![Cambright logo]

Cambright Solved Paper

Tags	2024 · CIE IGCSE · Feb/March · Mathematics · P2 · V2
Solver	(F) Fizzle
Status	Done

1 A night bus runs from 21 50 to 05 18 the next day.

Work out the number of hours and minutes that the night bus runs.

- Find the number of minutes first:

  21:50 + n minutes = 22:18.

  n minutes = 28 minutes.

- Find the number of hours:

  22:18 + n hours = 05:18.

  n hours = 2 + 5 = 7 hours

Answer: 7 hours and 28 minutes.

2 Calculate $\sqrt{5.76} + 2.8^3$.

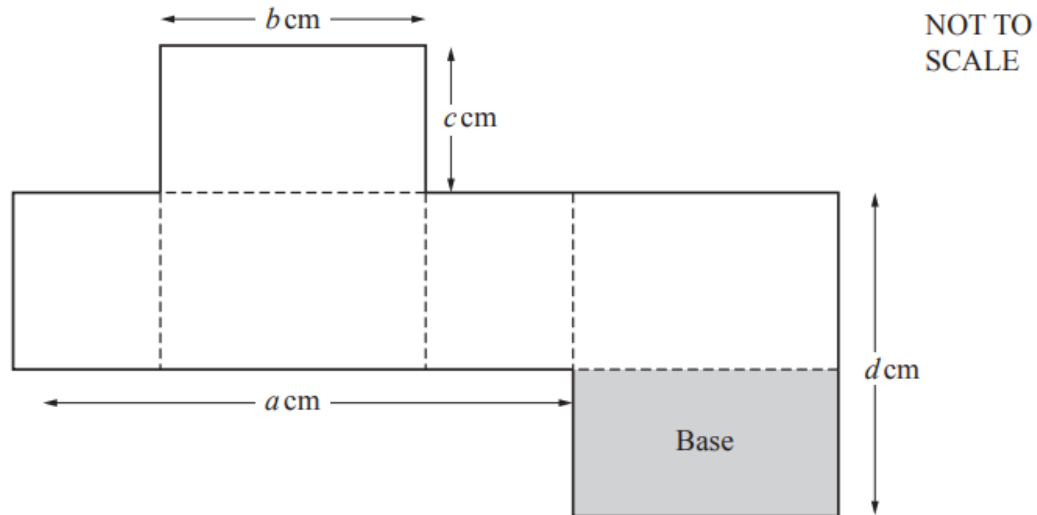- No working required, input this directly into your calculator

Answer: 24.352

3 Simplify $4m + 7k - m + 3k$.

- Bring similar terms together:

  - This results in: 4m - m + 7k + 3k

    4m - m = 3m

7k + 3k = 10k

Answer: 3m + 10k

4

NOT TO SCALE

The diagram shows the net of a cuboid with its base shaded.
The length of the cuboid is 10 cm, its width is 4 cm and its height is 5 cm.

Write down the values of each of a, b, c and d.

A is equal to a length and two heights of the cuboid, which is 10 + 4 + 4 = 18 cm.

B is equal to the length of the cuboid, which is 10 cm.

C is equal to the width of the cuboid, which is 5 cm.

D is equal to a width AND a height of the cuboid, which is 5 + 4 = 9 cm.

Answer: A = 18cm, B = 10cm, C = 5cm, and D = 9cm.

5 There are 20 cars in a car park and 3 of the cars are blue.

(a) James wants to draw a pie chart to show this information.

Find the angle of the sector for the blue cars in this pie chart.

Total angle in a pie chart = 360°

Blue cars compared to the total are = 3/20

(3/20) x 360° = 54°

Answer: 54°
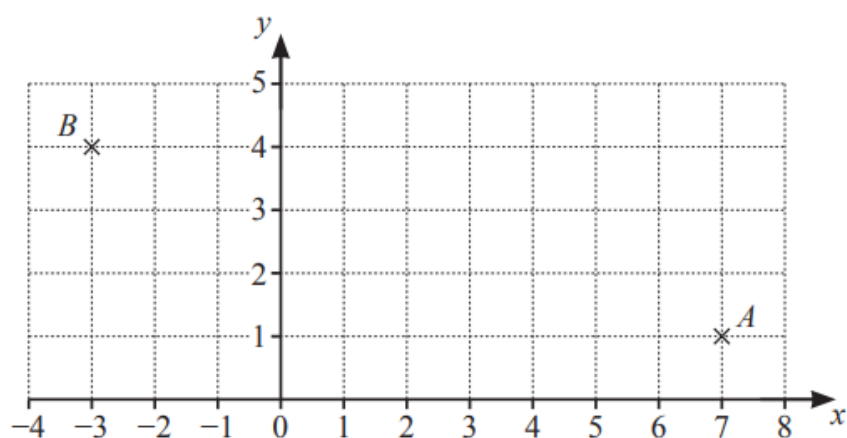
(b) One of the 20 cars is picked at random.

