



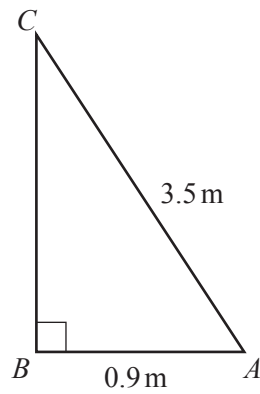
1 Solve  $(x - 7)(x + 4) = 0$ .

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

2 Factorise  $2x - 4xy$ .

$\dots\dots\dots$  [2]

3



NOT TO  
SCALE

Calculate angle  $BAC$ .

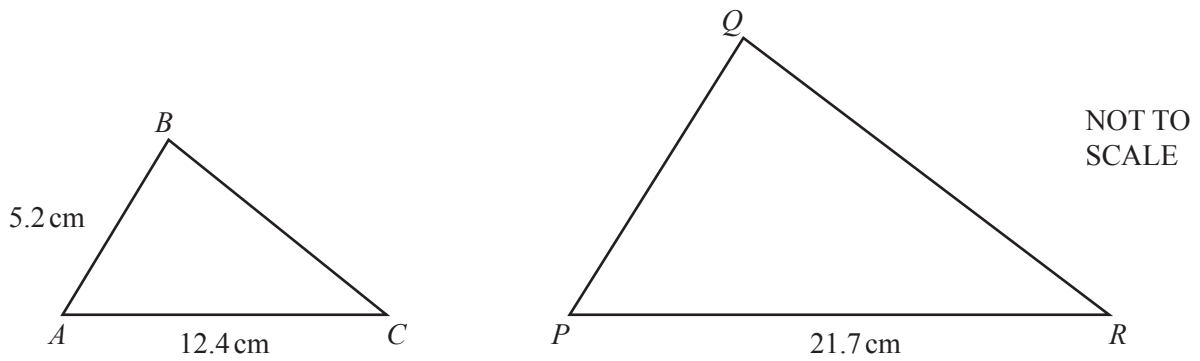
Angle  $BAC = \dots\dots\dots$  [2]

4 Solve the inequality.

$$6n + 3 > 8n$$

$\dots\dots\dots$  [2]

- 5 Triangle  $ABC$  is similar to triangle  $PQR$ .



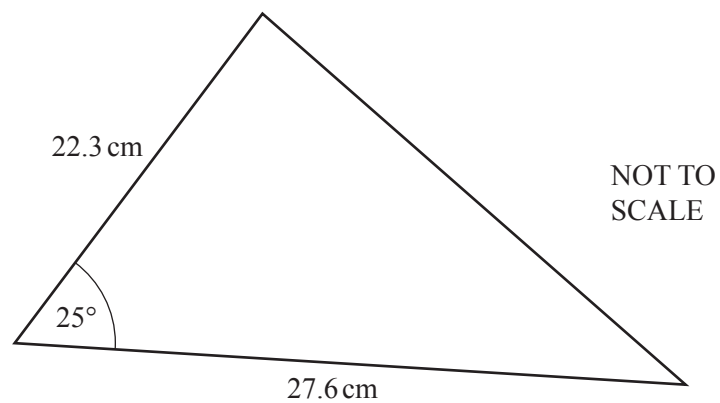
Find  $PQ$ .

$$PQ = \dots\dots\dots \text{ cm [2]}$$

- 6 Write the recurring decimal  $0.\dot{4}$  as a fraction.  
[ $0.\dot{4}$  means  $0.444\dots$ ]

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

7



Calculate the area of this triangle.

$$\dots\dots\dots \text{ cm}^2 [2]$$

- 8 Find the inverse of the matrix  $\begin{pmatrix} 3 & -2 \\ -8 & 7 \end{pmatrix}$ .

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

- 9 **Without using your calculator**, work out  $1\frac{7}{12} + \frac{13}{20}$ .

You must show all your working and give your answer as a mixed number in its simplest form.

..... [3]

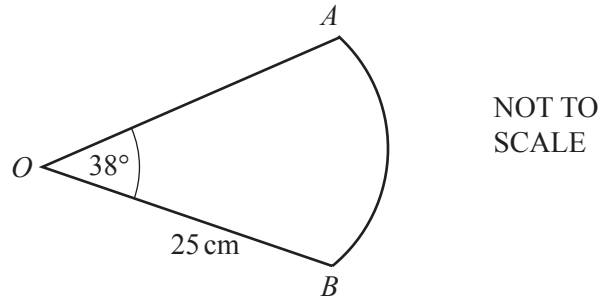
- 10 The scale on a map is 1 : 20 000.  
The area of a lake on the map is 1.6 square centimetres.

