

- 1 Work out the value of $\frac{48}{19.1 - 3.5 \times 4.6}$.

Answer [1]

- 2 Write the following in order of size, starting with the smallest.

0.83 $\frac{5}{6}$ 82% $\frac{23}{28}$

Answer < < < [2]

- 3 The ferry from Helsinki to Travemunde leaves Helsinki at 17 30 on a Tuesday.
The journey takes 28 hours 45 minutes.

Work out the day and time that the ferry arrives in Travemunde.

Answer Day Time [2]

4 TRIGONOMETRY

From the above word, write down the letters which have

- (a) exactly two lines of symmetry,

Answer(a) [1]

- (b) rotational symmetry of order 2.

Answer(b) [1]

5 The table shows the average monthly temperatures in Beijing.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average temperature (°C)	-4.6	-2.2	4.5	13.1	19.8	24.0	25.8	24.4	19.4	12.4	4.1	-2.7

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(a) Work out how many degrees higher the temperature is in December than in January.

Answer(a) °C [1]

(b) Find the range.

Answer(b) °C [1]

6 $\mathbf{a} = \begin{pmatrix} 5 \\ -3 \end{pmatrix}$ $\mathbf{b} = \begin{pmatrix} -2 \\ 7 \end{pmatrix}$

Work out $3\mathbf{a} + \mathbf{b}$.

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

7

$$1\frac{1}{2} + \frac{1}{3} + \frac{1}{4} = \frac{p}{12}$$

Work out the value of p .

Show all your working.

Answer $p =$ [2]

- 8 A lake has an area of 63 800 000 000 square metres.

Write this area in square kilometres, correct to 2 significant figures.

Answer km² [2]

- 9 (a) Simplify $a^{-3} \times a^8$.

Answer(a) [1]

- (b) Work out the value of 5^{-2} .

Answer(b) [1]

- 10 The number of people, n , who attended a concert was 12 600 to the nearest 100.

Complete the statement about n .

Answer $\leq n <$ [2]

- 11 Keiko travels from Tokyo to London for the Olympic Games.
On the internet, a flight costs £767.

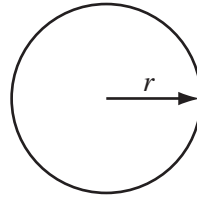
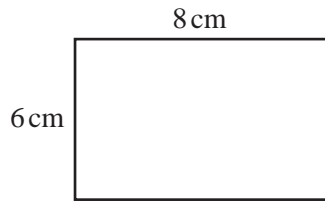
- (a) Use the exchange rate £1 = 143 Japanese Yen to find the cost of the flight in Japanese Yen.

Answer(a) Yen [1]

- (b) Write your answer to **part (a)** in standard form.

Answer(b) [1]

12

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The perimeter of the rectangle is the same length as the circumference of the circle.

Calculate the radius, r , of the circle.

Answer $r =$ cm [3]

13 (a) Factorise $xy - y^2$.

Answer(a) [1]

(b) Solve $4x - 7 = 12$.

Answer(b) $x =$ [2]

14 Scatter diagrams are drawn to compare sets of data from each team in a hockey league during a year.

Write down the type of correlation you would expect to see when the data recorded is

(a) the number of games won and the total points scored,

Answer(a) [1]

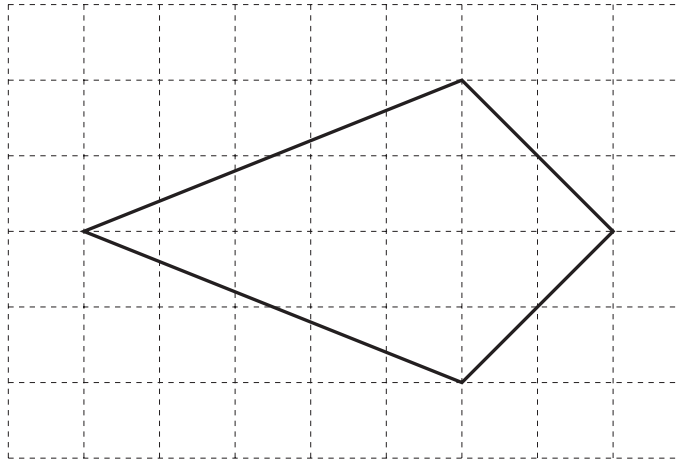
(b) the number of games drawn and the average height of the team,

Answer(b) [1]

(c) the number of goals scored and the final position in the league.

