Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

MATHEMATICS **0580/12**

Paper 1 (Core) **February/March 2022**

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 π, 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. Any blank pages are indicated.

1 Write the number sixteen thousand and thirty-seven in figures.

16 037 [1]

2 Write down the six factors of 28.

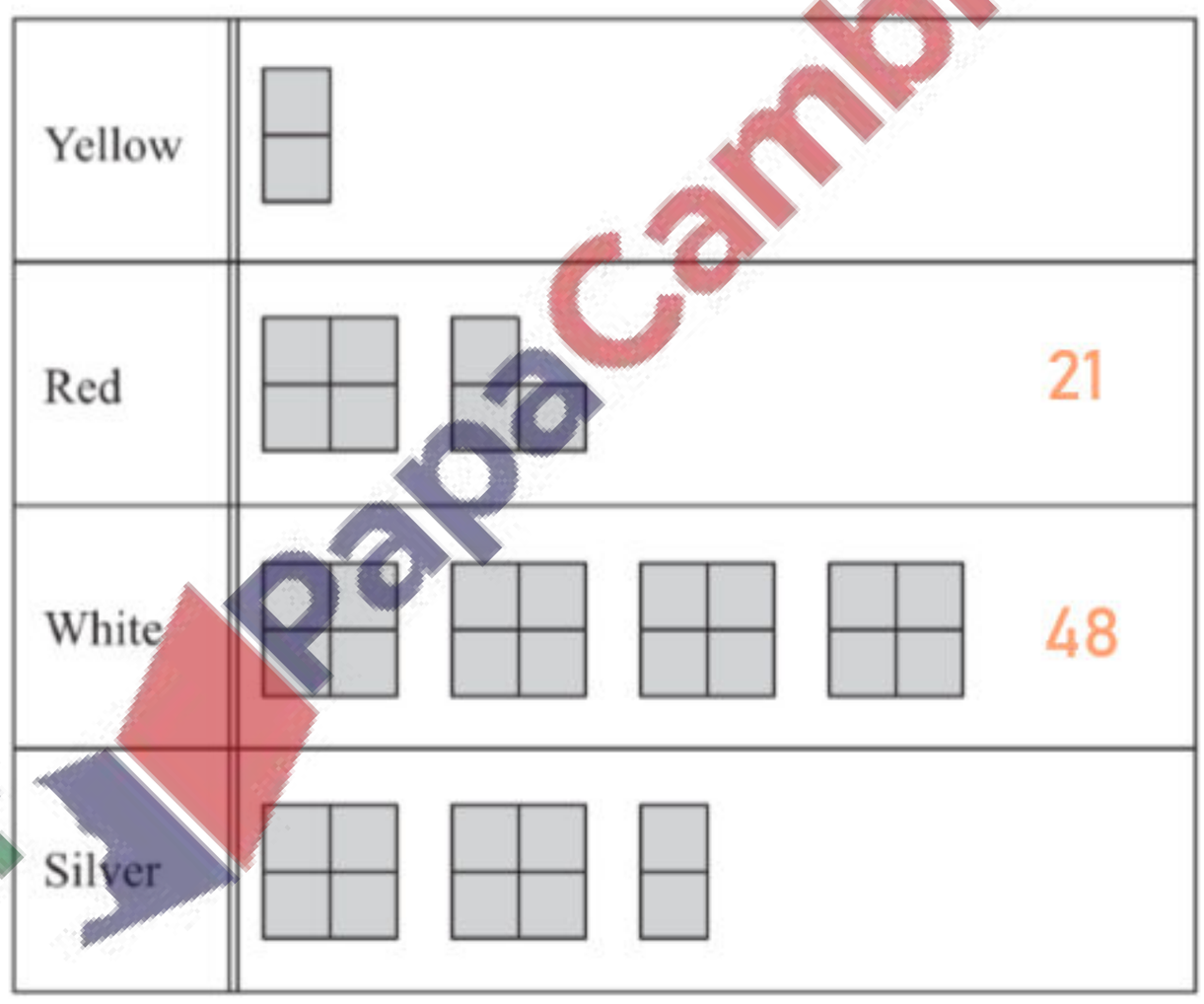
1 × 28
2 × 14
4 × 7

1, 2, 4, 7, 14, 28 [2]

3 Write 9876 correct to the nearest thousand.

10 000 [1]

4 The pictogram shows the number of different coloured cars a garage sells in a month.



Work out how many more white cars than red cars the garage sells.

