



- 1 During April the probability that it will rain on any one day is  $\frac{5}{6}$ .  
On how many of the 30 days in April would it be expected to rain?

Answer ..... [1]

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- 2 (a) Write, in figures, the number

one hundred and five thousand and two.

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

- (b) Write your answer to **part (a)** correct to the nearest ten thousand.

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

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- 3 Simplify the expression.

$$7x + 11y + x - 6y$$

Answer ..... [2]

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- 4 Insert **one** pair of brackets into each calculation to make the answer correct.

(a)  $7 \times 6 - 3 + 5 = 26$  [1]

(b)  $8 - 6 \times 4 - 1 = -10$  [1]

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- 5 Write the following in order of size, starting with the smallest.

$$0.525 \quad \frac{11}{21} \quad \frac{111}{211} \quad 52.4\%$$

*Answer* ..... < ..... < ..... < ..... [2]

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- 6 Thomas fills glasses from a jug containing 2.4 litres of water.  
Each glass holds 30 centilitres.

How many glasses can Thomas fill?

*Answer* ..... [2]

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- 7 Martha divides \$240 between spending and saving in the ratio

$$\text{spending} : \text{saving} = 7 : 8.$$

Calculate the amount Martha has for spending.

*Answer* \$ ..... [2]

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8                            210      211      212      213      214      215      216

From the list of numbers, find

(a) a prime number,

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

(b) a cube number.

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

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9 Calculate the selling price of a bicycle bought for \$120 and sold at a profit of 15%.

Answer \$ ..... [2]

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10 Solve the simultaneous equations.

$$\begin{aligned}x + 5y &= 22 \\x + 3y &= 12\end{aligned}$$

Answer  $x =$  .....

$y =$  ..... [2]

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11 Solve the equation.

$$\frac{2x-3}{2} = 2$$

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

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12 The population of a city is 128 000, correct to the nearest thousand.

(a) Write 128 000 in standard form.

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

(b) Write down the upper bound of the population.

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

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13 Pedro invested \$800 at a rate of 5% per year **compound** interest.  
Calculate the **total** amount he has after 2 years.

Answer \$ ..... [2]

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14 Factorise completely.

$$5g^2h + 10hj$$

Answer ..... [2]

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15 For her holiday, Dina changed 500 Swiss francs (CHF) into pounds (£).  
The rate was £1 = CHF 1.6734.

Calculate how much Dina received in pounds.  
Give your answer correct to 2 decimal places.

Answer £ ..... [2]

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16 Simplify

$$4x^4 \times 5x^5.$$

Answer ..... [2]

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- 17 The scale of a map is 1 : 500 000.  
On the map the centres of two cities are 26 cm apart.

Calculate the actual distance, in kilometres, between the centres of the two cities.

*Answer* ..... km [2]

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- 18 Show that  $3^{-2} + 2^{-2} = \frac{13}{36}$ .

Write down all the steps of your working.

*Answer*

[2]

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- 19 In Vienna, the mid-day temperatures, in  $^{\circ}\text{C}$ , are recorded during a week in December. This information is shown below.

-2    2    1    -3    -1    -2    0

Calculate

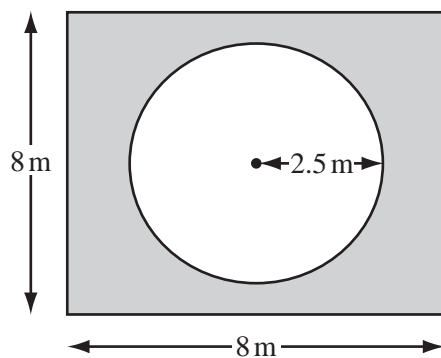
- (a) the difference between the highest temperature and the lowest temperature,

Answer(a) .....  $^{\circ}\text{C}$  [1]

- (b) the mean temperature.

