

1 Write 168.9 correct to 2 significant figures.

Answer [1]

2 Calculate $\frac{2.07 - 1.89}{5.71 - 3.92}$.

Answer [1]

3 Write 1.7×10^{-4} as an ordinary number.

Answer [1]

4 The probability that it will rain on any day is $\frac{1}{5}$.

Calculate an estimate of the number of days it will rain in a month with 30 days.

Answer [1]

5 11 12 13 14 15 16

From the list of numbers, write down

(a) the factors of 60,

Answer(a) [1]

(b) the prime numbers.

Answer(b) [1]

6 Simplify.

$$1 - 2u + u + 4$$

Answer [2]

7 Factorise completely.

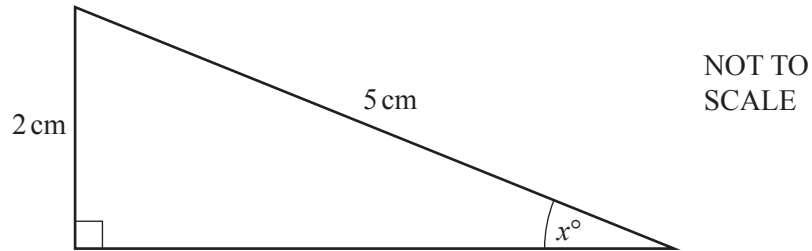
$$2x - 4x^2$$

Answer [2]

- 8 Find the sum of the interior angles of a 25-sided polygon.

Answer [2]

9



Calculate the value of x .

Answer $x =$ [2]

- 10 Find the value of

(a) $(\sqrt{5})^8$,

Answer(a) [1]

(b) $\left(\frac{1}{27}\right)^{-\frac{2}{3}}$.

Answer(b) [1]

11 Write the following as single fractions.

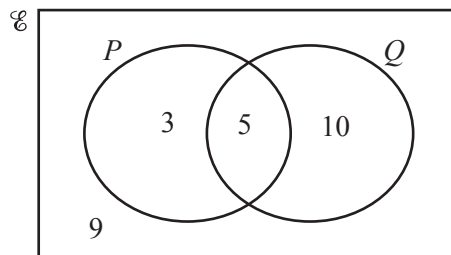
(a) $x + \frac{x}{2}$

Answer(a) [1]

(b) $x + \frac{2}{x}$

Answer(b) [1]

12



The Venn diagram shows the number of elements in each set.

(a) Find $n(P' \cap Q)$.

Answer(a) [1]

(b) Complete the statement $n(\dots) = 17$.

[1]

13 $\mathbf{M} = \begin{pmatrix} 7 & u \\ 2 & 3 \end{pmatrix}$ and $|\mathbf{M}| = 1$.

Find the value of u .

Answer $u =$ [2]

- 14 Two containers are mathematically similar.
Their volumes are 54 cm^3 and 128 cm^3 .
The height of the smaller container is 4.5 cm.

Calculate the height of the larger container.

Answer cm [3]

- 15 Work out $\frac{2}{3} + \frac{1}{6} - \frac{1}{4}$, giving your answer as a fraction in its lowest terms.

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

Answer [3]

- 16 Make a the subject of the formula $s = ut + \frac{1}{2}at^2$.

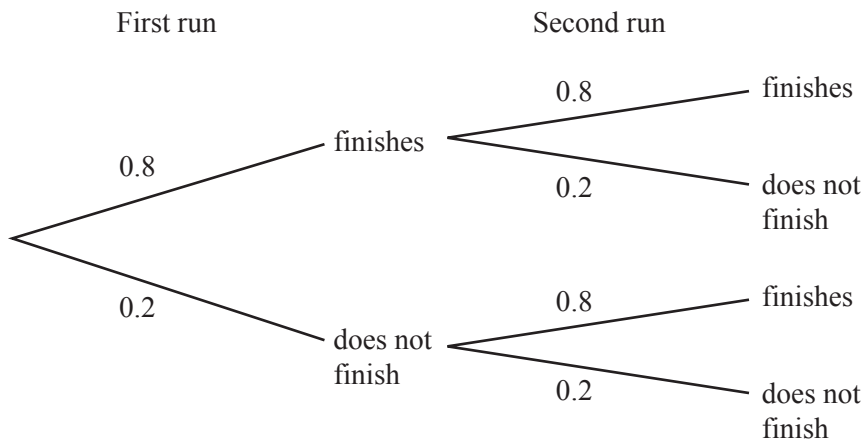
Answer a = [3]

17 Simplify.

$$\left(\frac{x^{64}}{16y^{16}}\right)^{\frac{1}{4}}$$

Answer [3]

18 Samira takes part in two charity runs.
The probability that she finishes each run is 0.8 .



Find the probability that Samira finishes at least one run.