* Difference = 48 − 21 = 27,

27 [1]

5 Write down the reciprocal of $\frac{5}{6}$.

$\frac{6}{5}$ [1]

6 This is Edha's method to work out 99×27 without using a calculator.

$$\begin{aligned} 99 \times 27 &= 100 \times 27 - 27 \\ &= 2700 - 27 \\ &= 2673 \end{aligned}$$

Show how to use Edha's method to work out 99×68 without using a calculator.

$* \ 99 \times 68 = 100 \times 68 - 68$
$= 6800 - 68$
$= 6732$

[2]

7 **(a)** Write 5.26 pm using the 24-hour clock.

17 26 [1]

(b) A journey starts at 21 15 one day and ends at 04 33 the next day.

Calculate the time taken, in hours and minutes.

hrs.	mins.
24	00
−21	15
2	45

hrs.	mins.
04	33
+ 2	45
7	18

7 h 18 min [1]

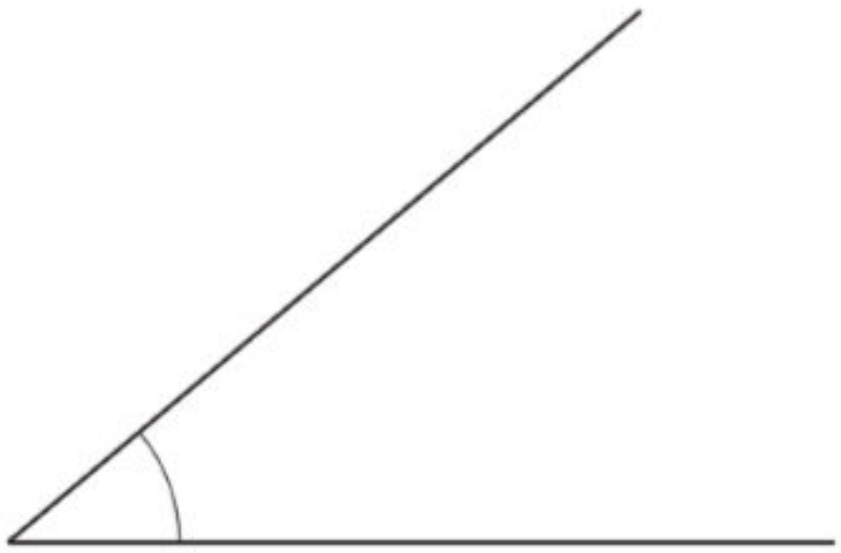
(c) Change 10 260 seconds into hours.

$1h \rightarrow 3600s$
$x \rightarrow 10\,260s$

$\Rightarrow x = \frac{10\,260s}{3600s} \times 1h = 2.85h$

2.85 hours [2]

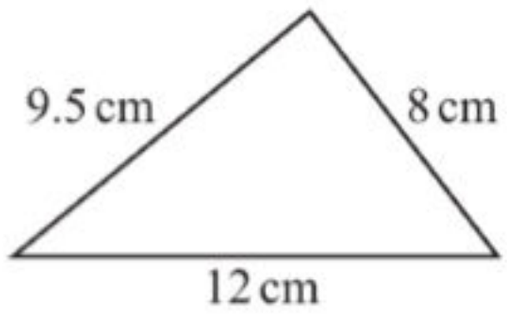
8 (a)



Measure the marked angle.

