Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

MATHEMATICS **0580/12**

Paper 1 (Core) **February/March 2018**

1 hour

Candidates answer on the Question Paper.

Additional Materials: Electronic calculator
Tracing paper (optional)
Geometrical instruments

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.
If working is needed for any question it must be shown below that question.
Electronic calculators should be used.
If the degree of accuracy is not specified in the question, and if the answer is not exact, give the answer to three significant figures. Give answers in degrees to one decimal place.
For π, use either your calculator value or 3.142.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.
The total of the marks for this paper is 56.

This document consists of **8** printed pages.

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[Turn over

1 Write $\frac{2}{5}$ as a percentage.

* $\frac{2}{5} \times 100\% = 40\%$

40 ..... % [1]

2 Write these numbers in order, starting with the smallest.

0.55 $\quad \frac{6}{11} \quad$ $54\frac{1}{2}\%$

55% 54.55% 54.5%

$54\frac{1}{2}\%$ < $\frac{6}{11}$ < 0.55 [1]

smallest

3 "We eat more ice cream as the temperature rises."

What type of correlation is this?

positive ..... [1]

4 The probability that it rains tomorrow is 0.35 .

Work out the probability that it does not rain tomorrow.

* $P = 1 - 0.35 = 0.65$

0.65 ..... [1]

5 Write 0.000 052 3 in standard form.

0.00005 2 3 (-1 -2 -3 -4 -5)

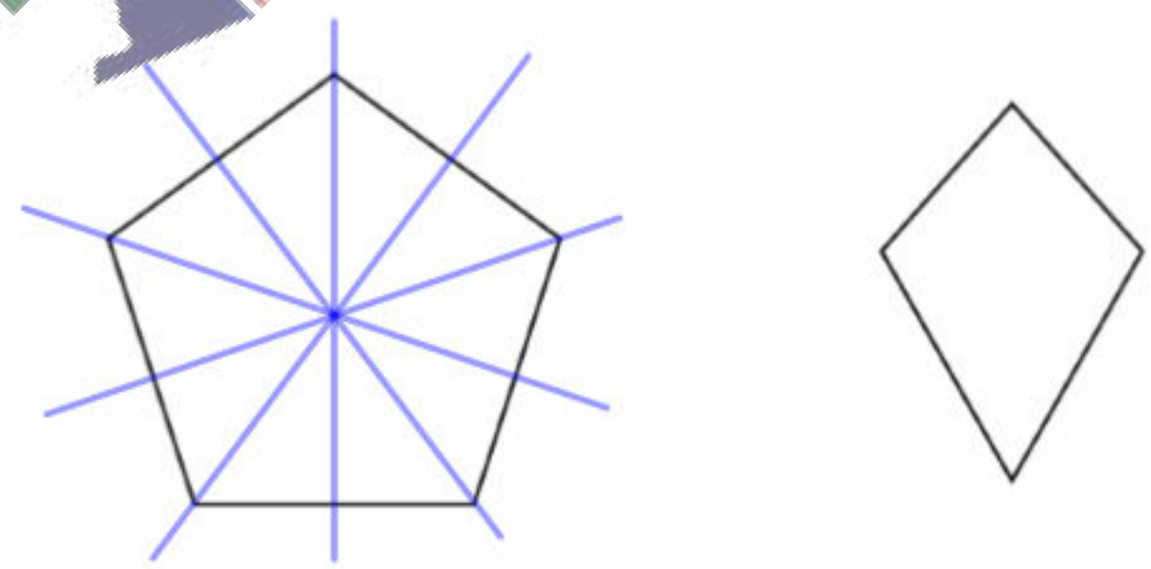
5.23×10^{-5}

5.23×10^{-5} ..... [1]

6 Write 6.8167 correct to 3 significant figures.

6.82 ..... [1]

7



The diagram shows a regular pentagon and a kite.

Complete the following statements.