Find the probability that this car is **not** blue.

Probability of selecting a blue car = 3/20

  1 - 3/20 = 17/20

Answer: 17/20

6

Write $\overrightarrow{AB}$ as a column vector.

The distance from A to B would be:

  - 3 - 7 = -10 on the x-axis

  4 - 1 = 3 on the y-axis

Answer: [-10 3]

7 As the temperature increases, the number of people who go swimming increases.

Write down the type of correlation that this statement describes.

Answer: Positive correlation

8 **(a)** The nth term of a sequence is $n^2 - 3$.

Find the first three terms of this sequence.

(1)2 + 3 = 4

(2)2 + 3 = 7

(3)2 + 3 = 12

Answer: 4, 7, 12

(b) These are the first five terms of a different sequence.

$$1 \qquad 3 \qquad 9 \qquad 27 \qquad 81$$

Find the nth term of this sequence.

This is an exponential sequence, more specifically 3 to the power of n.

It starts with 1, so the power would be $n-1$.

Answer: 3n-1

9 The line $y = 2x - 5$ intersects the line $y = 3$ at the point P.

Find the coordinates of the point P.
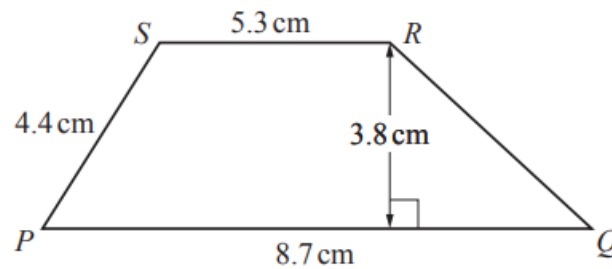
2x + 5 = 3

Make x the subject

2x = -2

x = -1

Substitute x as -1

2(-1) + 5 = 3

Answer: -1, 3

10

The diagram shows a trapezium *PQRS*.

Calculate the area of the trapezium.

Area formula for trapezium = ½ x height x (a+b), where a and b are 5.3 and 8.7 respectively.

½ x 3.8 x (5.3 + 8.7) = 26.6

Answer: 26.6 cm2

11 **Without using a calculator**, work out $1\frac{1}{4} - \frac{5}{6}$.

You must show all your working and give your answer as a fraction in its simplest form.

First, convert 1 ¼ into mixed fraction, giving ⁵⁄₄ - ⅚

Give them the same denominator, resulting in ¹⁵⁄₁₂ - ¹⁰⁄₁₂

Answer: ⁵⁄₁₂

12 Farid spins a three-sided spinner with sides labelled *A*, *B* and *C*.
The probability that the spinner lands on *C* is 0.35 .
Farid spins the spinner 40 times.

Calculate the number of times he expects the spinner to land on *C*.

0.35 × 40 = 14 times

Answer: 14

13 The bearing of *B* from *A* is 107°.

Calculate the bearing of *A* from *B*.

