

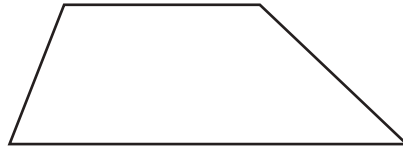
1 Write down the difference in temperature between 8°C and -9°C .

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

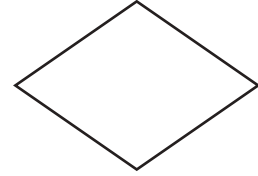
2



Parallelogram



Trapezium



Rhombus

Write down which one of these shapes has

- rotational symmetry of order 2
- and**
- no line symmetry.

Answer [1]

3 Carlos changed \$950 into euros (€) when the exchange rate was $\text{€}1 = \$1.368$.

Calculate how many euros Carlos received.

Answer € [2]

4 $\vec{AB} = \begin{pmatrix} -3 \\ 5 \end{pmatrix}$

Find $|\vec{AB}|$.

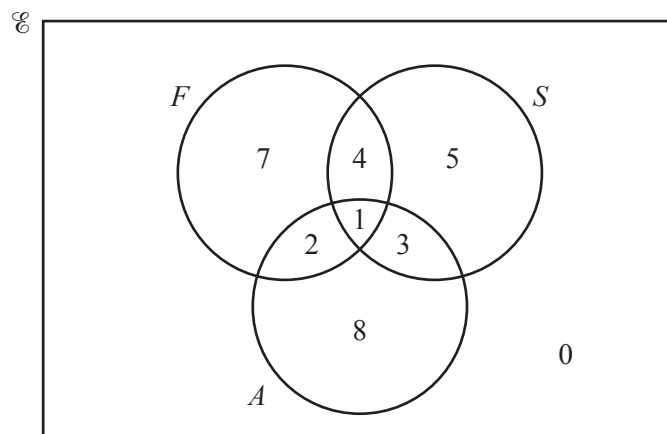
Answer [2]

5 Calculate the volume of a hemisphere with radius 5 cm.

[The volume, V , of a sphere with radius r is $V = \frac{4}{3}\pi r^3$.]

Answer cm^3 [2]

6 The Venn diagram shows the number of students who study French (F), Spanish (S) and Arabic (A).



(a) Find $n(A \cup (F \cap S))$.

Answer(a) [1]

(b) On the Venn diagram, shade the region $F' \cap S$. [1]

7

$$\mathbf{M} = \begin{pmatrix} 3 & -4 \\ -2 & 4 \end{pmatrix}$$

$$\mathbf{N} = \begin{pmatrix} 5 & 0 \\ 1 & 2 \end{pmatrix}$$

Calculate \mathbf{MN} .

Answer $\left(\begin{array}{cc} & \\ & \end{array} \right)$ [2]

- 8 Robert buys a car for \$8000.
At the end of each year the value of the car has decreased by 10% of its value at the beginning of that year.

Calculate the value of the car at the end of 7 years.

Answer \$ [2]

- 9 The scale on a map is 1 : 50 000.
The area of a field on the map is 1.2 square centimetres.

Calculate the actual area of the field in square kilometres.

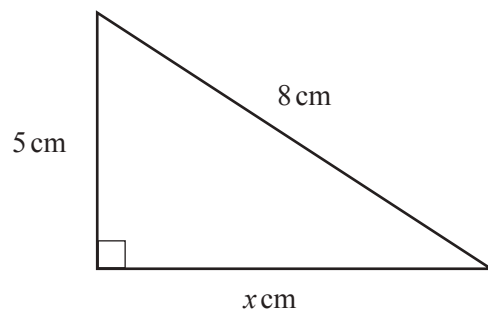
Answer km² [2]

- 10 Jason receives some money for his birthday.
He spends $\frac{11}{15}$ of the money and has \$14.40 left.

Calculate how much money he received for his birthday.

Answer \$ [3]

11



NOT TO
SCALE

Calculate the value of x .

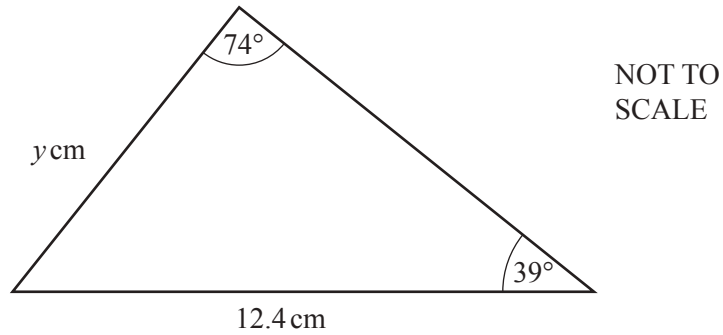
Answer $x =$ [3]

- 12 Without using your calculator, work out $2\frac{1}{4} - \frac{11}{12}$.

