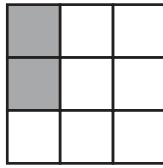




- 1 Shade two more squares so that this pattern has rotational symmetry of order 2.



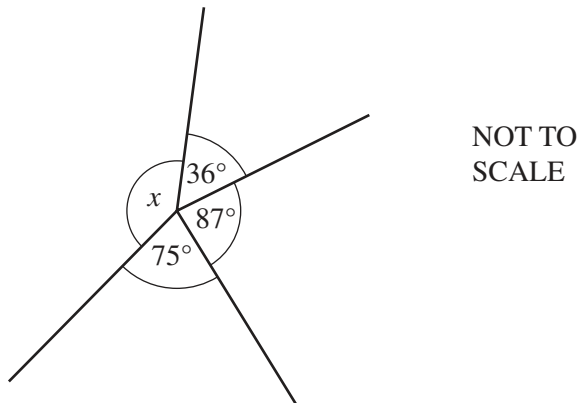
[1]

- 2 Write three hundredths as a decimal.

Answer .....

[1]

3



- (a) Find angle  $x$ .

Answer(a) Angle  $x = \dots\dots\dots$  [1]

- (b) What type of angle is  $x$ ?

Answer(b) .....

[1]

4 A football ground seats 28 750 people when it is full.

(a) Write 28 750 correct to the nearest thousand.

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

(b) One day 17 250 people attended a football match.

Work out 17 250 as a percentage of 28 750.

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

5 Solve the following equations.

(a)  $x + 9 = 16$

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

(b)  $6y = 27$

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

6 On a mountain, the temperature decreases by  $6.5^{\circ}\text{C}$  for every 1000 metres increase in height.  
At 2000 metres the temperature is  $10^{\circ}\text{C}$ .

Find the temperature at 6000 metres.

Answer .....  $^{\circ}\text{C}$  [2]

- 7 Simplify the following expression.

$$3j - 4k - 2 + 5j + k - 6$$

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Answer ..... [2]

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- 8 The train fare from Bangkok to Chiang Mai is 768 baht.  
The exchange rate is £1 = 48 baht.

Calculate the train fare in pounds (£).

Answer £ ..... [2]

---

- 9 Use your calculator to find the value of

$$\frac{8.1^2 + 6.2^2 - 4.3^2}{2 \times 8.1 \times 6.2}$$

Answer ..... [2]

---

10 (a) Write 230 000 in standard form.

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

(b) Write  $4.8 \times 10^{-4}$  as an ordinary number.

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

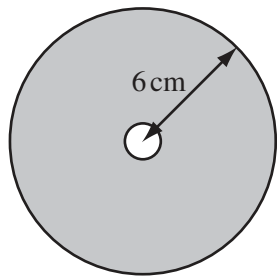
11 Write down all your working to show that the following statement is correct.

$$\frac{1 + \frac{8}{9}}{2 + \frac{1}{2}} = \frac{34}{45}$$

Answer

[2]

12



NOT TO  
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The diagram shows a circular disc with radius 6 cm.  
In the centre of the disc there is a circular hole with radius 0.5 cm.

Calculate the area of the shaded section.

Answer ..... cm<sup>2</sup> [3]

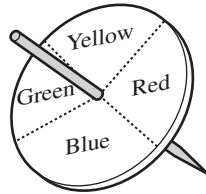
- 13 (a) Factorise  $9y + 12$ .

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

- (b) Expand  $a(a^2 - 7)$ .

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

- 14 Ying spins a spinner 75 times.  
The table shows her results.



Colour	Red	Blue	Green	Yellow
Frequency	17	24	20	14

- (a) Write down the relative frequency of the spinner stopping on blue.

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

- (b) Tony spins the **same** spinner 450 times.

Find the expected number of times the spinner stops on yellow.

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

- 15 The table shows how 45 students each travel to college.

Method of travel	Walk	Bus	Cycle
Frequency	20	18	7

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This information can be displayed in a pie chart.

- (a) Show that the sector angle for students who walk is  $160^\circ$ .

*Answer(a)*

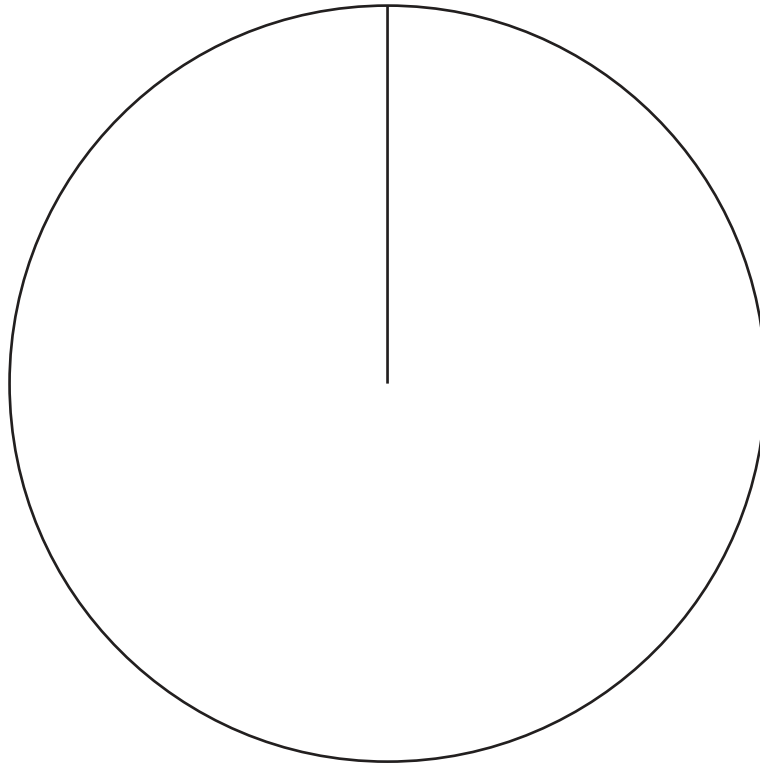
[1]

