



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

Answer ..... % [1]

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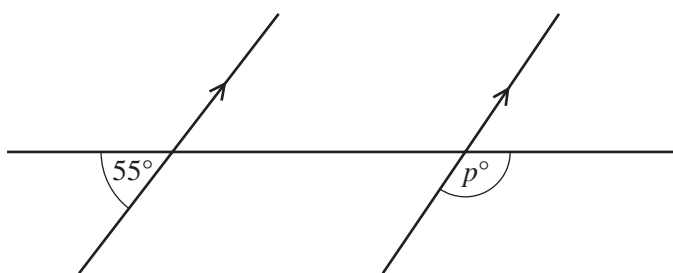
- 2 Calculate  $\frac{5.27 - 0.93}{4.89 - 4.07}$ .

Give your answer correct to 4 significant figures.

Answer ..... [2]

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- 3



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Find the value of  $p$ .

Answer  $p =$  ..... [2]

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- 4 Calculate 17.5% of 44 kg.

Answer ..... kg [2]

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5 Solve the equation.

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

Answer  $x =$  ..... [2]

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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]

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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]

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- 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]

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- 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]

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- 10 Make  $b$  the subject of the formula.

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

Answer  $b =$  ..... [3]

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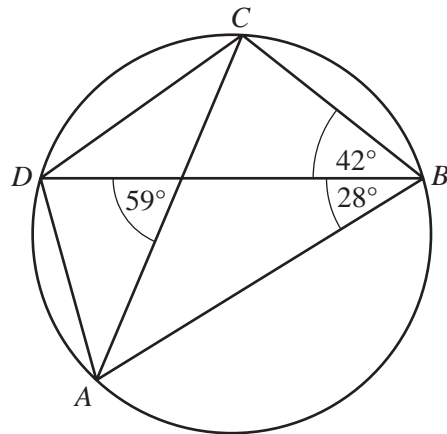
- 11 The volume of a child's model plane is  $1200 \text{ cm}^3$ .  
The volume of the full size plane is  $4050 \text{ m}^3$ .

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

Answer 1: ..... [3]

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12

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

Find

(a) angle  $ADC$ ,

Answer(a) Angle  $ADC$  = ..... [1]

(b) angle  $ADB$ .

Answer(b) Angle  $ADB$  = ..... [2]

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

Find the value of  $x$ .

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

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

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

14 Write as a single fraction in its simplest form.

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

For  
Examiner's  
Use

Answer ..... [3]

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

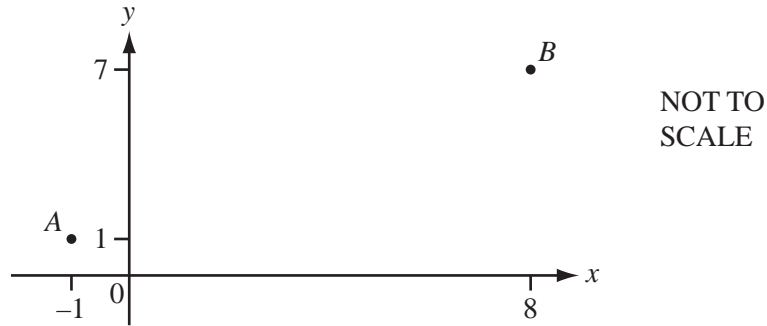
Answer(a) ..... [2]

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

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

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16



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

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

$$\text{Answer(a) } \vec{AB} = \begin{pmatrix} \phantom{0} \\ \phantom{0} \end{pmatrix} \quad [1]$$

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

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

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

Write down the co-ordinates of  $C$ .

$$\text{Answer(c) } (\dots\dots\dots, \dots\dots\dots) [1]$$

17 Factorise completely.

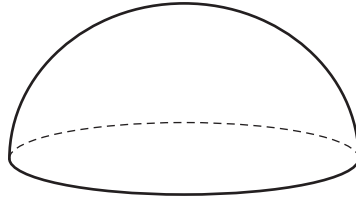
(a)  $a + b + at + bt$

$$\text{Answer(a) } \dots\dots\dots [2]$$

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

$$\text{Answer(b) } \dots\dots\dots [2]$$

- 18 The diagram shows a solid hemisphere.



The **total** surface area of this hemisphere is  $243\pi$ .