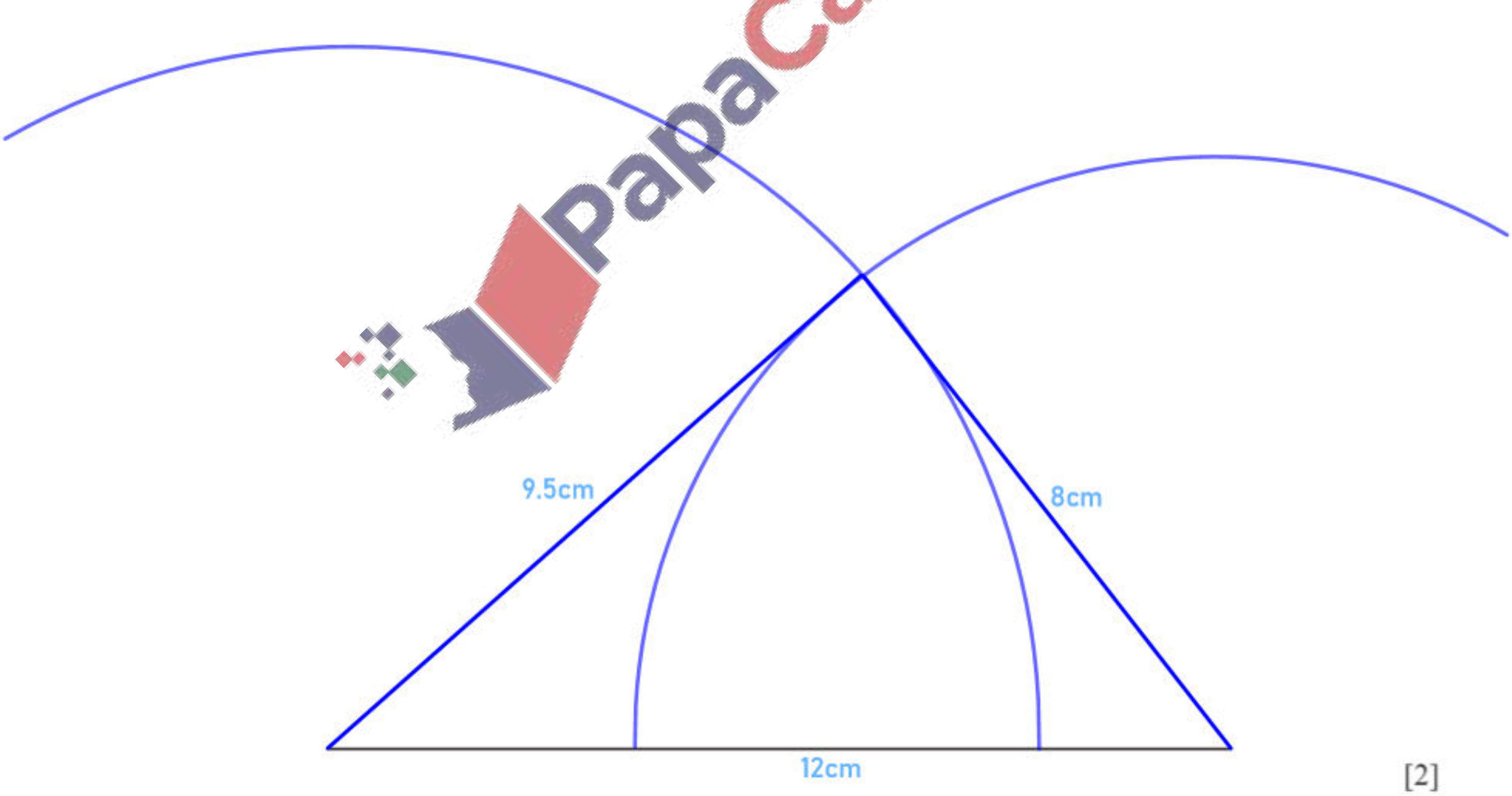
40° ..... [1]

(b)



NOT TO SCALE

Using a ruler and compasses only, construct this triangle.
Leave in your construction arcs.
The side of length 12 cm has been drawn for you.



[2]

9 Put one pair of brackets into this calculation to make it correct.

$$150 - 17 - 5 \times 2^2 = 33$$

[1]

10 Work out $\sqrt{5} \times 6^2$.
Give your answer correct to 2 decimal places.

80.50 [2]

11 Joe thinks of a positive number, n.
He squares n, then adds it to -24.
The answer is 25.

Work out n.