Answer [3]

- 19 y is inversely proportional to $(x + 2)^2$.
When $x = 1$, $y = 2$.

Find y in terms of x .

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

- 20 The volume of a cuboid is 878 cm^3 , correct to the nearest cubic centimetre.
The length of the base of the cuboid is 7 cm , correct to the nearest centimetre.
The width of the base of the cuboid is 6 cm , correct to the nearest centimetre.

Calculate the lower bound for the height of the cuboid.

Answer $\dots\dots\dots \text{ cm}$ [3]

- 21 Solve the equation $3x^2 + 4x - 5 = 0$.
Show all your working and give your answers correct to 2 decimal places.

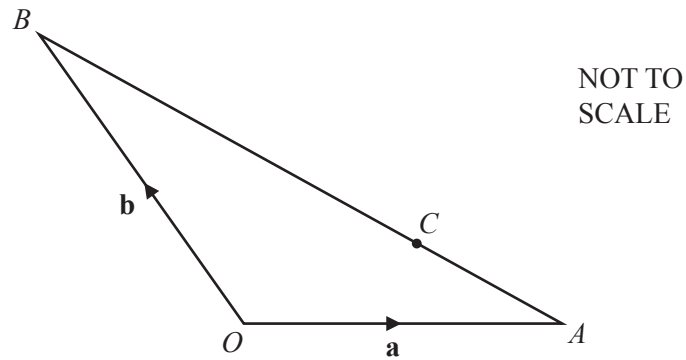
Answer $x = \dots\dots\dots$ or $x = \dots\dots\dots$ [4]

- 22 Simplify.

$$\frac{4 + 10w}{8 - 50w^2}$$

Answer $\dots\dots\dots$ [4]

23



In the diagram, O is the origin, $\overrightarrow{OA} = \mathbf{a}$ and $\overrightarrow{OB} = \mathbf{b}$.
 C is on the line AB so that $AC:CB = 1:2$.

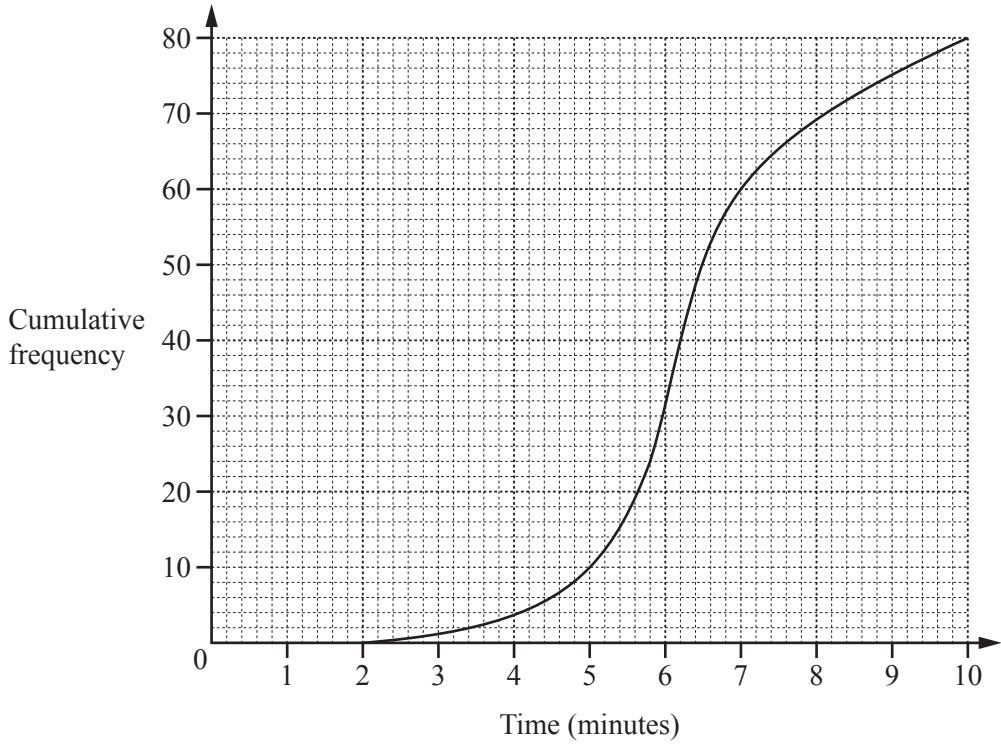
Find, in terms of \mathbf{a} and \mathbf{b} , in its simplest form,

(a) \overrightarrow{AC} ,

Answer(a) $\overrightarrow{AC} = \dots\dots\dots$ [2]

(b) the position vector of C .