Calculate the actual area of the lake.

Give your answer in square metres.

.....m<sup>2</sup> [3]

11



The diagram shows a sector of a circle, centre  $O$ , radius  $25\text{ cm}$ .  
The sector angle is  $38^\circ$ .

Calculate the length of the arc  $AB$ .  
Give your answer correct to 4 significant figures.

$AB = \dots\dots\dots\text{ cm [3]}$

- 12** A metal pole is  $500\text{ cm}$  long, correct to the nearest centimetre.  
The pole is cut into rods each of length  $5.8\text{ cm}$ , correct to the nearest millimetre.

Calculate the largest number of rods that the pole can be cut into.

$\dots\dots\dots [3]$

**13 (a)** Write 2016 as the product of prime factors.

..... [3]

**(b)** Write 2016 in standard form.

..... [1]

**14** Simplify.

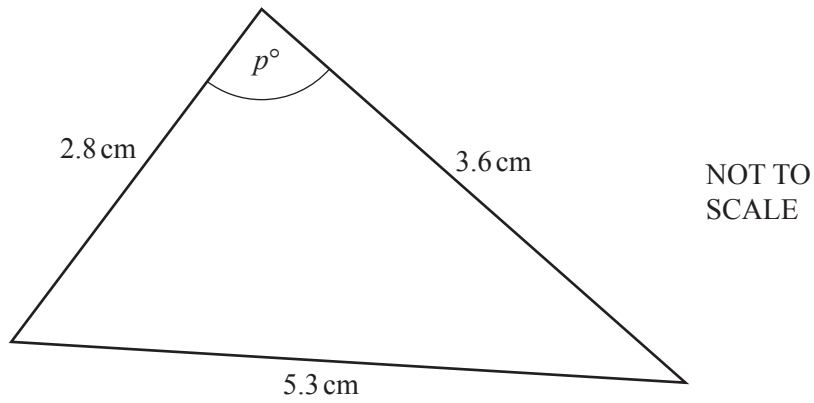
**(a)**  $x^3y^4 \times x^5y^3$

..... [2]

**(b)**  $(3p^2m^5)^3$

..... [2]

15



Find the value of  $p$ .

$p = \dots\dots\dots$  [4]

- 16** Raj measures the height,  $h$  cm, of 70 plants.  
The table shows the information.

| Height ( $h$ cm) | $10 < h \leq 20$ | $20 < h \leq 40$ | $40 < h \leq 50$ | $50 < h \leq 60$ | $60 < h \leq 90$ |
|------------------|------------------|------------------|------------------|------------------|------------------|
| Frequency        | 7                | 15               | 27               | 13               | 8                |

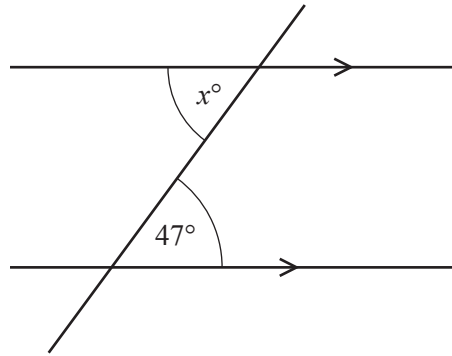
Calculate an estimate of the mean height of the plants.

$\dots\dots\dots$  cm [4]

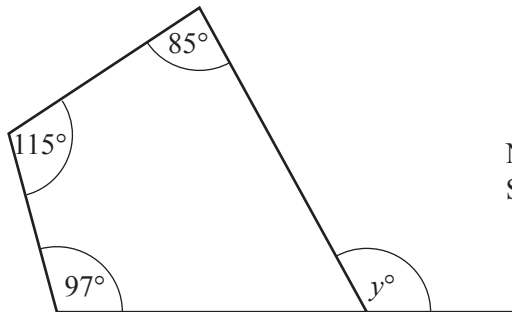
- 17 Solve the equation  $3x^2 - 11x + 4 = 0$ .  
Show all your working and give your answers correct to 2 decimal places.