* $n^2 + (-24) = 25$
$\Rightarrow n^2 - 24 = 25$
$\Rightarrow n^2 = 49$
$\Rightarrow n = \sqrt{49}$
$\Rightarrow n = 7$

$n =$ 7 [2]

12 Indrani and Jagad share some money in the ratio Indrani : Jagad = 7 : 9.

Calculate the percentage of the money that Indrani receives.

* Percentage $= \frac{7}{7+9} \times 100\%$
$= 43.75\%$

43.75 % [2]

13 The equation of a line is $y = 5x + 7$.

(a) Write down the gradient of this line.

5 [1]

(b) **(i)** Find the coordinates of the point where this line crosses the y-axis.

(0 , 7) [1]

(ii) Find the coordinates of the point where this line crosses the x-axis.

At the point where the line crosses x-axis,

$y=0$

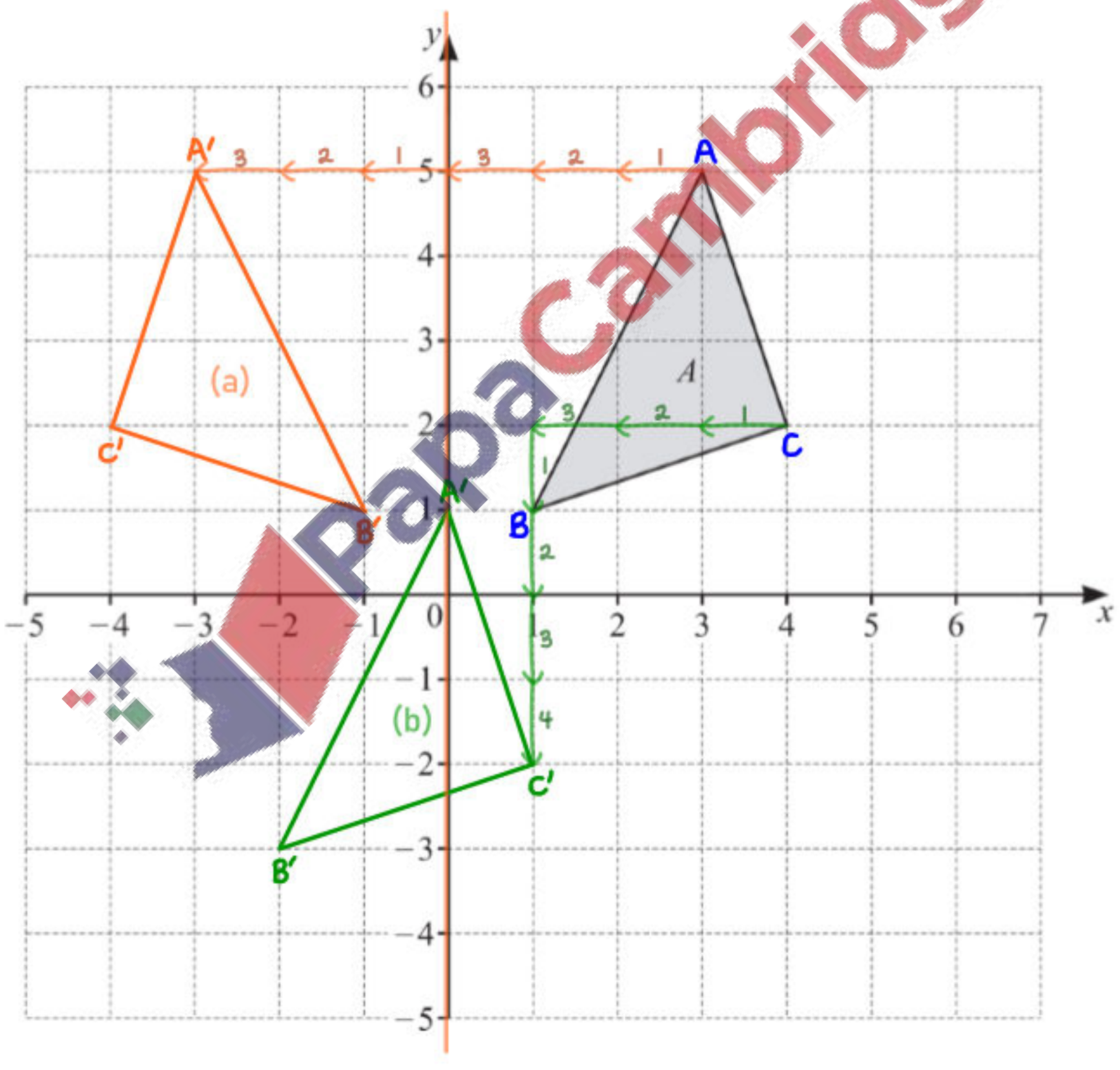
$\Rightarrow 5x+7=0$

$\Rightarrow 5x=-7$

$\Rightarrow x=-1.4$

(-1.4 , 0) [2]

14



On the grid, draw the image of

(a) triangle A after a reflection in the y-axis, [1]

(b) triangle A after a translation by the vector $\begin{pmatrix} -3 \\ -4 \end{pmatrix}$. [2]

15 Write 0.0001 as a power of 10.

-1 -2 -3 -4
0.0001

$1.0 \times 10^{-4} = 10^{-4}$

.....10^{-4}..... [1]

16 As the temperature increases, people eat more ice cream.

What type of correlation does this statement describe?

.....positive..... [1]

