



1 Write 30 000 000 in words.

..... [1]

2 Write down the temperature which is  $5^{\circ}\text{C}$  below  $-2^{\circ}\text{C}$ .

.....  $^{\circ}\text{C}$  [1]

3 Write  $\$0.70$  as a fraction of  $\$5.60$ , giving your answer in its lowest terms.

..... [1]

4 Write 0.040 190 7 correct to

(a) 3 significant figures,

..... [1]

(b) 3 decimal places.

..... [1]

5 In triangle  $ABC$ ,  $AB = 7\text{ cm}$ ,  $BC = 4\text{ cm}$  and  $AC = 6\text{ cm}$ .

**Using a ruler and compasses only**, construct triangle  $ABC$ .  
The side  $BC$  has been drawn for you.



[2]

6 Write the following in order of size, smallest first.

$$\frac{7}{12} \quad \sqrt{0.33} \quad 58\% \quad \frac{18}{31} \quad 0.59$$

..... < ..... < ..... < ..... < ..... [2]  
*smallest*

7  $\mathbf{a} = \begin{pmatrix} 5 \\ -6 \end{pmatrix}$        $\mathbf{b} = \begin{pmatrix} -2 \\ 4 \end{pmatrix}$

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

$\begin{pmatrix} \phantom{0} \\ \phantom{0} \end{pmatrix}$  [2]

8 Work out  $\frac{2}{3} - \frac{1}{4}$ , giving your answer as a fraction in its lowest terms.

Do not use a calculator and show all the steps of your working.

..... [2]

9 A circular pool has radius 8 m.

Calculate the circumference of the pool.

..... m [2]

- 10  $\frac{2}{9}$  of an amount is 48.

Calculate the original amount.

..... [2]

11

## E L E P H A N T

Francesca chooses a letter at random from this word.

- (a) Write down the letter she is most likely to choose.

..... [1]

- (b) Write down the probability that she chooses the letter R.

..... [1]

- 12 Write down the type of correlation there is between

- (a) the number of litres of fuel used by a car and the distance it travels,

..... [1]

- (b) the test score of a student and their shoe size.

..... [1]

- 13 Eleven children attempt to solve a puzzle.  
This list shows the number of attempts each child made.

7 6 8 5 6 5 7 8 3 8 1

- (a) Write down the mode.

..... [1]

- (b) Find the median.

..... [2]

14 Calculate.

(a)  $\frac{4}{5}$  of 90

..... [1]

(b)  $\frac{7.1 \times 4.8}{15.3 - 9.62}$

..... [1]

(c)  $\sqrt[3]{4913}$

..... [1]

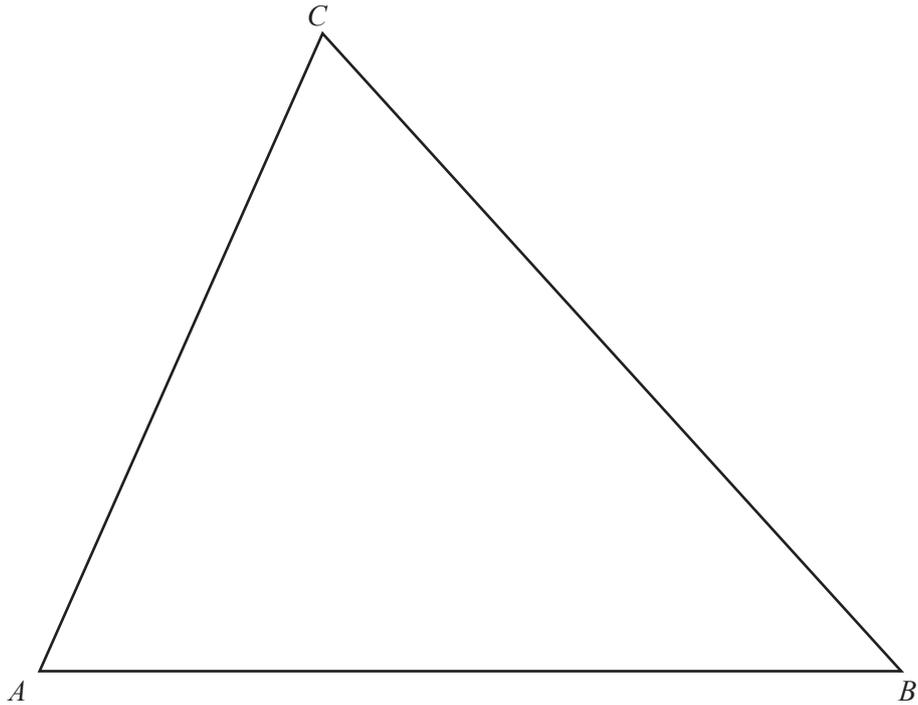
15 Solve the simultaneous equations.  
You must show all your working.

