Cambridge Assessment International Education

# Cambridge IGCSE™

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

**MATHEMATICS** **0580/13**

Paper 1 (Core) **May/June 2020**

**1 hour**

You must answer on the question paper.

You will need: Geometrical instruments

**INSTRUCTIONS**

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You should use a calculator where appropriate.
- You may use tracing paper.
- You must show all necessary working clearly.
- Give non-exact numerical answers correct to 3 significant figures, or 1 decimal place for angles in degrees, unless a different level of accuracy is specified in the question.
- For $\pi$, use either your calculator value or 3.142.

**INFORMATION**

- The total mark for this paper is 56.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **12** pages. Blank pages are indicated.

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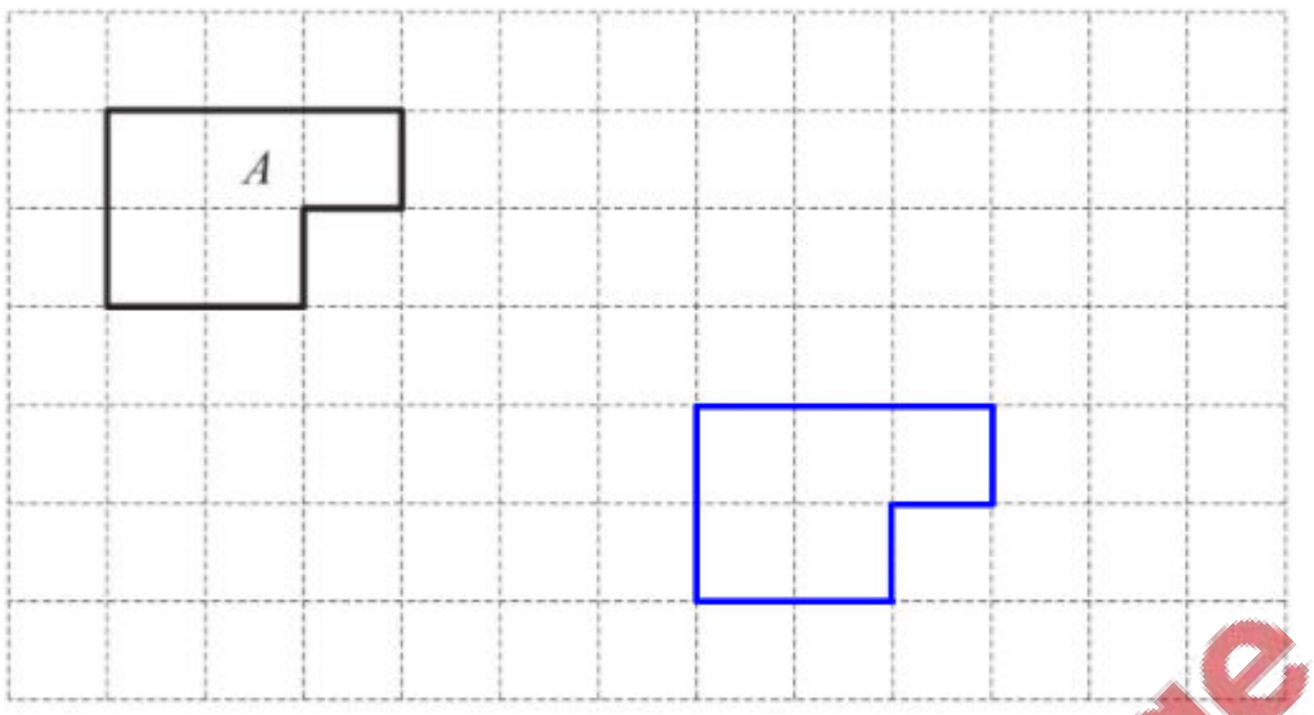
[Turn over

**1** Write six hundred and seven thousand and twenty-one in figures.

607 021 [1]

**2**




On the grid, draw a shape that is congruent to shape *A*. [1]

**3** Edelgard tries to calculate $\frac{68+18}{9-5}$.

**(a)** She types into her calculator $68+18\div9-5$.

Explain why this does not give Edelgard the correct answer.