17 Sanjay invests $700 in an account paying simple interest at a rate of 2.5% per year.

Calculate the value of his investment at the end of 6 years.

$\star$ Total $= P + I$

$= P + \frac{PRT}{100}$

$= \$700 + \frac{\$700 \times 2.5 \times 6}{100}$

$= \$805$

$ .....805..... [3]

18 These are the first four terms of a sequence.

1 23 45 67 89 111

+22 +22 +22 +22 +22

(a) Write down the next two terms.

.....89....., ...111..... [2]

(b) Find the *n*th term.

$\star\ a_n = a_1 + (n-1)d$

$= 1 + (n-1) \times 22$

$= 1 + 22n - 22$

$= 22n - 21$

.....$22n-21$..... [2]

19 Simplify.

(a) $5f+7g-8f+2g$

$9g-3f$ [2]

(b) $h^2 \times h^5 = h^{2+5} = h^7$

h^7 [1]

(c) $\sqrt{16x^2} \times 5y^0$

$\Rightarrow \sqrt{(4x)^2} \times 5(1)$

$\Rightarrow 4x \times 5$

$\Rightarrow 20x$

$20x$ [2]

20 Balavan has n marbles.

He gives his sister $\frac{n}{5}$ marbles.

He gives his cousin $\frac{n}{2}$ marbles.

Write an expression, in terms of n, for the number of marbles that Balavan has now.
Give your answer in its simplest form.

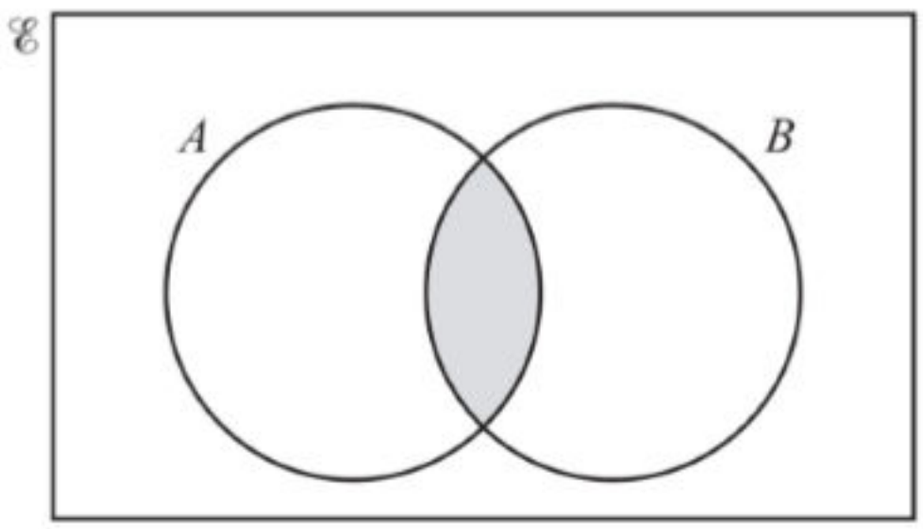
$* \; n - \frac{n}{5} - \frac{n}{2}$

$\Rightarrow n\left(1 - \frac{1}{5} - \frac{1}{2}\right)$

$\Rightarrow \frac{3}{10}n$

$\frac{3}{10}n$ [2]