You must show all your working and give your answer as a fraction in its lowest terms.

Answer [3]

13



Calculate the value of y .

Answer $y = \dots\dots\dots$ [3]

- 14 Jasjeet and her brother collect stamps.
When Jasjeet gives her brother 1% of her stamps, she has 2475 stamps left.

Calculate how many stamps Jasjeet had originally.

Answer $\dots\dots\dots$ [3]

15 Factorise

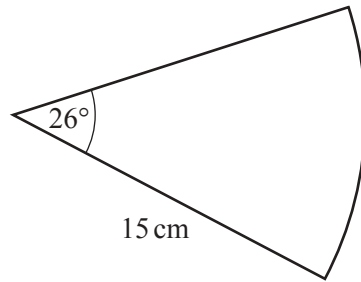
(a) $9w^2 - 100$,

Answer(a) $\dots\dots\dots$ [1]

(b) $mp + np - 6mq - 6nq$.

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

16

NOT TO
SCALE

The diagram shows a sector of a circle with radius 15 cm.

Calculate the perimeter of this sector.

Answer cm [3]

- 17 y is directly proportional to the square of $(x - 1)$.
 $y = 63$ when $x = 4$.

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

Answer $y =$ [3]

- 18 A rectangle has length 5.8 cm and width 2.4 cm, both correct to 1 decimal place.

Calculate the lower bound and the upper bound of the perimeter of this rectangle.

Answer Lower bound cm

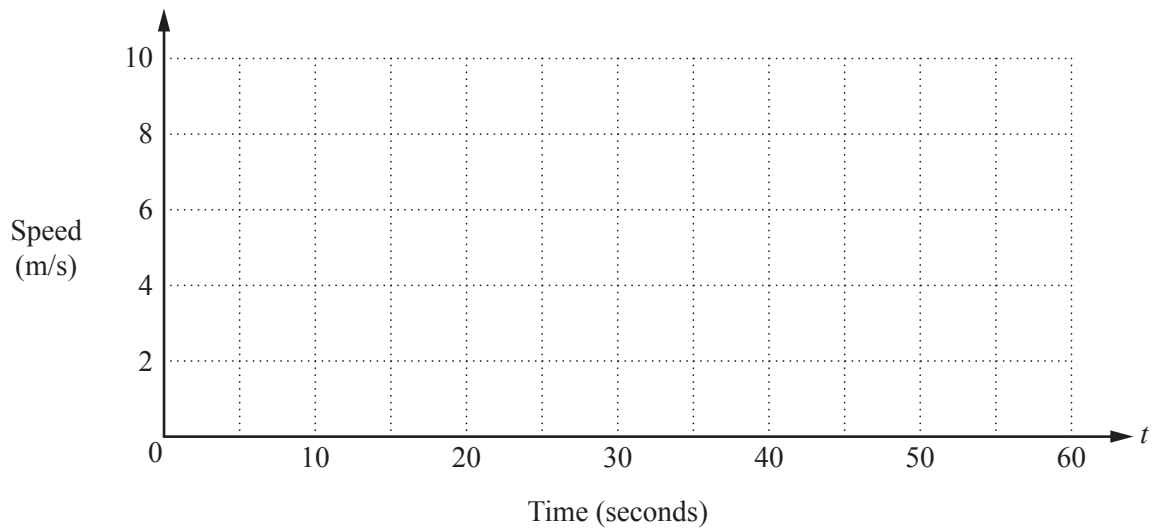
Upper bound cm [3]

- 19 Solve the equation $5x^2 - 6x - 3 = 0$.
Show all your working and give your answers correct to 2 decimal places.

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

- 20 A car passes through a checkpoint at time $t = 0$ seconds, travelling at 8 m/s.
It travels at this speed for 10 seconds.
The car then decelerates at a constant rate until it stops when $t = 55$ seconds.

- (a) On the grid, draw the speed-time graph.