She did not put brackets around (68+18) and (9-5) [1]

**(b)** Work out the correct answer to $\frac{68+18}{9-5}$.

21.5 [1]

**4** A train from Woodton to Northley takes 6 hours 25 minutes.
The train leaves Woodton at 19 46.

Work out the time the train arrives at Northley.

| | day | hrs. | mins. |
|---|---|---|---|
| | 00 +1 | 19 +1 | 46 |
| + | 00 | 6 | 25 |
| | 1 | 2 | 11 |

02 11 [1]

**5** Write down the number that is 7 more than −38.

* −38 + 7 = −31

-31 ..... [1]

**6** Simplify.

$5w + 3h - 7w + 8h$

11h - 2w ..... [2]

**7** **(a)** Write down the mathematical name of a quadrilateral that has

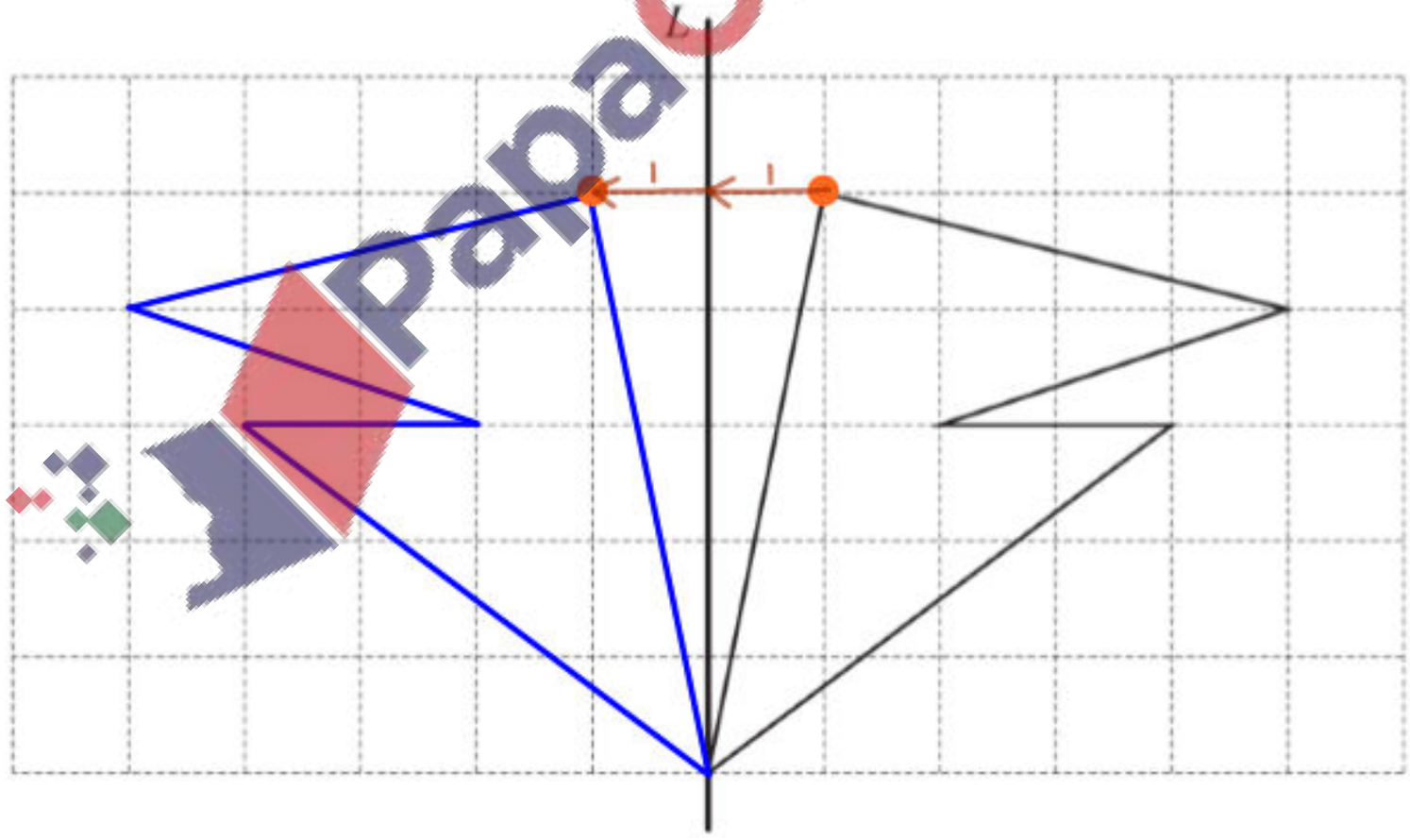
- rotational symmetry of order 1

and

- only one line of symmetry.