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

20



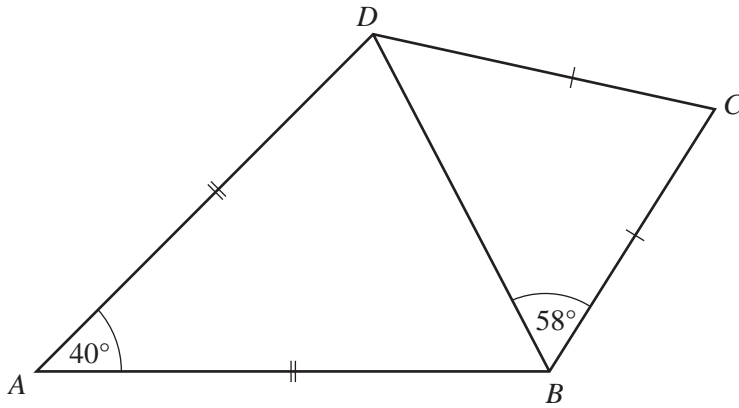
NOT TO  
SCALE

The diagram shows a circular pool of radius 2.5 m.  
A square piece of land surrounds the pool.  
Each side of the square is 8 m long.

Calculate the shaded area of the land that surrounds the pool.

Answer .....  $\text{m}^2$  [3]





NOT TO SCALE

In the quadrilateral  $ABCD$ ,  $AB = AD$  and  $CB = CD$ .

Angle  $BAD = 40^\circ$  and angle  $CBD = 58^\circ$ .

(a) Calculate

(i) angle  $ABD$ ,

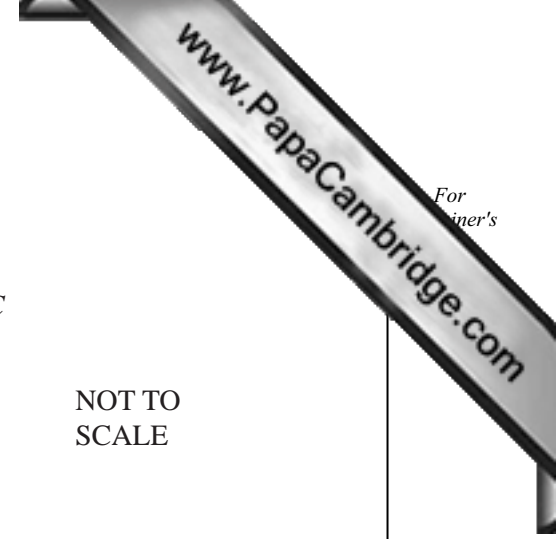
Answer(a)(i) Angle  $ABD = \dots\dots\dots$  [1]

(ii) angle  $BCD$ .

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

(b) Write down the mathematical name for the quadrilateral  $ABCD$ .