(a) The regular pentagon has 5 ..... lines of symmetry. [1]

(b) The kite has rotational symmetry of order 1 ..... . [1]

8 Divide 120 in the ratio 1 : 2.

$\frac{1}{3} \times 120 : \frac{2}{3} \times 120$

$40 : 80$

40 : 80 [2]

9 **(a)** Calculate $\sqrt[3]{-4.3 \times 6.7^2}$ and write down all the figures shown on your calculator.

-5.779266039947 [1]

(b) Write your answer to **part (a)** correct to 4 decimal places.

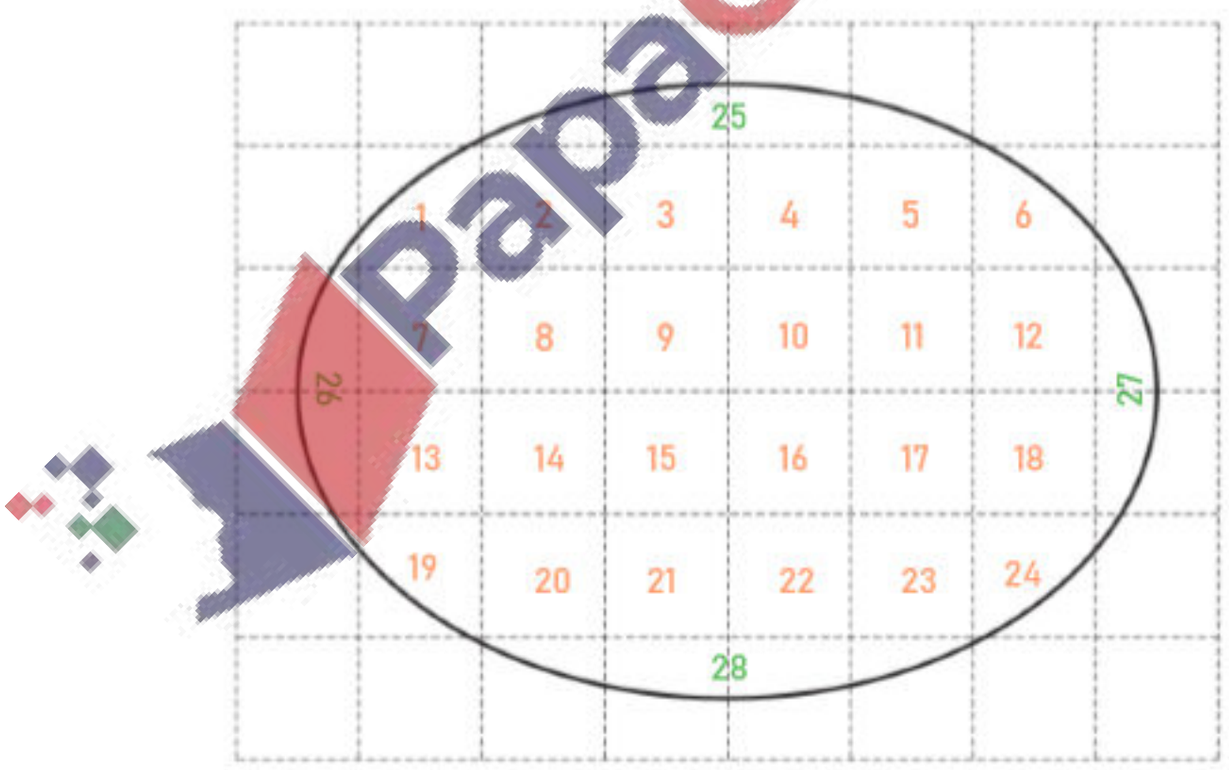
-5.7793 [1]

10 Insert one pair of brackets in each of the following to make the statements correct.

(a) $5 + 3 \times (10 - 1) = 32$ [1]

(b) $3 \times 2 - (4 - 7) = 9$ [1]

11



Find an estimate for the area of the shape drawn on this 1 cm^2 grid.

28 cm^2 [2]

12 **(a)** Find the value of $(\sqrt{25})^2$.