360 − (180 − 107) = 73

360 − 73 = 287

Answer: 287

14 A train, 1750 metres long, is travelling at 55 km/h.

Calculate how long it will take for the whole train to completely cross a bridge that is 480 metres long.
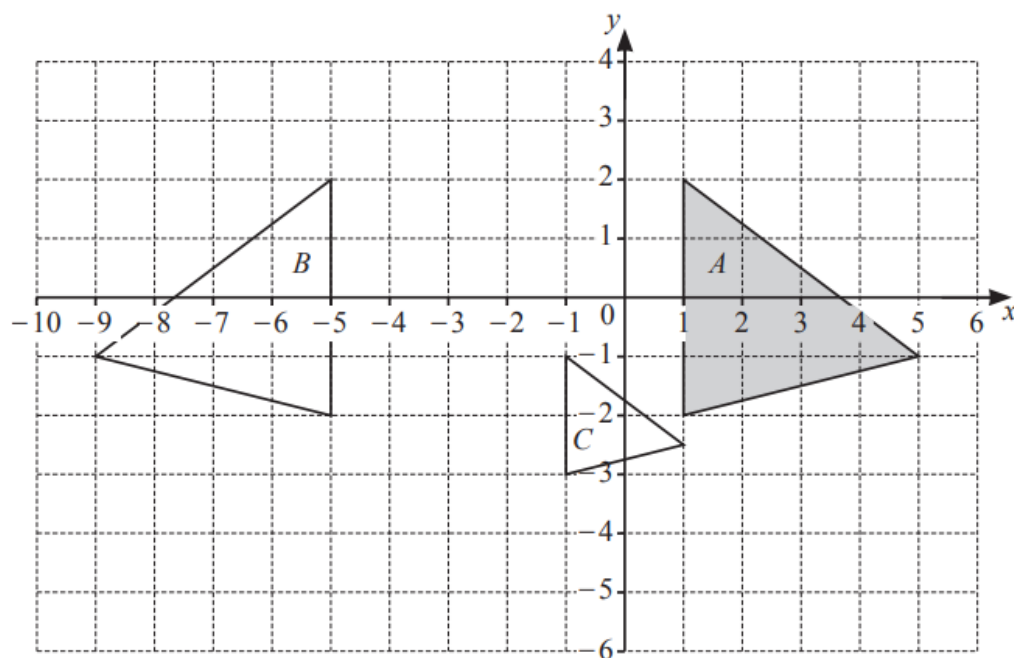Give your answer in seconds, correct to the nearest second.

Time = Distance / Speed

Total distance = 1750 + 480 = 2330

Speed (in m/hr) = 55 × 1000 = 55000

(2330 / 55000) x 3600 = 146 seconds

Answer: 146 seconds
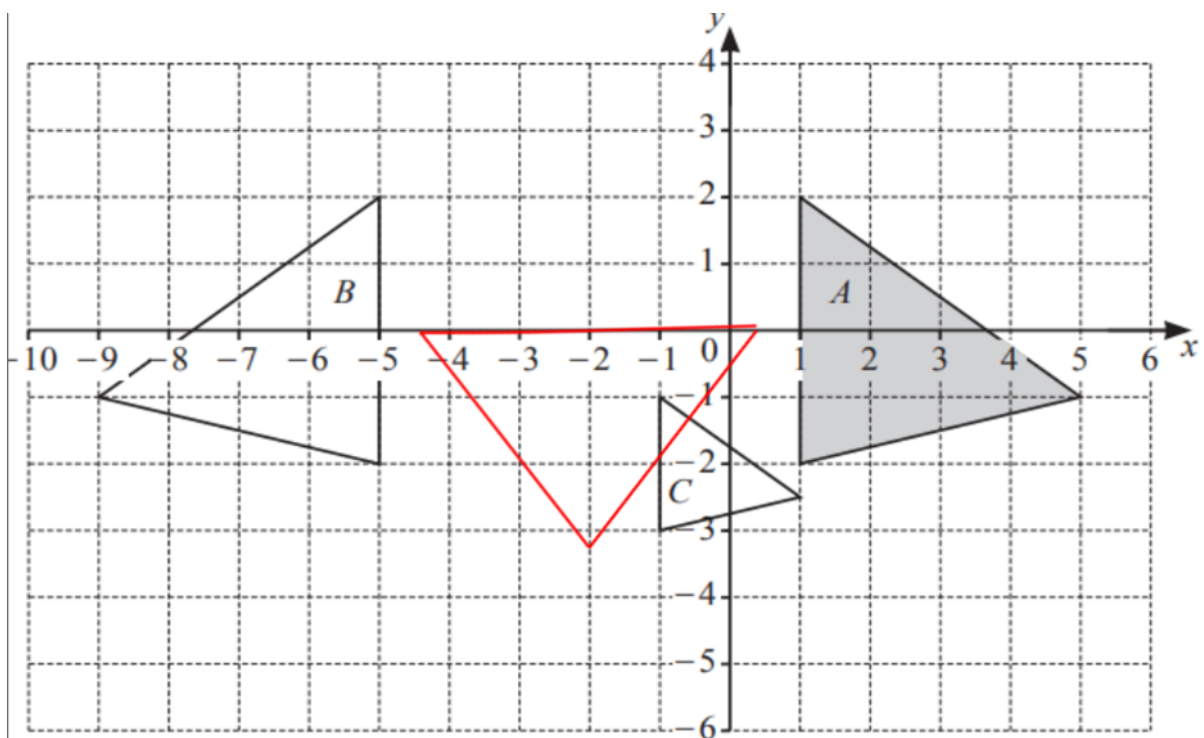
15

(i) is a Reflection, with mirror line at x = -2

(ii) is an Enlargement, with scale factor ½ and centre at (-3, -4)

(b) Draw the image of triangle *A* after a rotation, 90° clockwise, about (1, 3).