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]

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

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

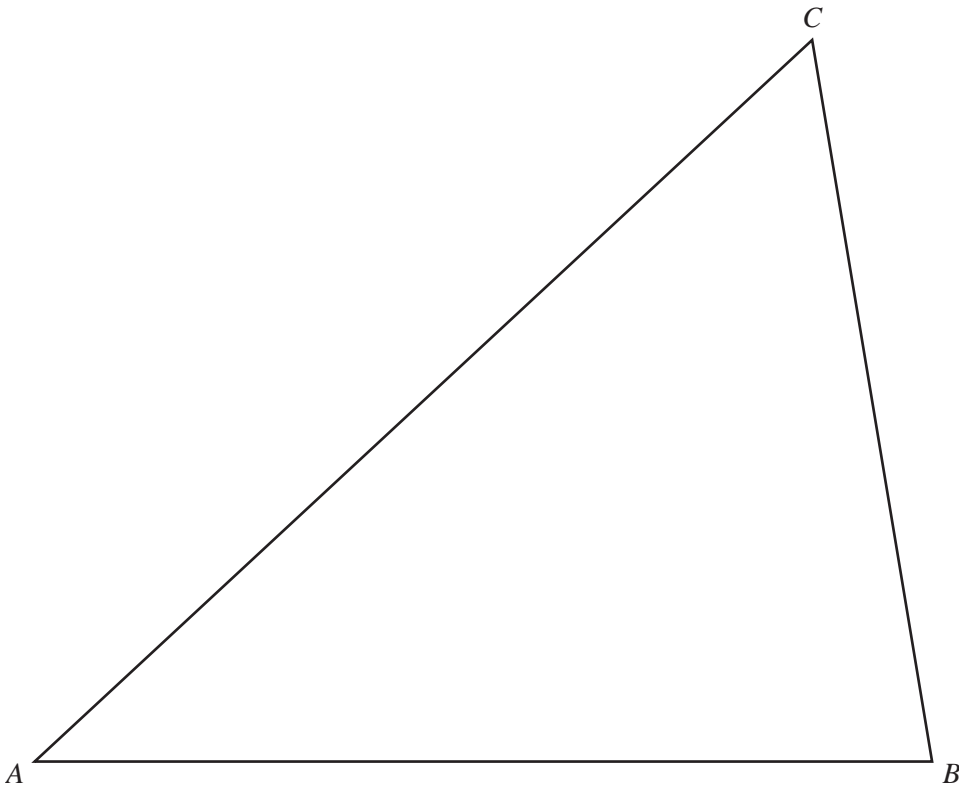
- (b) A train of length 120 m is travelling at 144 km/h.  
It passes under a bridge of width 20 m.

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]

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

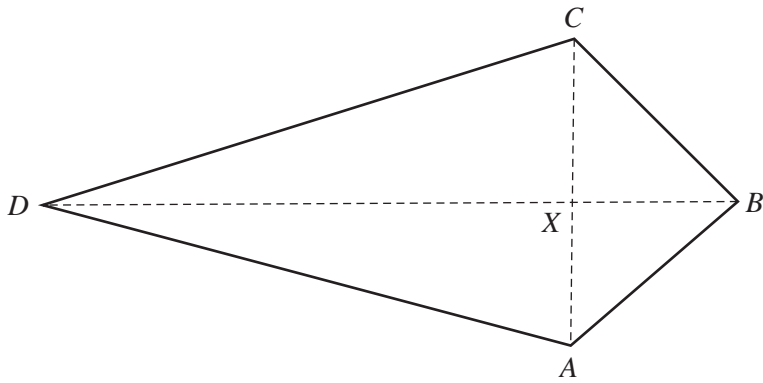
Construct accurately

(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]

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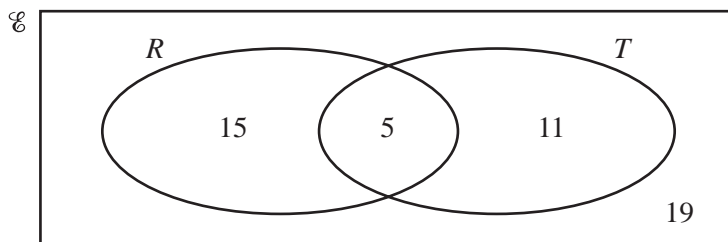
$ABCD$  is a kite.  
The diagonals  $AC$  and  $BD$  intersect at  $X$ .  
 $AC = 12$  cm,  $BD = 20$  cm and  $DX : XB = 3 : 2$ .

(a) Calculate angle  $ABC$ .

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

(b) Calculate the area of the kite.

Answer(b)  $\dots\dots\dots$  cm<sup>2</sup> [2]



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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