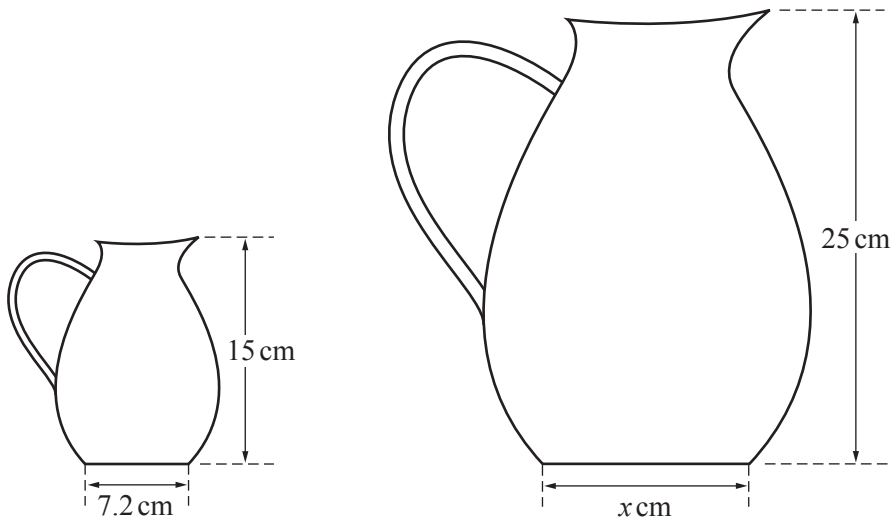


[2]

- (b) Calculate the total distance travelled by the car after passing through the checkpoint.

Answer(b) $\dots\dots\dots$ m [3]

21 (a)



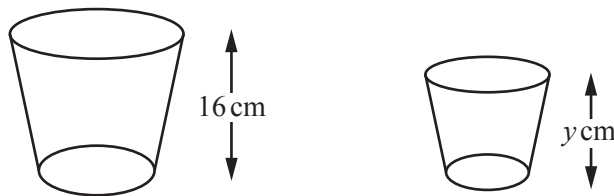
NOT TO SCALE

The diagram shows two jugs that are mathematically similar.

Find the value of x .

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

(b)



NOT TO SCALE

The diagram shows two glasses that are mathematically similar.
 The height of the larger glass is 16 cm and its volume is 375 cm^3 .
 The height of the smaller glass is $y \text{ cm}$ and its volume is 192 cm^3 .

Find the value of y .

Answer(b) $y = \dots\dots\dots$ [3]

- 22 The table shows information about the numbers of pets owned by 24 students.

Number of pets	0	1	2	3	4	5	6
Frequency	1	2	3	5	7	3	3

- (a) Calculate the mean number of pets.

Answer(a) [3]

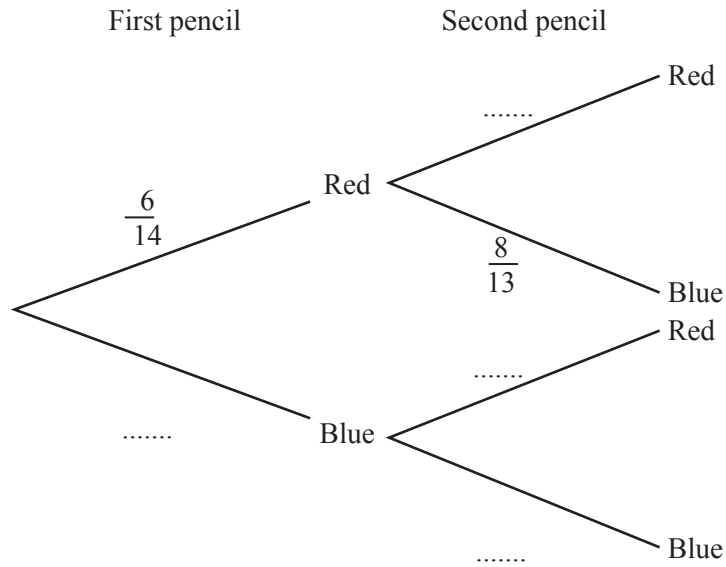
- (b) Jennifer joins the group of 24 students.
When the information for Jennifer is added to the table, the new mean is 3.44 .

Calculate the number of pets that Jennifer has.

Answer(b) [3]

- 23 A box contains 6 red pencils and 8 blue pencils. A pencil is chosen at random and not replaced. A second pencil is then chosen at random.

(a) Complete the tree diagram.



[2]

(b) Calculate the probability that

(i) both pencils are red,

Answer(b)(i) [2]

(ii) at least one of the pencils is red.

Answer(b)(ii) [3]

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