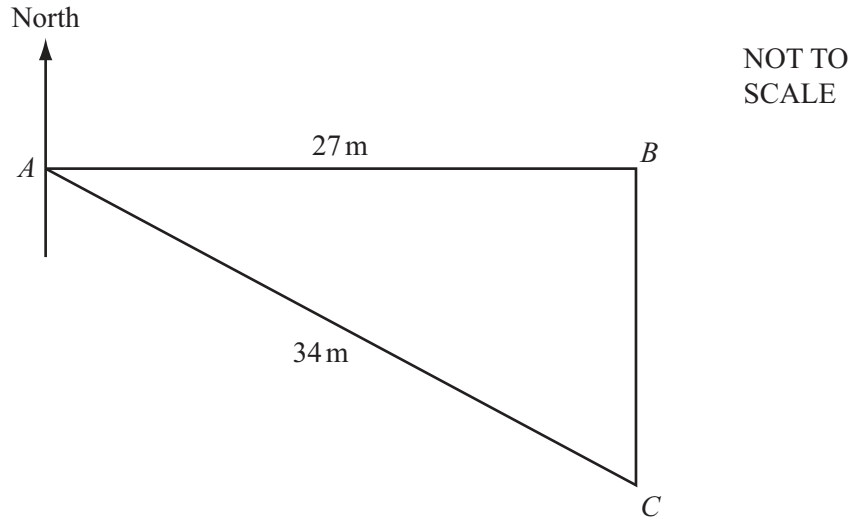
(a) Calculate the area of the circle when the side of the square is 15 cm.

*Answer(a)* ..... cm<sup>2</sup> [2]

(b) Draw all the lines of symmetry on the diagram. [2]

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**Question 22 is printed on the next page.**



In the diagram,  $B$  is 27 metres due east of  $A$ .  
 $C$  is 34 metres from  $A$  and due south of  $B$ .

(a) Using trigonometry, calculate angle  $ACB$ .

*Answer(a)* Angle  $ACB$  = ..... [2]

(b) Find the bearing of  $C$  from  $A$ .

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

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