- (b) Calculate the sector angle for students who travel by bus.

*Answer(b)* .....

[1]

- (c) Complete the pie chart and label the sectors.



[2]

$$16 \quad \mathbf{p} = \begin{pmatrix} 0 \\ 9 \end{pmatrix} \quad \mathbf{q} = \begin{pmatrix} 3 \\ -5 \end{pmatrix} \quad \mathbf{r} = \begin{pmatrix} -4 \\ 3 \end{pmatrix}$$

Calculate

(a)  $7\mathbf{p}$ ,

*Answer(a)*  $\begin{pmatrix} \phantom{0} \\ \phantom{0} \end{pmatrix}$  [2]

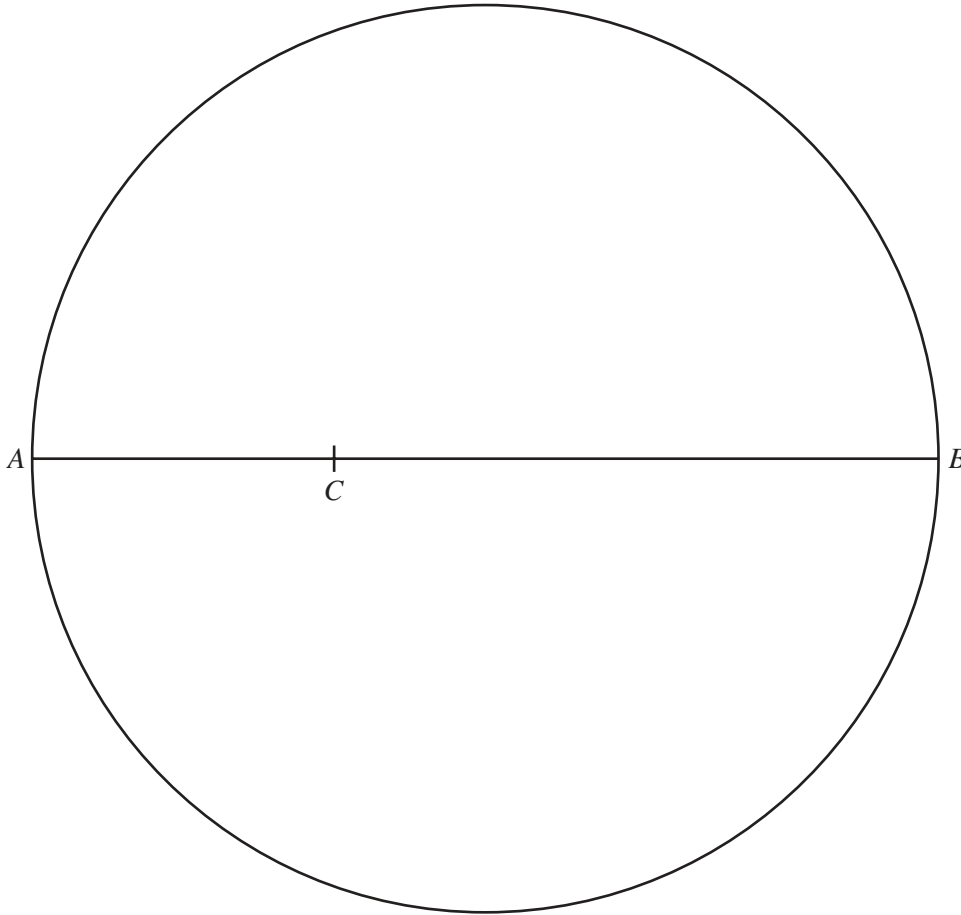
(b)  $\mathbf{q} - \mathbf{r}$ .

*Answer(b)*  $\begin{pmatrix} \phantom{0} \\ \phantom{0} \end{pmatrix}$  [2]

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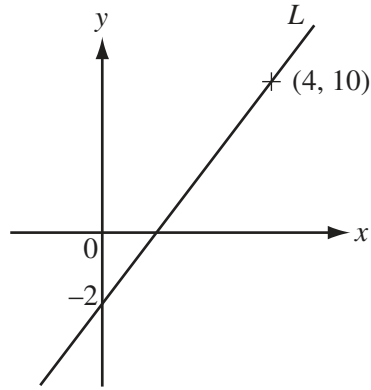
$AB$  is the diameter of a circle.  
 $C$  is a point on  $AB$  such that  $AC = 4$  cm.

