

- 1 Work out 72 cents as a percentage of 83 cents.

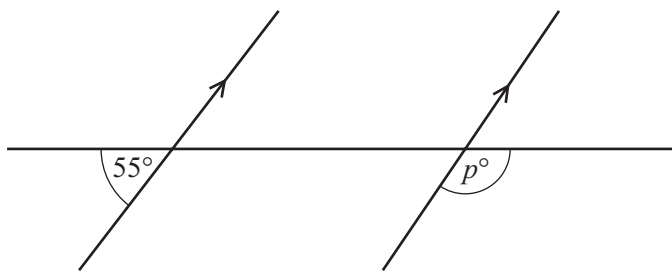
Answer % [1]

- 2 Calculate $\frac{5.27 - 0.93}{4.89 - 4.07}$.

Give your answer correct to 4 significant figures.

Answer [2]

3



NOT TO
SCALE

Find the value of p .

Answer $p =$ [2]

- 4 Calculate 17.5% of 44 kg.

Answer kg [2]

5 Solve the equation.

$$5 - 2x = 3x - 19$$

Answer $x =$ [2]

6

S **P** **A** **C** **E** **S**

One of the 6 letters is taken at random.

(a) Write down the probability that the letter is S.

Answer(a) [1]

(b) The letter is replaced and again a letter is taken at random.
This is repeated 600 times.

How many times would you expect the letter to be S?

Answer(b) [1]

7 The length, p cm, of a car is 440 cm, correct to the nearest 10 cm.

Complete the statement about p .

Answer $\leq p <$ [2]

- 8 Emily invests \$ x at a rate of 3% per year simple interest.
After 5 years she has \$20.10 interest.

Find the value of x .

Answer $x =$ [3]

- 9 Find the n th term in each of the following sequences.

(a) $\frac{1}{3}, \frac{2}{4}, \frac{3}{5}, \frac{4}{6}, \frac{5}{7}, \dots$

Answer(a) [1]

(b) 0, 3, 8, 15, 24,

Answer(b) [2]

- 10 Make b the subject of the formula.

$$c = \sqrt{a^2 + b^2}$$

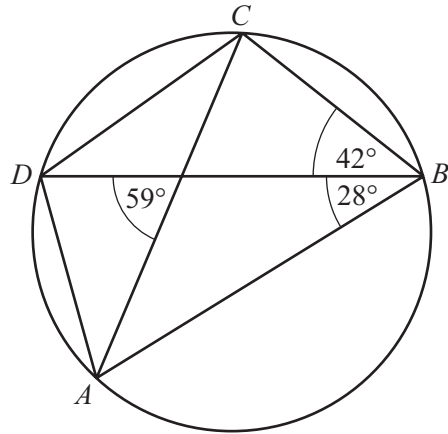
Answer $b =$ [3]

- 11 The volume of a child's model plane is 1200 cm^3 .
The volume of the full size plane is 4050 m^3 .

Find the scale of the model in the form $1 : n$.

Answer 1 : [3]

12



NOT TO SCALE

A, B, C and D lie on the circle.

Find

(a) angle ADC ,

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

(b) angle ADB .

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

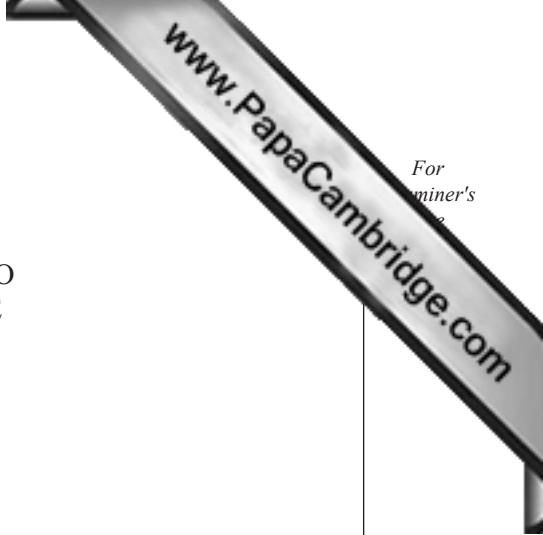
13 (a) $3^x = \sqrt[4]{3^5}$

Find the value of x .