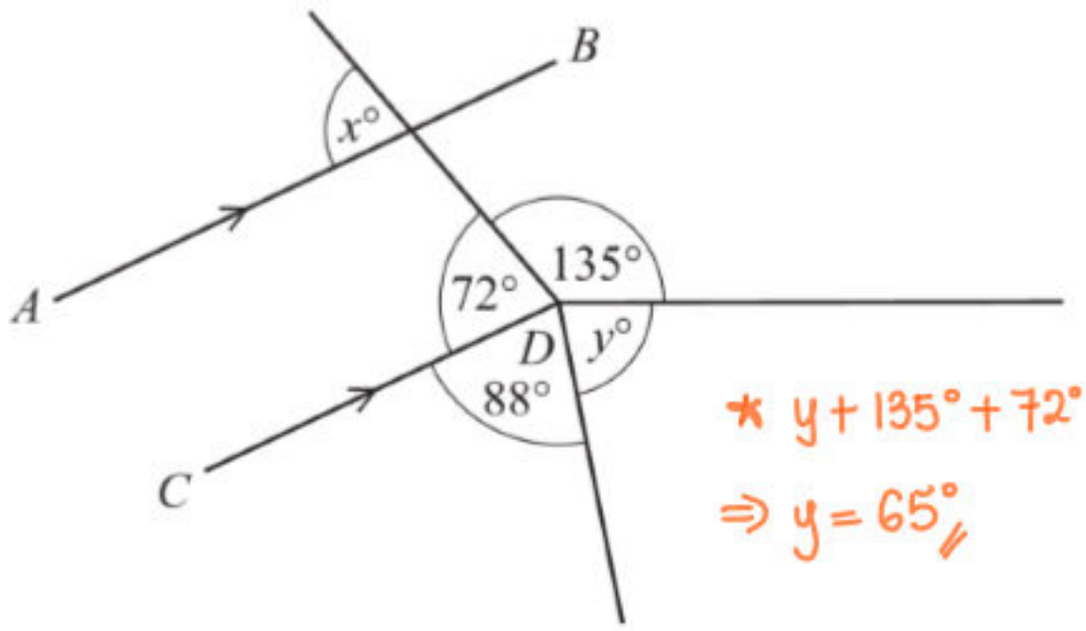
Kite ..... [1]

**(b)** Reflect the shape in line $L$.




[2]

**8**




NOT TO SCALE

* $y + 135° + 72° + 88° = 360°$

$\Rightarrow y = 65°$

In the diagram, $AB$ is parallel to $CD$.

**(a)** Find the value of $x$.
Give a geometrical reason for your answer.

$x =$ 72 because corresponding angles are equal. [2]

**(b)** Work out the value of $y$.
Give a geometrical reason for your answer.

$y =$ 65 because angles at a point add up to 360°. [2]

**9** 32 33 34 35 36 37 38 39

From this list of numbers, write down

**(a)** a multiple of 8,

32 [1]

**(b)** a square number,

36 [1]