**(a) Using a straight edge and compasses only**, construct

- (i) the locus of points which are equidistant from  $A$  and from  $B$ , [2]  
 (ii) the locus of points which are 4 cm from  $C$ . [1]

**(b)** Shade the region in the diagram which is

- and**
- nearer to  $B$  than to  $A$
  - less than 4 cm from  $C$ . [1]



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Line  $L$  passes through the point  $(4, 10)$ .

(a) Find the gradient of line  $L$ .

Answer(a) ..... [2]

(b) Write down the equation of line  $L$ , in the form  $y = mx + c$ .

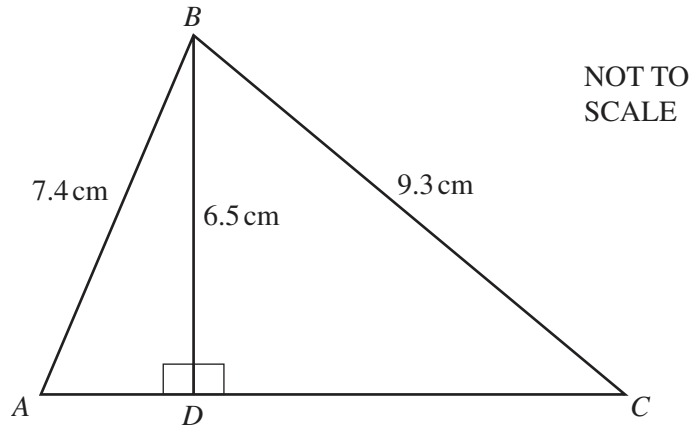
Answer(b)  $y =$  ..... [1]

(c) Line  $P$  passes through the point  $(0, 0)$ .  
Line  $P$  is parallel to line  $L$ .

Write down the equation of line  $P$ .

Answer(c)  $y =$  ..... [1]

19



(a) Calculate  $AD$ .

Answer(a)  $AD = \dots\dots\dots$  cm [3]

(b) Use trigonometry to calculate angle  $BCD$ .

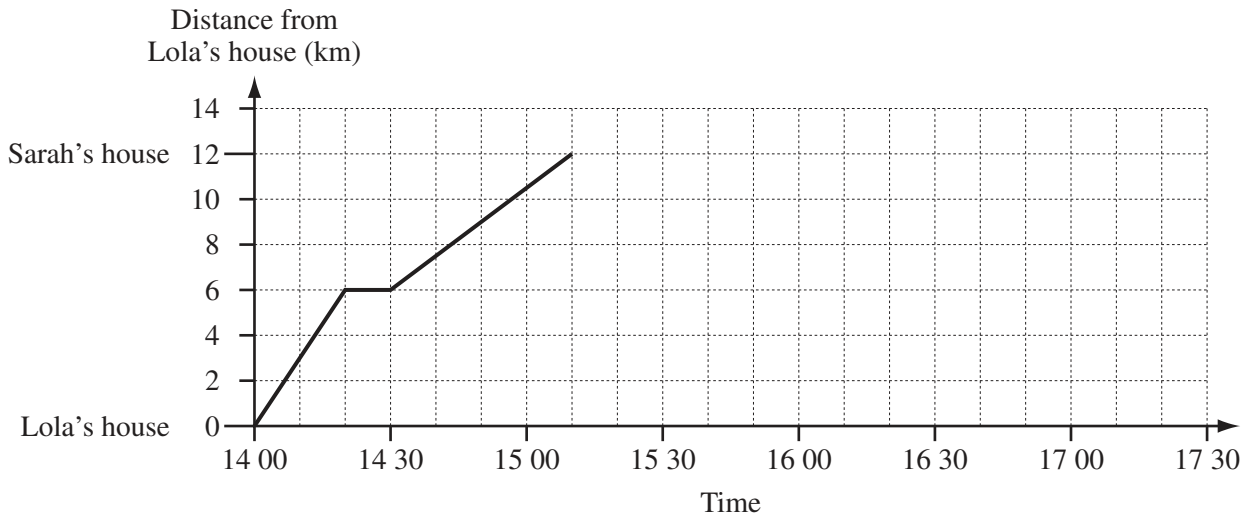
Answer(b) Angle  $BCD = \dots\dots\dots$  [2]

Question 20 is printed on the next page.

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20

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The travel graph shows Lola's journey from her house to Sarah's house.

(a) Lola stopped at a shop on the way to Sarah's house.

For how many minutes did she stop?

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

(b) Write down the time she arrived at Sarah's house.

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

(c) Calculate Lola's average speed from leaving the **shop** to arriving at Sarah's house.  
Give your answer in kilometres per hour.

Answer(c) ..... km/h [2]

(d) Lola stayed at Sarah's house for 1 hour 20 minutes.  
She then cycled home without stopping.  
Her journey took 50 minutes.

Complete the travel graph. [2]

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