$$\begin{aligned} 2x + 3y &= 13 \\ x + 2y &= 9 \end{aligned}$$

$x =$  .....

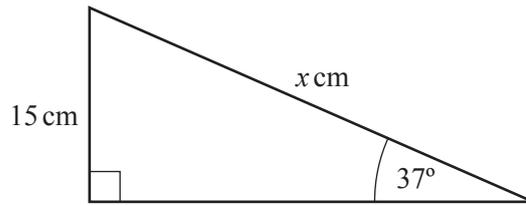
$y =$  ..... [3]

16



- (a) Construct the locus of points, inside the triangle, that are 5 cm from  $B$ . [1]
- (b) Construct the locus of points, inside the triangle, that are equidistant from  $AB$  and  $BC$ . [2]
- (c) Shade the region, inside the triangle, containing points that are
- more than 5 cm from  $B$
- and
- nearer to  $AB$  than to  $BC$ .
- [1]

17

NOT TO  
SCALE

Using trigonometry, calculate the value of  $x$ .

$x = \dots\dots\dots$  [3]

18 Find the  $n$ th term of each sequence.

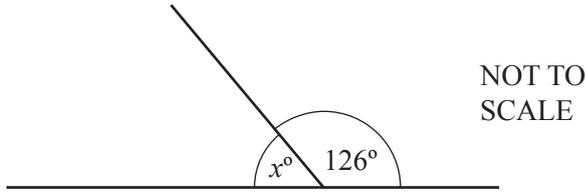
(a) 7, 13, 19, 25, 31, ...

$\dots\dots\dots$  [2]

(b) 9, 16, 25, 36, 49, ...

$\dots\dots\dots$  [2]

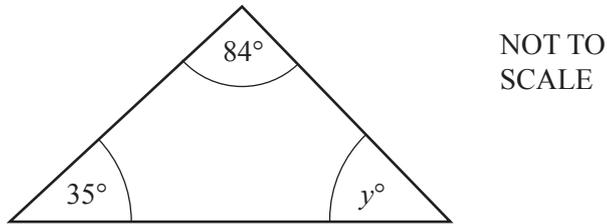
19 (a)



Work out the value of  $x$ .

$x = \dots\dots\dots$  [1]

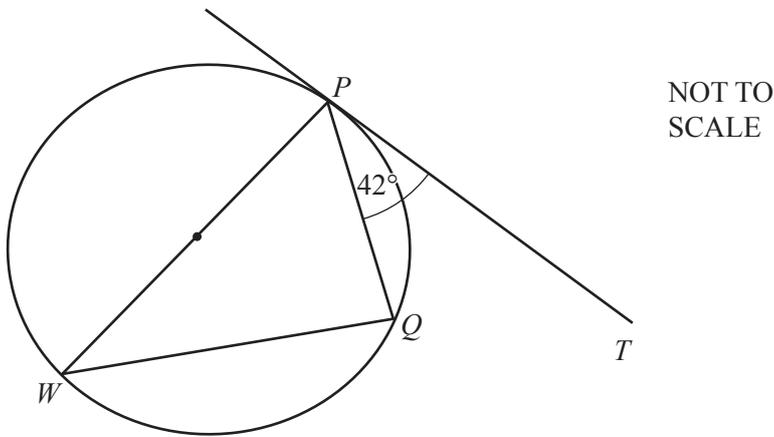
(b)



Work out the value of  $y$ , giving a reason for your answer.

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

(c)



In the diagram,  $PT$  is a tangent to the circle at  $P$ .  
 $PW$  is a diameter and angle  $TPQ = 42^\circ$ .