Answer(c) [1]

15



The diagram shows a quadrilateral drawn on a 1 cm square grid.

(a) Write down the mathematical name of the quadrilateral.

Answer(a) [1]

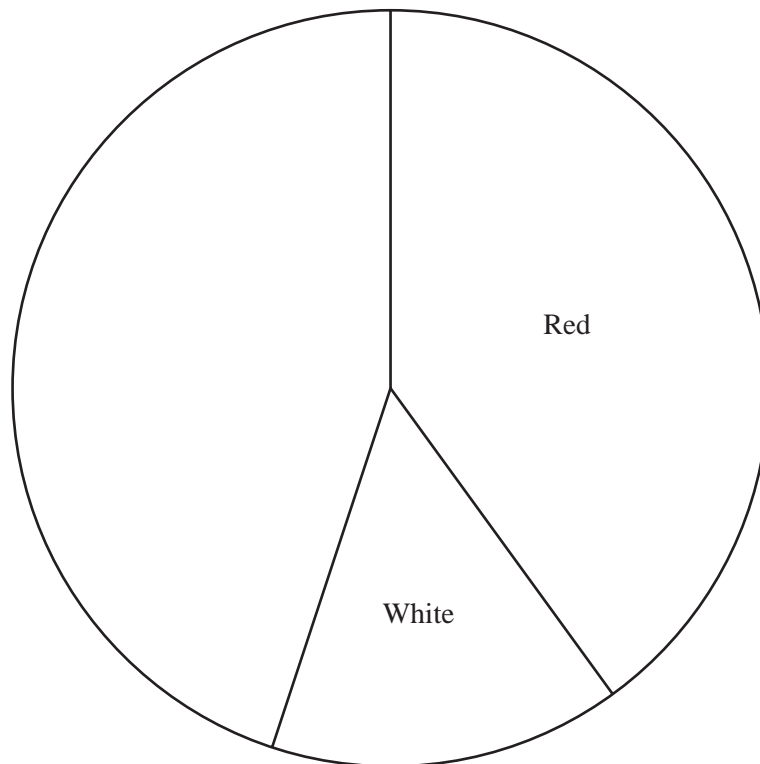
(b) Find the area of the quadrilateral and give the units.

Answer(b) [2]

16 The shirt colour of the teams in a football league are shown in the following table.

Colour	Frequency
Red	8
White	3
Blue	7
Gold	2

The pie chart shows some of this information.
The sectors for red shirts and white shirts have been drawn.



(a) Calculate the angle of the sector for blue shirts.

Answer(a) [2]

(b) Complete the pie chart. [1]

17 Solve the simultaneous equations.

$$\begin{aligned} 6x + 2y &= 22 \\ 4x - y &= 3 \end{aligned}$$

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Answer $x =$
 $y =$ [3]

18 The taxi fare in a city is \$3 **and** then \$0.40 for every kilometre travelled.

(a) A taxi fare is \$9.

How far has the taxi travelled?