$x = \dots\dots\dots$  or  $x = \dots\dots\dots$  [4]

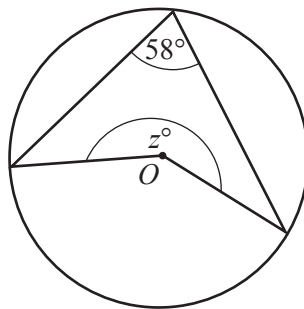
18 (a)

NOT TO  
SCALEFind the value of  $x$ . $x = \dots\dots\dots [1]$ 

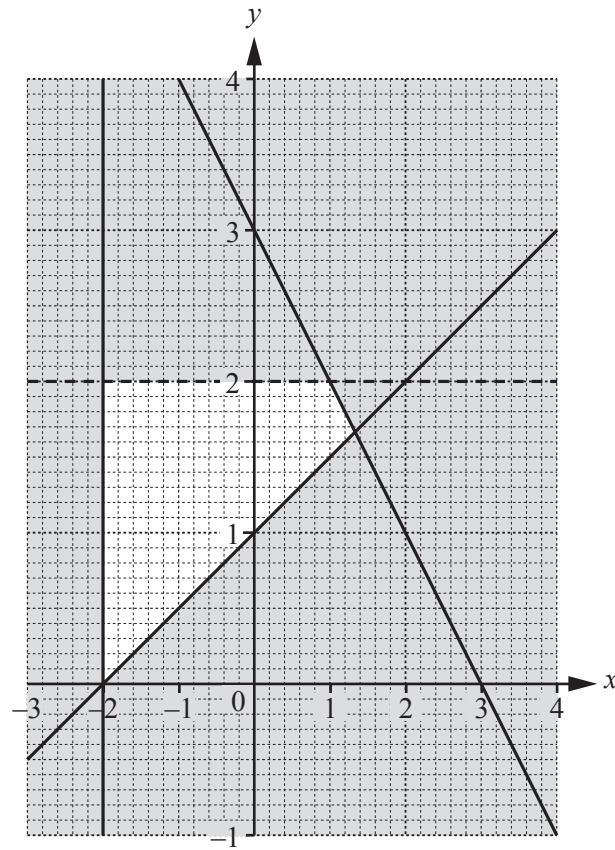
(b)

NOT TO  
SCALEFind the value of  $y$ . $y = \dots\dots\dots [2]$ 

(c)

NOT TO  
SCALEThe diagram shows a circle, centre  $O$ .Find the value of  $z$ . $z = \dots\dots\dots [2]$

19



Find the four inequalities that define the region that is **not** shaded.

.....  
 .....  
 .....  
 ..... [5]

**20** The  $n$ th term of a sequence is  $an^2 + bn$ .

- (a) Write down an expression, in terms of  $a$  and  $b$ , for the 3rd term.

..... [1]

- (b) The 3rd term of this sequence is 21 and the 6th term is 96.

Find the value of  $a$  and the value of  $b$ .

You must show all your working.

$a =$  .....

$b =$  ..... [4]

**Question 21 is printed on the next page.**

- 21 Dan either walks or cycles to school.  
The probability that he cycles to school is  $\frac{1}{3}$ .

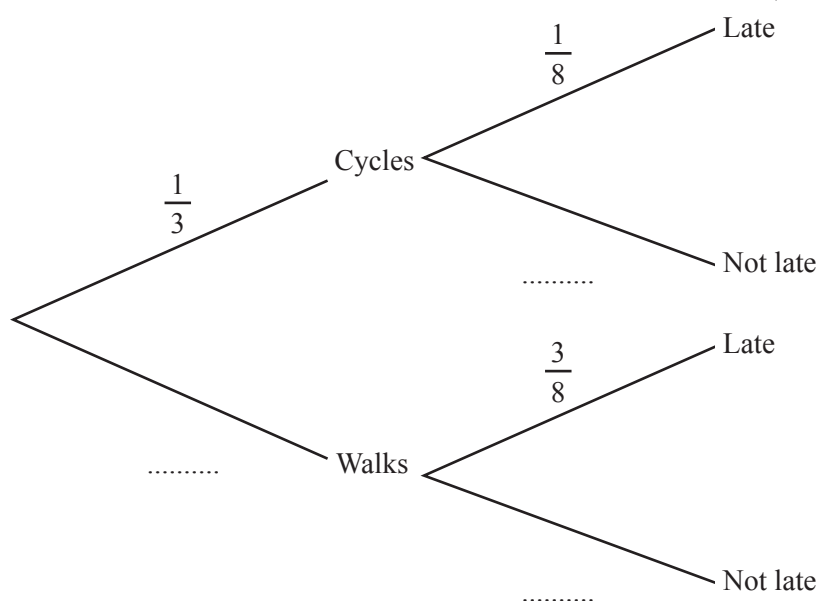
(a) Write down the probability that Dan walks to school.

..... [1]

(b) When Dan cycles to school the probability that he is late is  $\frac{1}{8}$ .

When Dan walks to school the probability that he is late is  $\frac{3}{8}$ .

Complete the tree diagram.



[2]

(c) Calculate the probability that

(i) Dan cycles to school and is late,

..... [2]

(ii) Dan is not late.

..... [3]

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