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



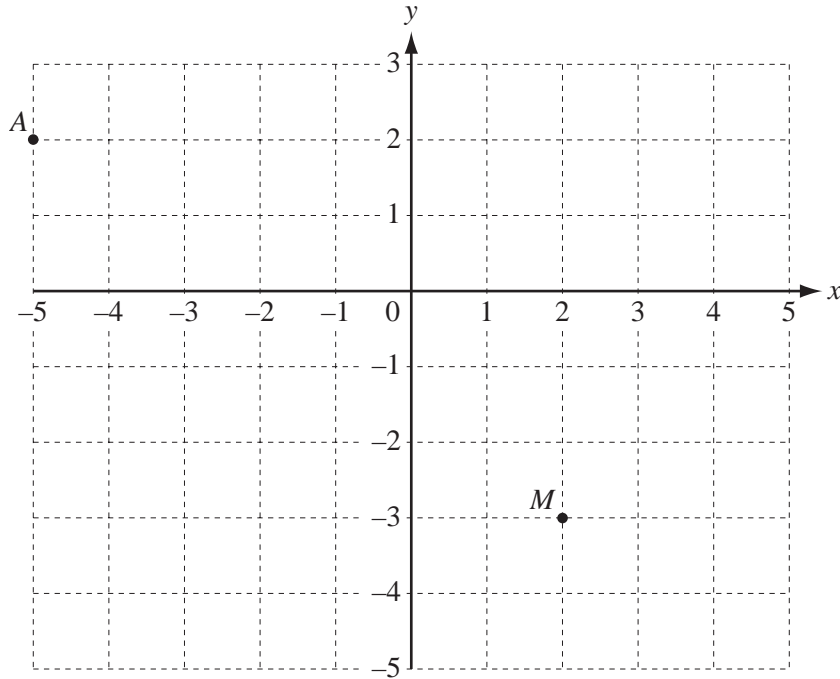
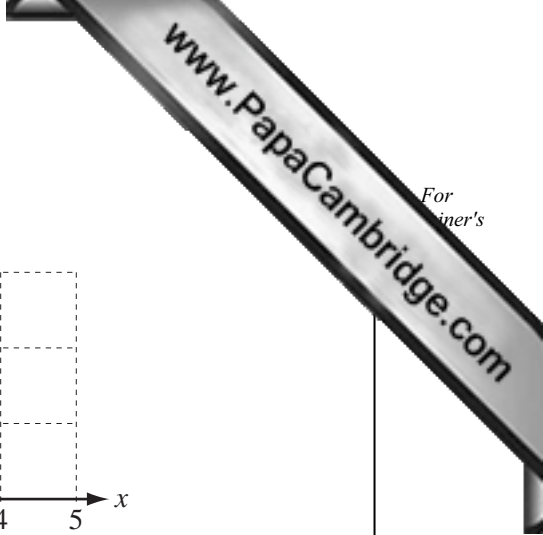
22 (a) Calculate  $\frac{700}{28.6^3}$ .

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

(b) Work out  $(8 \times 10^6)^2$ , giving your answer in standard form.

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

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The diagram shows two points  $A(-5, 2)$  and  $M(2, -3)$ .

(a)  $B$  is the point  $(5, -2)$ .

(i) On the grid, mark the point  $B$ .

[1]

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

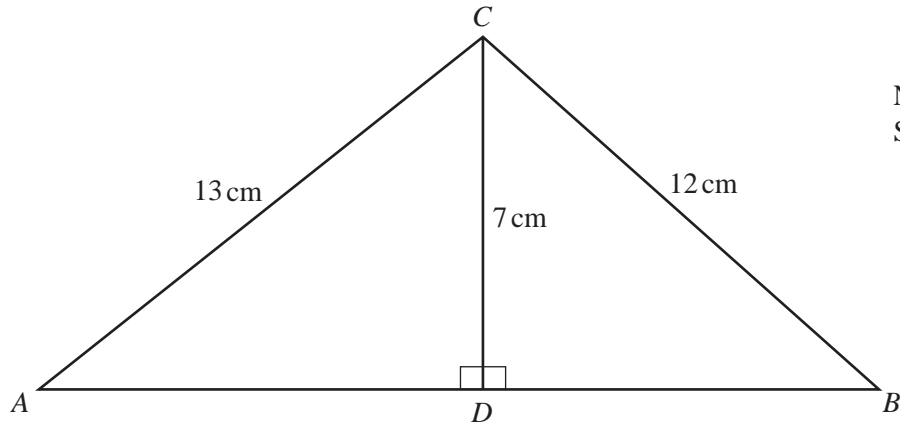
Answer(a)(ii)  $\vec{AB} = \begin{pmatrix} \phantom{0} \\ \phantom{0} \end{pmatrix}$  [1]

(b)  $M$  is the midpoint of the line  $BD$ .

Find the co-ordinates of  $D$ .

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

Question 24 is printed on the next page.



NOT TO  
SCALE

In triangle  $ABC$ ,  $D$  is on  $AB$  so that angle  $ADC =$  angle  $BDC = 90^\circ$ .

$AC = 13$  cm,  $BC = 12$  cm and  $CD = 7$  cm.

**(a)** Calculate the length of  $DB$ .

Answer(a)  $DB =$  ..... cm [3]

**(b)** Use trigonometry to calculate angle  $CAD$ .

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