**(c)** a prime number.

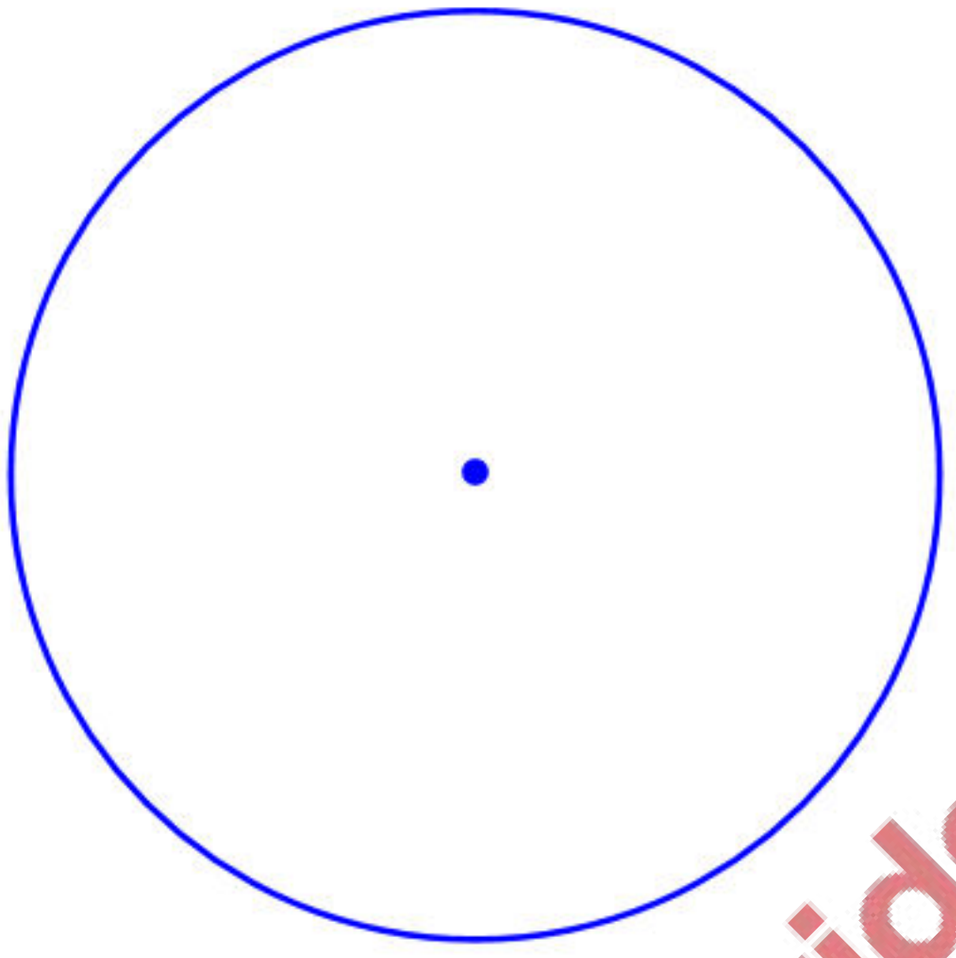
37 [1]

7.6cm

**10** **(a)** A circular garden has diameter 11.4 m.

Draw the garden accurately, using a scale of 1 cm represents 1.5 m.

* radius = $\frac{7.6\text{cm}}{2} = 3.8\text{cm}$



Scale: 1 cm to 1.5 m

[2]

**(b)** On a map, the distance between two towns is 9.6 cm.
The scale of the map is 1 : 50 000.

Work out the actual distance between the two towns in kilometres.

1 : 50 000

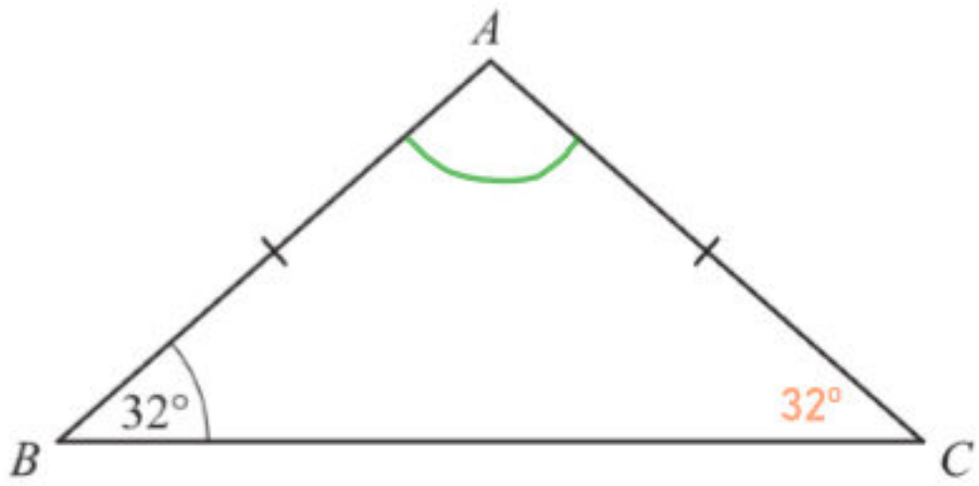
9.6cm : x

$\Rightarrow x = \frac{9.6}{10^5}\text{ km} \times 50\,000$

$\Rightarrow x = 4.8\text{ km}$

4.8 ..... km [2]

**11**




NOT TO SCALE

Triangle $ABC$ is isosceles.
Angle $ABC = 32°$ and $AB = AC$.