25 [1]

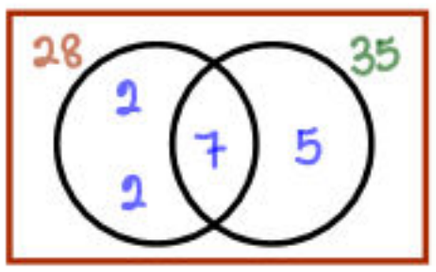
(b) Simplify $(x^5)^2$. $= x^{2\times5}$

$= x^{10}$

x^{10} [1]

13 Find the lowest common multiple (LCM) of 28 and 35.

* $28 = 2\times2\times7$
* $35 = 5\times7$



* LCM (28 and 35) $= 2\times2\times7\times5 = 140$

140 [2]

14 Factorise completely.

$$6d^2e - 9e^2$$

$3e(2d^2 - 3e)$ [2]

15 The length, l metres, of a garden is 78.5 metres, correct to the nearest half metre.

Complete this statement about the value of l.

* $l = 78.5\text{m} \pm \frac{0.5\text{m}}{2}$
* $\text{LB}(l) = (78.5 - \frac{0.5}{2})\text{m} = 78.25\text{m}$
* $\text{UB}(l) = (78.5 + \frac{0.5}{2})\text{m} = 78.75\text{m}$

78.25 $\leqslant l <$ 78.75 [2]

16 Neelum hires a machine to clean carpets.
It costs \$25 to hire the machine for the first day and \$9 for each extra day after the first day.
Neelum pays a total of \$88 to hire the machine.

Work out the **total** number of days she hires the machine for.

* $88 = 25 + 9x$ ∴ Total no. of days $= 1 + 7 = 8$
$\Rightarrow 9x = 63$
$\Rightarrow x = 7$

8 [3]

17 Dev makes 600 cakes.
18% of the 600 cakes go to a hotel and $\frac{2}{3}$ of the 600 cakes go to a supermarket.

Calculate how many cakes he has left.

* $N = 600 - \left(\frac{18}{100} \times 600\right) - \left(\frac{2}{3} \times 600\right)$

$\Rightarrow N = 600 - 108 - 400$

$\Rightarrow N = 92$//

92 .....[3]

18 Tomas borrows \$5000 for 3 years at a rate of 2.5% per year compound interest.
He pays back the whole amount, with interest, at the end of 3 years.

Calculate the total amount of money he pays back at the end of the 3 years.

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

$\Rightarrow A = \$5000\left(1 + \frac{2.5}{100}\right)^3$

$\Rightarrow A = \$5384.45 (2dp)$//

\$ 5384.45 .....[3]

19 **Without using your calculator**, work out $\frac{7}{8} + \frac{1}{6}$.

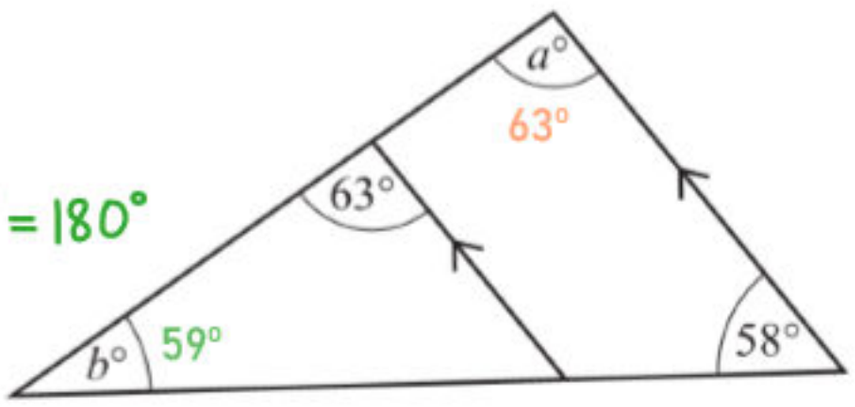
You must show all your working and give your answer as a mixed number in its simplest form.

$\Rightarrow \frac{21+4}{24}$

$\Rightarrow \frac{25}{24} = 1\frac{1}{24}$//

$1\frac{1}{24}$ .....[3]

20



NOT TO SCALE

* $b + 58° + 63° = 180°$

$\Rightarrow b = 59°$ //

Complete the statements.