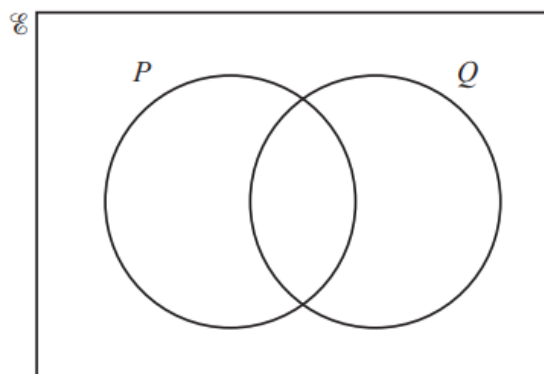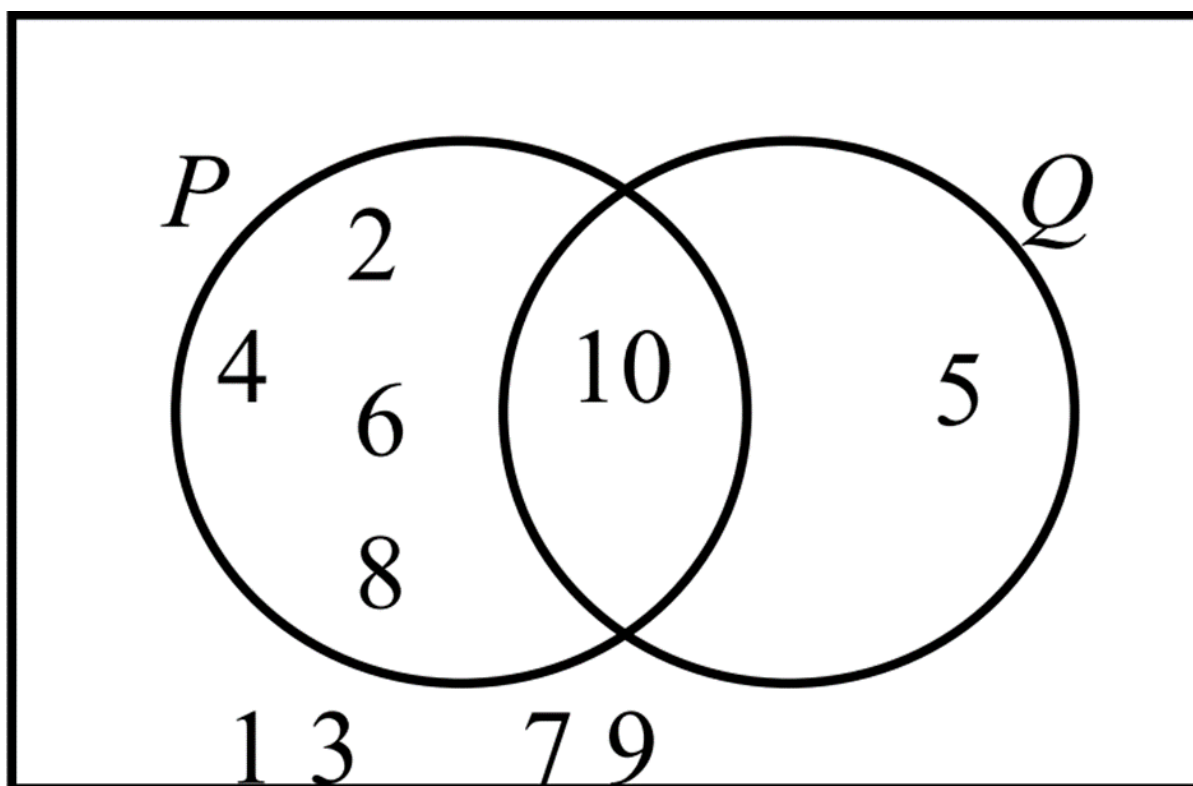**16** x is an integer.