Find angle $BAC$.

$* \hat{BAC} + 32° + 32° = 180°$

$\Rightarrow \hat{BAC} = 116°$ //

Angle $BAC$ = ..... 116° ..... [2]

**12** A bag contains yellow balls, pink balls and green balls only.

The ratio yellow balls : pink balls : green balls = 7 : 3 : 5.
There are 42 yellow balls in the bag.

Work out the total number of balls in the bag.

$* \frac{7}{15} \times T = 42$

$\Rightarrow T = \frac{42 \times 15}{7}$

$\Rightarrow T = 90$ //

..... 90 ..... [2]

**13** On any day, the probability that Marcus will get a seat on the school bus is 0.93 .

**(a)** Write down the probability that he will **not** get a seat on the school bus today.

$* P = 1 - 0.93 = 0.07$ //

..... 0.07 ..... [1]

**(b)** There are 200 school days in a year.

Work out the expected number of days in a year that Marcus will **not** get a seat.

$* N = 0.07 \times 200 = 14$ //

..... 14 ..... [1]

**14** Simplify.

**(a)** $p^2 \times p^4$ = $p^{2+4}$ = $p^6$

$p^6$ ..... [1]

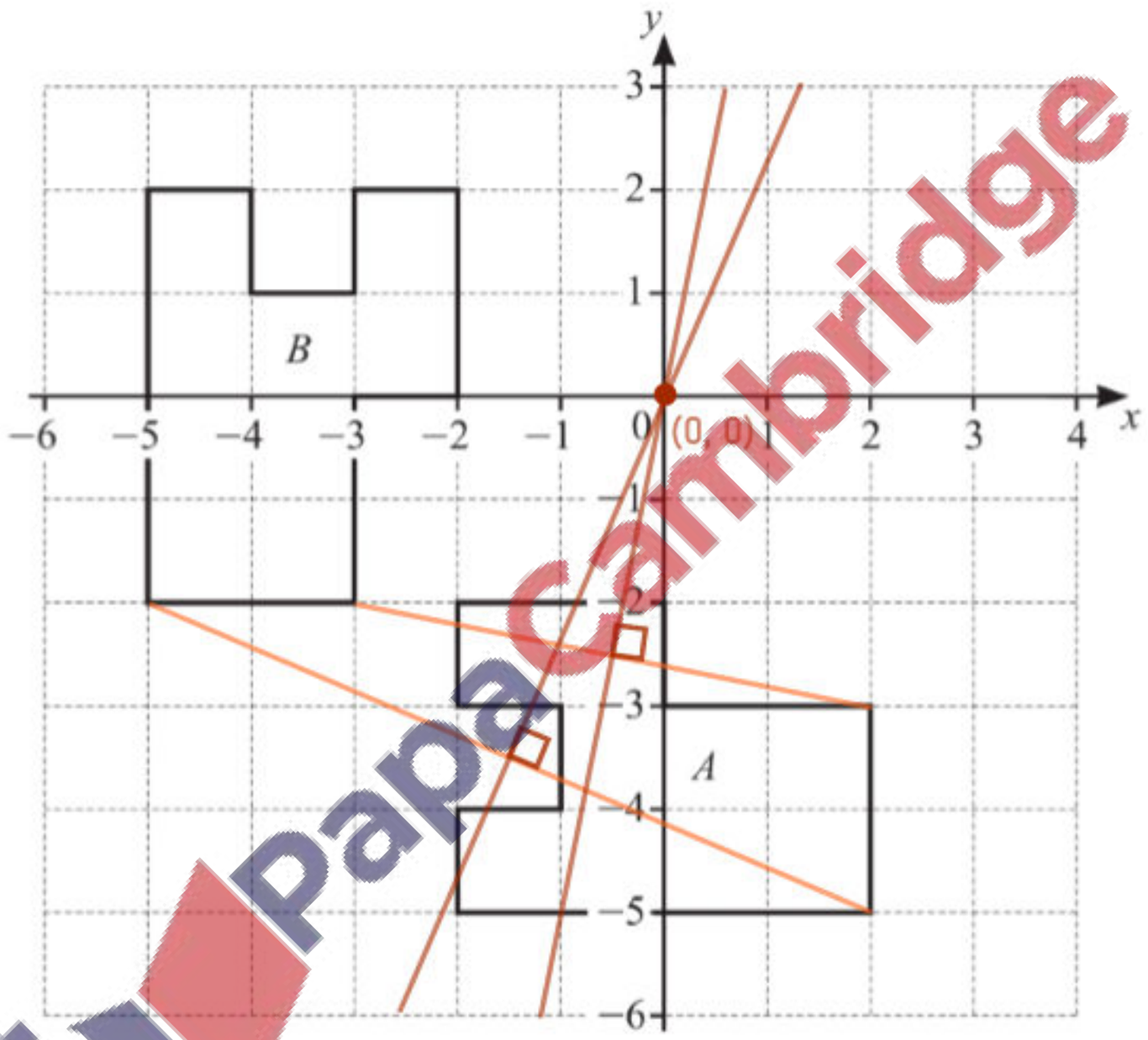
**(b)** $m^{15} \div m^5$ = $m^{15-5}$ = $m^{10}$