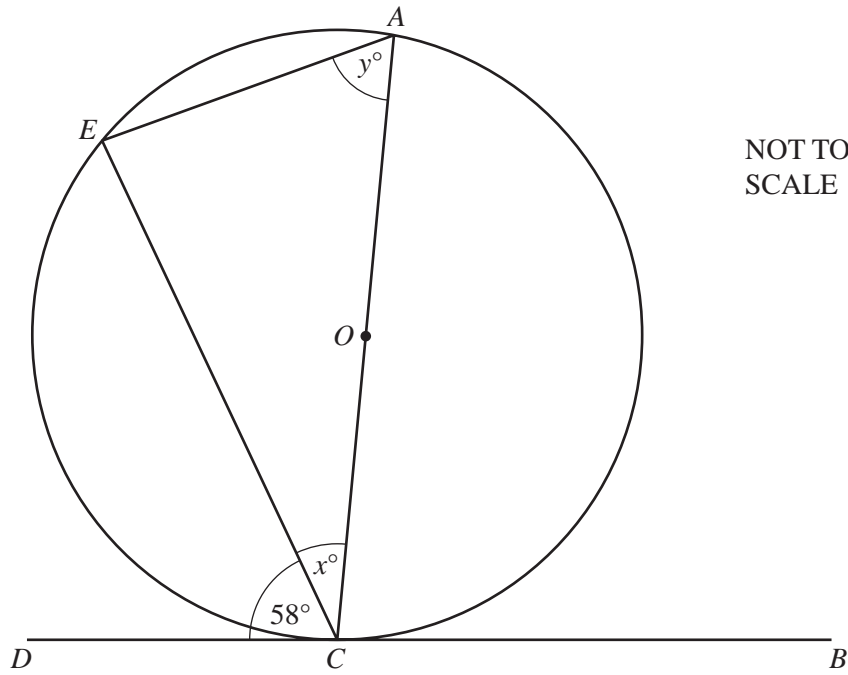
Answer(a) km [2]

(b) Taxi fares cost 30% more at night.

How much does a \$9 daytime journey cost at night?

Answer(b) \$ [2]

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AC is a diameter of a circle, centre O .
 BCD is a tangent to the circle and E is a point on the circumference.
 Angle $ECD = 58^\circ$.

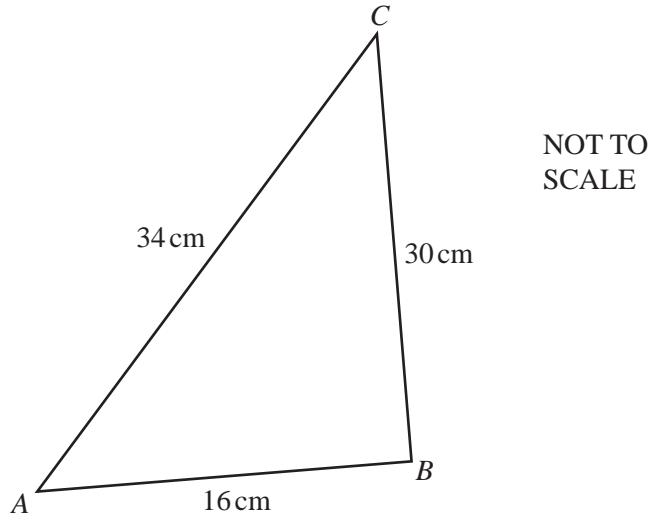
Work out the value of

(a) x ,

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

(b) y .

Answer(b) $y = \dots\dots\dots$ [2]



(a) Write down all your working to show that angle ABC is a right angle.

Answer(a)

[2]

(b) Use trigonometry to calculate angle CAB .

Answer(b) Angle $CAB = \dots\dots\dots$ [2]

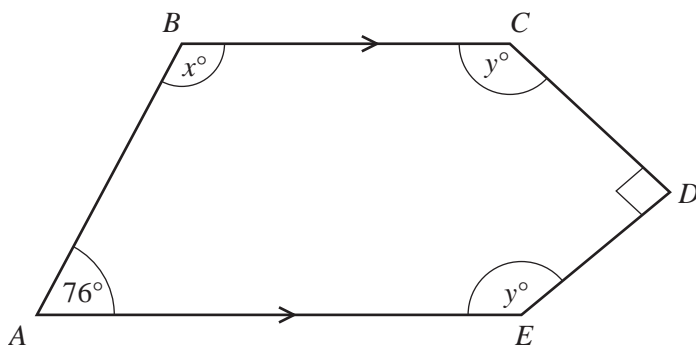
21 (a) Show that the sum of the interior angles of a regular pentagon is 540° .

Answer(a)

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[2]

(b)



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The diagram shows a pentagon $ABCDE$.
 BC is parallel to AE and angle CDE is a right angle.

Find the values of x and y .

Answer(b) $x =$

$y =$ [3]

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