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

(b) Simplify $(32y^{15})^{\frac{2}{5}}$.

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



14 Write as a single fraction in its simplest form.

$$3 - \frac{t+2}{t-1}$$

Answer [3]

15 Do not use a calculator in this question and show all the steps of your working.

Give each answer as a fraction in its lowest terms.

Work out.

(a) $\frac{3}{4} - \frac{1}{12}$

Answer(a) [2]

(b) $2\frac{1}{2} \times \frac{4}{25}$

Answer(b) [2]

16



NOT TO SCALE

A is the point $(-1, 1)$ and B is the point $(8, 7)$.

(a) Write \vec{AB} as a column vector.

Answer(a) $\vec{AB} = \begin{pmatrix} \\ \end{pmatrix}$ [1]

(b) Find $|\vec{AB}|$.

Answer(b) $|\vec{AB}| = \dots\dots\dots$ [2]

(c) $\vec{AC} = 2\vec{AB}$.

Write down the co-ordinates of C .

Answer(c) $(\dots\dots\dots, \dots\dots\dots)$ [1]

17 Factorise completely.

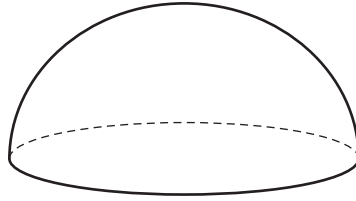
(a) $a + b + at + bt$

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

(b) $x^2 - 2x - 24$

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

- 18 The diagram shows a solid hemisphere.



The **total** surface area of this hemisphere is 243π .

The volume of the hemisphere is $k\pi$.

Find the value of k .

[The surface area, A , of a sphere with radius r is $A = 4\pi r^2$.]

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

Answer $k = \dots\dots\dots$ [4]

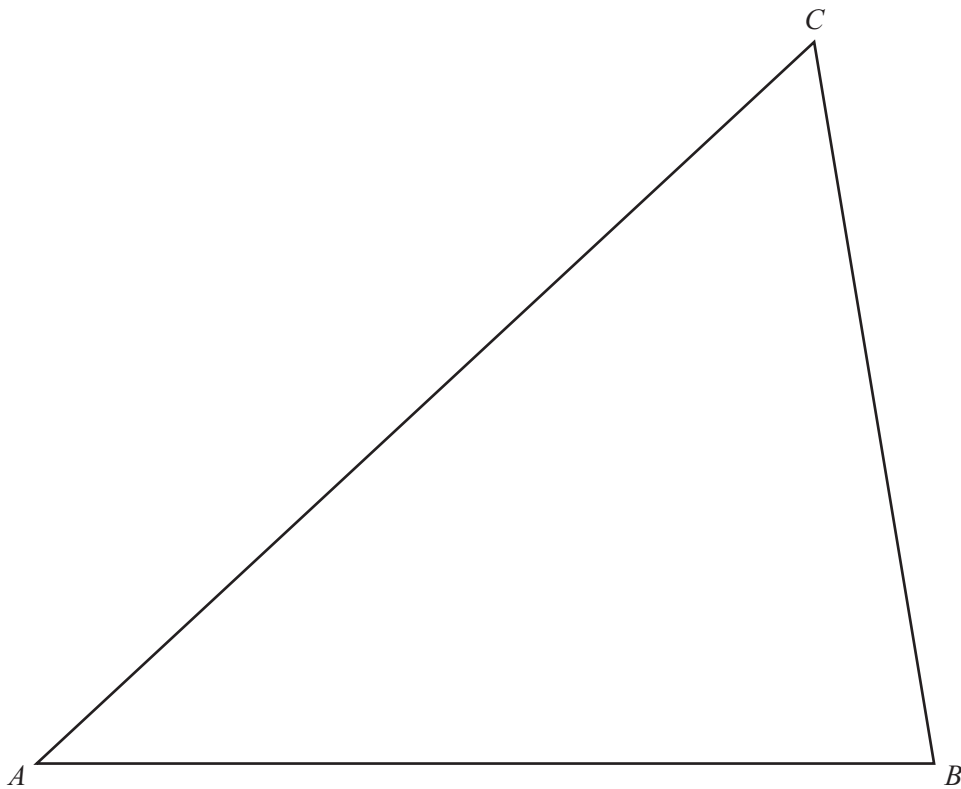
- 19 (a) Convert 144 km/h into metres per second.