$m^{10}$ ..... [1]

**(c)** $(k^3)^5$ = $k^{3\times5}$ = $k^{15}$

$k^{15}$ ..... [1]

**15**




Describe fully the **single** transformation that maps shape *A* onto shape *B*.

Rotation 90° clockwise about the origin

..... [3]

**16** **Without using a calculator**, work out $3\frac{1}{4} - 2\frac{2}{3}$.
You must show all your working and give your answer as a fraction in its simplest form.

$\Rightarrow \frac{13}{4} - \frac{8}{3}$

$\Rightarrow \frac{39-32}{12}$

$\Rightarrow \frac{7}{12}$

$\frac{7}{12}$ [3]

**17** A chef buys some cheese from France.
200 g of cheese costs 3.45 euros.
The exchange rate is \$1 = 0.84 euros.

Work out the maximum mass of cheese the chef can buy with \$150.
Give your answer in kilograms, correct to 1 decimal place.

\$1 → 0.84 euros
\$150 → x

$\Rightarrow x = \frac{\$150}{\$1} \times 0.84 \text{ euros} = 126 \text{ euros}$

200g → 3.45 euros
y → 126 euros

$\Rightarrow y = \frac{126 \text{ euros}}{3.45 \text{ euros}} \times \frac{200}{10^3} \text{ kg} = 7.3 \text{ kg (1 dp)}$

7.3 kg [4]

**18** Sonia wants to invest \$5000 for 6 years.

Bank A pays compound interest at a rate of 3.5% per year.
Bank B increases the \$5000 by 22% at the end of 6 years.

Which bank will give Sonia the most money at the end of 6 years and by how much?
You must show all your working.

Bank A

$* A = a\left(1+\frac{r}{100}\right)^t$

$\Rightarrow A = \$5000\left(1+\frac{3.5}{100}\right)^6$

$\Rightarrow A = \$6146.28$

Bank B

$* A = \$5000 + \left(\frac{22}{100} \times \$5000\right)$

$\Rightarrow A = \$6100$

$\therefore$ Difference $= \$6146.28 - \$6100$
$= \$46.28$

Bank ..... A ..... will give \$ ..... 46.28 ..... more money. [5]

**19** By rounding each number correct to 1 significant figure, estimate the value of

$$\frac{71 \times 32.4}{4.8^2}.$$

You must show all your working.

$\Rightarrow \frac{70 \times 30}{5^2}$

$\Rightarrow \frac{2100}{25}$

$\Rightarrow 84$

..... 84 ..... [2]

**20** Des thinks of two numbers. x and y
The sum of his two numbers is −6.
The difference between his two numbers is 62.

Find the two numbers.

$x + y = -6$ — (1)

$x - y = 62$ — (2)

(1) + (2) : $2x = 56$

$\Rightarrow x = 28$ //

Put x in (1)

* $28 + y = -6$

$\Rightarrow y = -34$ //

..... 28 ..... and ..... -34 ..... [4]

**21** A solid cylinder has radius 3 cm and height 4.5 cm.

Calculate the **total** surface area of the cylinder.

* $A = 2\pi rh + 2(\pi r^2)$

$\Rightarrow A = [2\pi(3)(4.5)]\,cm^2 + 2[\pi(3)^2]\,cm^2$

$\Rightarrow A = 141\,cm^2$ // (3 sig. figs.)

..... 141 ..... $cm^2$ [4]

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