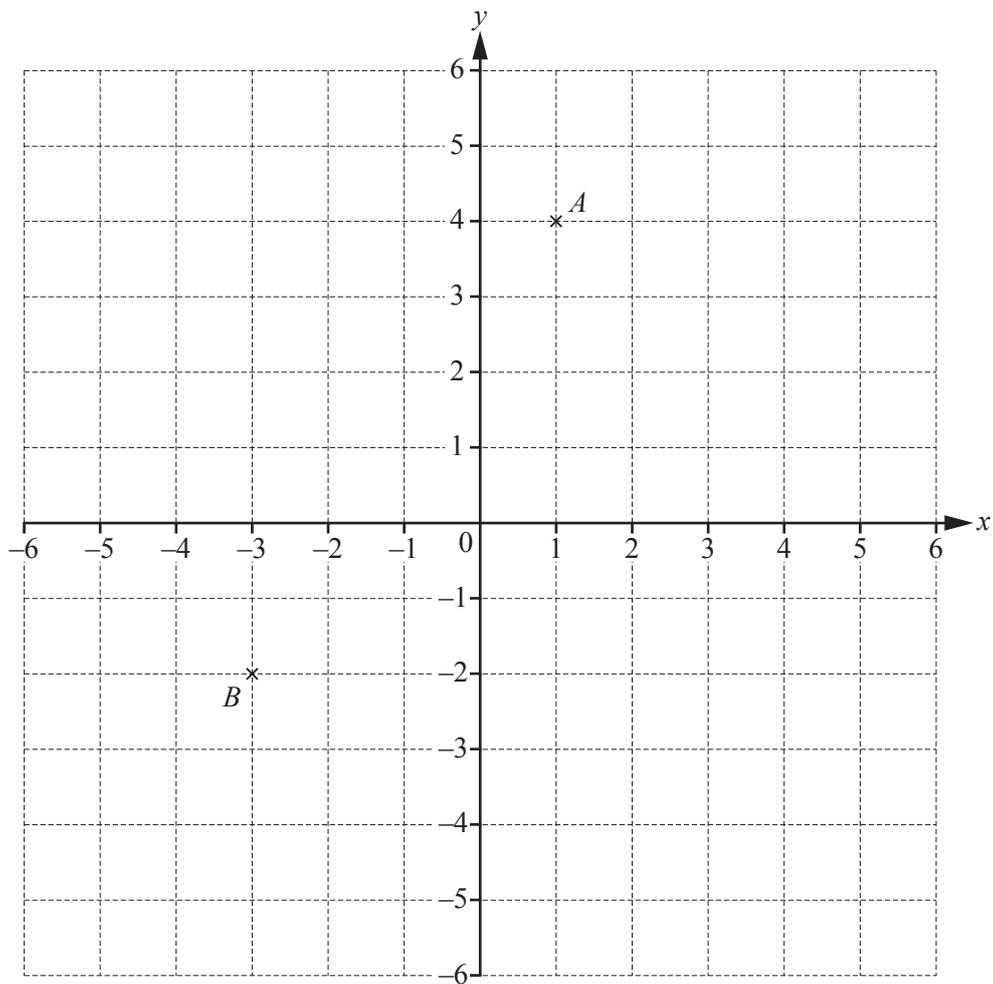
Find

(i) angle  $WPQ$ ,

Angle  $WPQ = \dots\dots\dots$  [1]

(ii) angle  $PWQ$ .

Angle  $PWQ = \dots\dots\dots$  [1]



- (a) Write down the co-ordinates of point  $A$ .  
 (..... , ..... ) [1]
- (b) Plot the point  $(5, -2)$ .  
 Label this point  $C$ . [1]
- (c) Write down the mathematical name of triangle  $ABC$ .  
 ..... [1]
- (d) Write  $\vec{AB}$  as a column vector.  

$$\vec{AB} = \begin{pmatrix} \phantom{0} \\ \phantom{0} \end{pmatrix}$$
 [1]
- (e)  $\vec{BD} = \begin{pmatrix} -2 \\ 5 \end{pmatrix}$   
 Write down the co-ordinates of point  $D$ .  
 (..... , ..... ) [1]

21 (a) Solve the equation.

$$4x + 3 = 11$$

$$x = \dots\dots\dots [2]$$

(b) Make  $x$  the subject of the formula  $y = 4x^2 - 2$ .

$$x = \dots\dots\dots [3]$$



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