$\mathscr{E} = \{x : 1 \leqslant x \leqslant 10\}$
$P = \{x : x \text{ is an even number}\}$
$Q = \{x : x \text{ is a multiple of 5}\}$

Complete the Venn diagram.

17 The height of each of 200 people is measured.
The table shows the results.

Height (h cm)	$100 < h \leqslant 120$	$120 < h \leqslant 130$	$130 < h \leqslant 150$	$150 < h \leqslant 190$
Frequency	32	55	64	49

Calculate an estimate of the mean height.

First, obtain the midpoints, which are (110, 125, 140, and 170)

Then multiply the frequency with the midpoints:

(110 × 32) + (125 × 55) + (140 × 64) + (170 × 49) = 27685

27685 / 200 = 138.425

Answer: 138.425

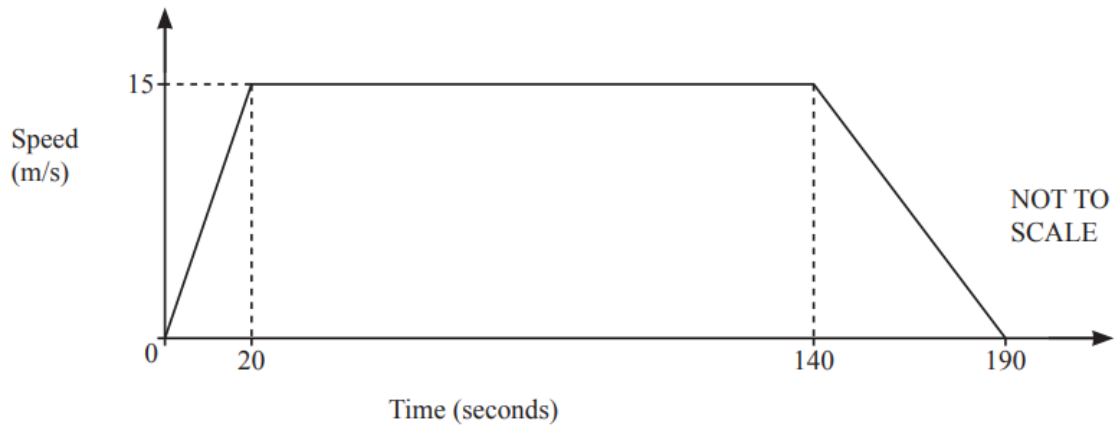**18** Find the highest common factor (HCF) of $28x^5$ and $98x^3$.

28×5 = 2 × 2 × 7 x x5

98×3 = 2 × 7 × 7 x x3

Common terms = 2 × 7 x x3

Answer: 14×3

19

The speed–time graph shows information about a bus journey.

Calculate the total distance travelled by the bus.

(½ x 20 × 15) + (120 × 15) + (½ x 15 × 50)

= 150 + 1800 + 375

Answer: 2325

20
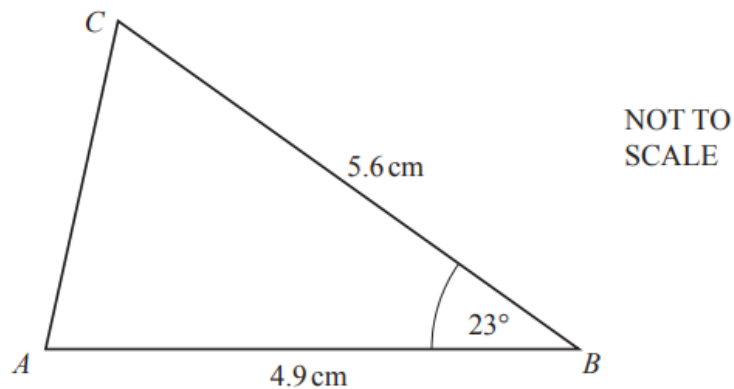
Calculate the area of triangle *ABC*.

½ x a x b x sin c

= ½ x 4.9 × 5.6 x sin 23

Answer: 5.36

21 (a) $\sqrt[5]{3} = 3^h$

Write down the value of h.

H = 1/5

(b) Simplify $\left(4x^3\right)^3$.