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



The cumulative frequency diagram shows information about the times, in minutes, taken by 80 students to complete a short test.

Find

(a) the median,

Answer(a) min [1]

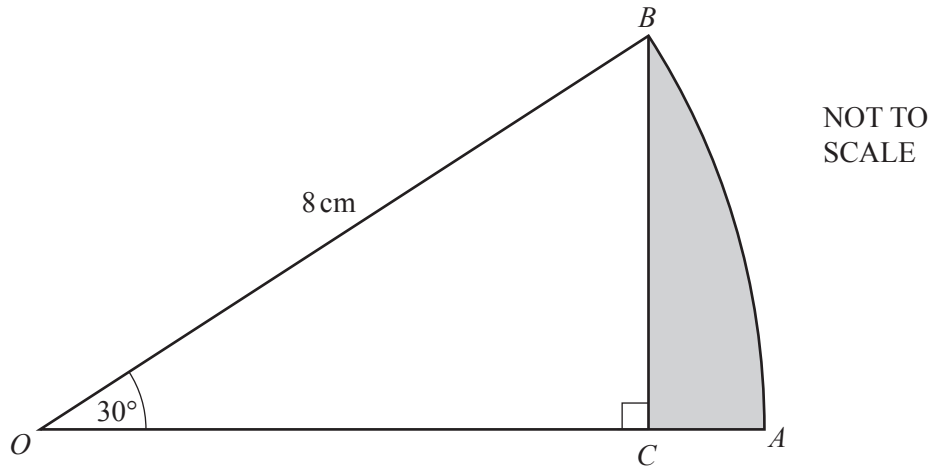
(b) the 30th percentile,

Answer(b) min [2]

(c) the number of students taking more than 5 minutes.

Answer(c) [2]

25

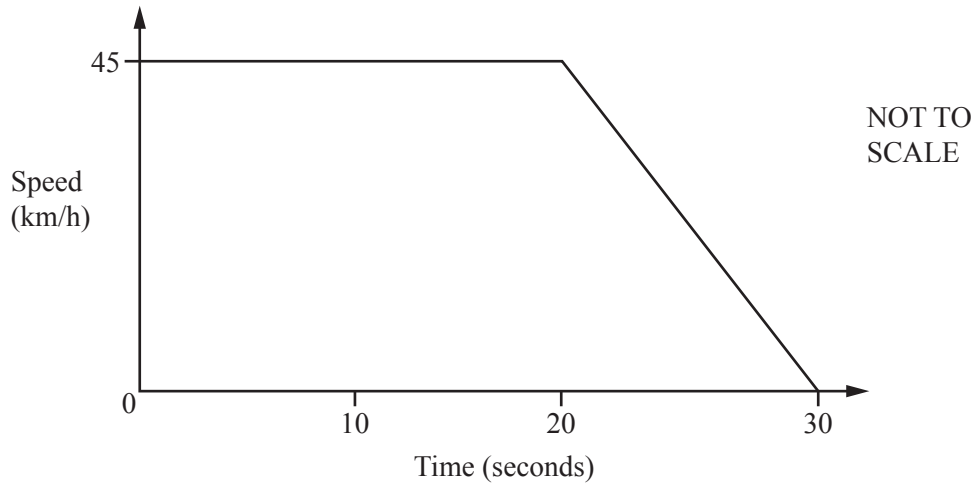


OAB is the sector of a circle, centre O , with radius 8 cm and sector angle 30° .
 BC is perpendicular to OA .

Calculate the area of the region shaded on the diagram.

Answer cm^2 [5]

Question 26 is printed on the next page.



The diagram shows the speed-time graph of a car.
 The car travels at 45 km/h for 20 seconds.
 The car then decelerates for 10 seconds until it stops.

(a) Change 45 km/h into m/s.

Answer(a) m/s [2]

(b) Find the deceleration of the car, giving your answer in m/s^2 .

Answer(b) m/s^2 [1]

(c) Find the distance travelled by the car during the 30 seconds, giving your answer in metres.

Answer(c) m [3]

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