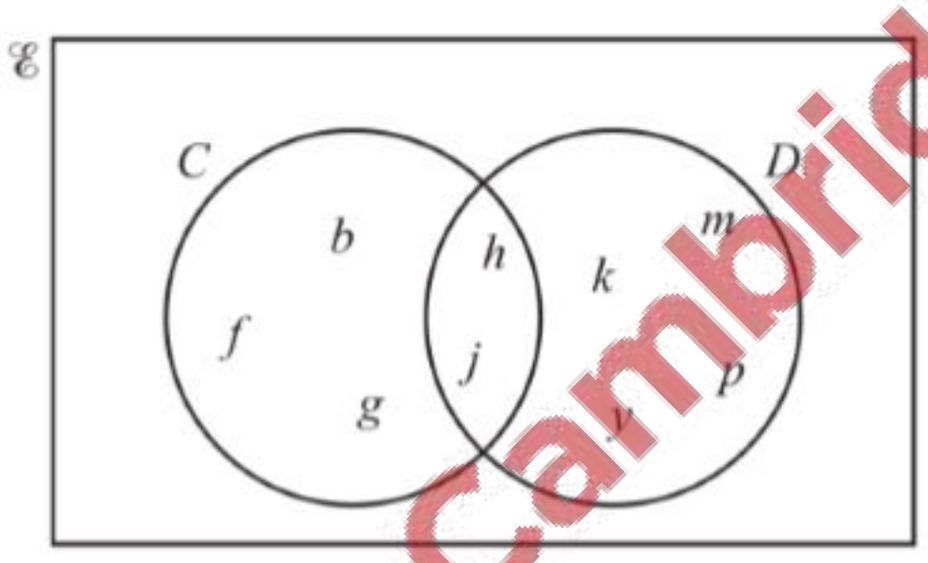
21 (a)



Use set notation to describe the shaded region.

A ∩ B [1]

(b)



Find n(C).

5 [1]

22 **Without using a calculator**, work out $2\frac{1}{3} \times \frac{11}{14}$.

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

$\Rightarrow \frac{7}{3} \times \frac{11}{14_2}$

$\Rightarrow \frac{11}{6} = 1\frac{5}{6}$

$1\frac{5}{6}$ [3]

23 **(a)** Expand and simplify.

$(x+3)(x-5)$

$\Rightarrow x^2 - 5x + 3x - 15$

$\Rightarrow x^2 - 2x - 15$

$x^2 - 2x - 15$ [2]

(b) Renuka's teacher asks her to factorise completely $8x^2 - 12x$.
Renuka writes $2x(4x-6)$ as her answer.

Explain why she does not score full marks and give the correct answer.

Reason She factors out 2x instead of 4x

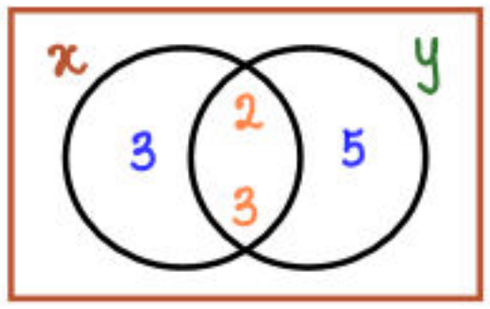
Correct answer $4x(2x-3)$

[2]

24 Udita thinks of two whole numbers.
Both numbers are greater than 6.
The lowest common multiple (LCM) of the two numbers is 90.
The highest common factor (HCF) of the two numbers is 6.

Find the two numbers.

* $90 = 2 \times 3 \times 3 \times 5$
* $6 = 2 \times 3$



* $x = 2 \times 3 \times 3 = 18$
* $y = 2 \times 3 \times 5 = 30$

18 and 30 [2]

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