43×3×3 = 64×9

Answer: 64×9

22 y is inversely proportional to the square of $(x+3)$.
When $x = 5$, $y = 0.375$.
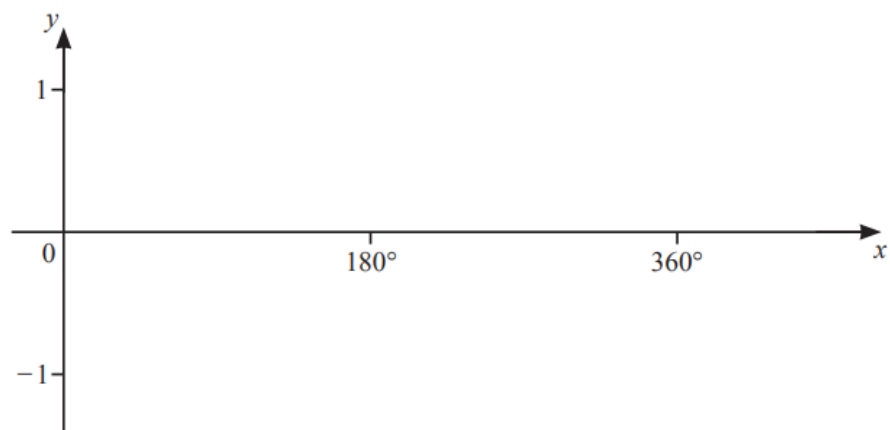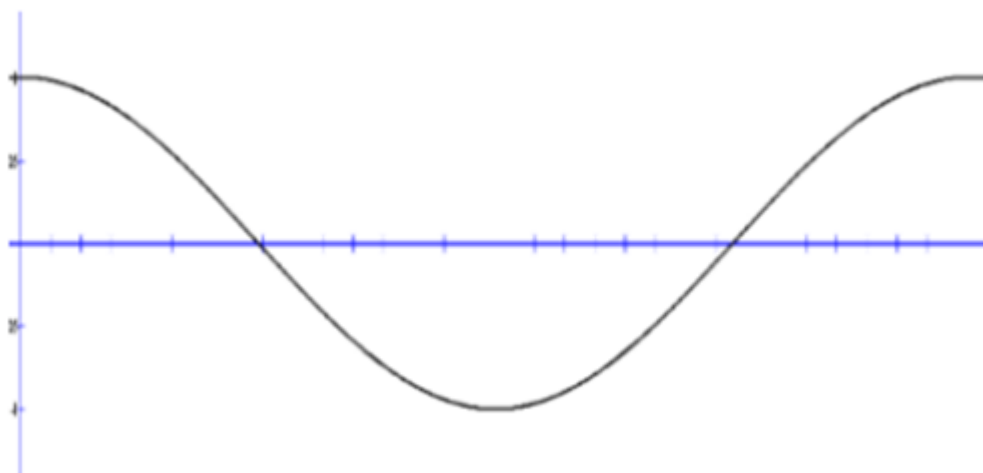
Find y in terms of x.

y = k / (x + 3)2

k = 24

Answer: 24 / (x + 3)2

23 (a) On the axes, sketch the graph of $y = \cos x$, for $0° \leqslant x \leqslant 360°$.

(b) Solve the equation $\cos x = 0.294$ for $0° \leqslant x \leqslant 360°$.

Answer: 72.9 and 287.1

24 $x^2 - 16x + a$ can be written in the form $(x+b)^2$.

Find the value of a and the value of b.

x2 − 16x + a = x2 + 2bx + b2

2b = -16

b = -8

a = (-8) 2 = 64

Answer: a = 64, b = -8

25 A bag contains 2 green buttons, 5 red buttons and 6 blue buttons.
Two buttons are taken at random from the bag without replacement.

Calculate the probability that the two buttons are different colours.

(2/13 × 11/12) + (5/13 × 8/12) + (6/13 × 7/12)

Answer: 2/3

26 A is the point (6, 1) and B is the point (2, 7).

Find the equation of the perpendicular bisector of AB.
Give your answer in the form $y = mx + c$.

We need the midpoint as co-ordinates, so (6+2)/2 , (1 + 7)/2, = (4,4)

m = (7-1)/(2-6) = -3/2

Since it is the perpendicular bisector, -3/2 becomes 2/3

c = y – mx

= 4 – (2/3 × 4) = 4/3

Answer: y = 2/3x + 4/3

Additional notes

If you find any errors or mistakes within this paper, please contact us and we will fix them as soon as possible.