Answer(a) $\dots\dots\dots$ m/s [2]

- (b) A train of length 120 m is travelling at 144 km/h.
It passes under a bridge of width 20 m.

Find the time taken for the whole train to pass under the bridge.
Give your answer in seconds.

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



(a) In this part, use a straight edge and compasses only and show your construction arcs.

Construct accurately

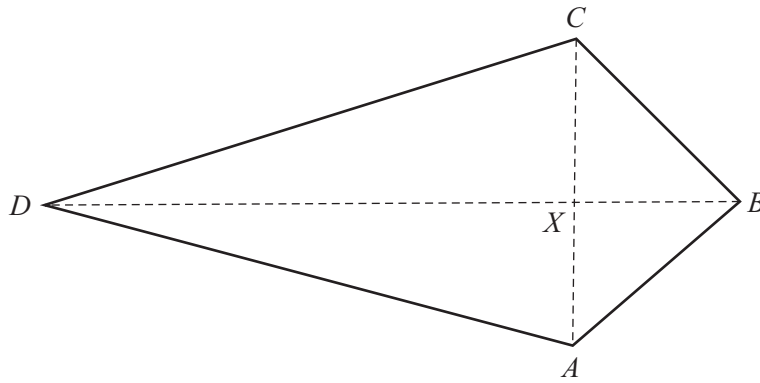
(i) the bisector of angle B , [2]

(ii) the locus of points equidistant from B and from C . [2]

(b) Shade the region inside triangle ABC containing the points which are
nearer to BC than to BA **and** nearer to C than to B . [1]

21

10



NOT TO
SCALE

$ABCD$ is a kite.
The diagonals AC and BD intersect at X .
 $AC = 12$ cm, $BD = 20$ cm and $DX:XB = 3:2$.

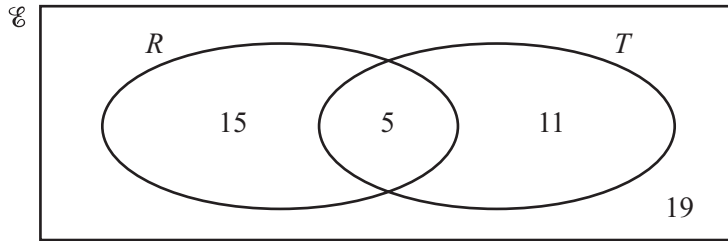
(a) Calculate angle ABC .

Answer(a) Angle $ABC = \dots\dots\dots$ [3]

(b) Calculate the area of the kite.

Answer(b) $\dots\dots\dots$ cm² [2]

22



The Venn diagram shows the number of red cars and the number of two-door cars in a car park. There is a total of 50 cars in the car park. $R = \{\text{red cars}\}$ and $T = \{\text{two-door cars}\}$.

(a) A car is chosen at random.

Write down the probability that

(i) it is red and it is a two-door car,

Answer(a)(i) [1]

(ii) it is not red and it is a two-door car.

Answer(a)(ii) [1]

(b) A two-door car is chosen at random.

Write down the probability that it is not red.

Answer(b) [1]

(c) Two cars are chosen at random.

Find the probability that they are both red.

Answer(c) [2]

(d) On the Venn diagram, shade the region $R \cup T'$. [1]

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