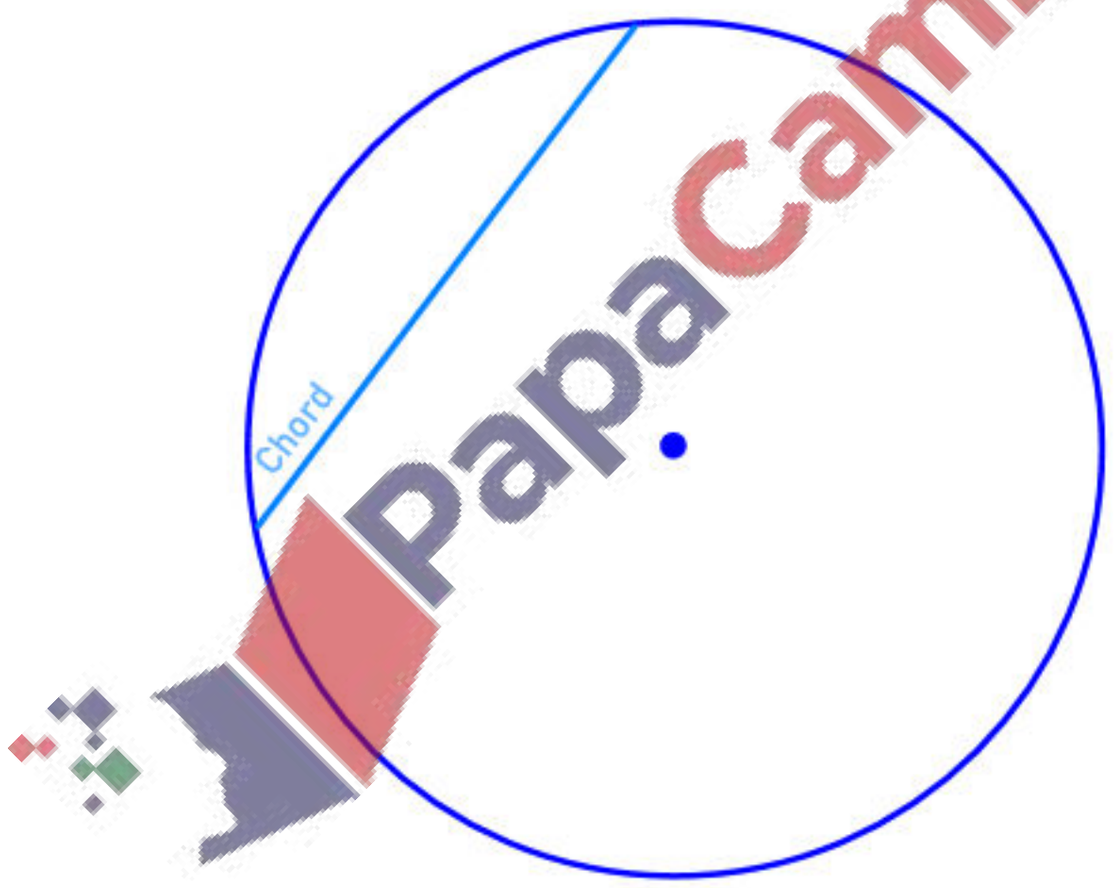
$a =$ ..... 63 ..... because ..... corresponding angles are equal. .....

.....

$b =$ ..... 59 ..... because ..... angles in a triangle add up to 180°. .....

..... [4]

21 **(a)** In the space below, draw a circle with diameter 7 cm. * radius $= \frac{7\text{cm}}{2} = 3.5\text{cm}$ //



[1]

(b) On your diagram, draw a chord. [1]

(c) Show that the circumference of the circle is 21.99 cm, correct to 2 decimal places.

* $C = 2\pi r$

$\Rightarrow C = 2\pi(3.5\text{ cm})$

$\Rightarrow C = 21.9911\ldots\text{cm} \approx 21.99\text{cm}\ (2\text{dp})$ //

[2]

22 On the internet, Pranay sees a grey jacket for 165 euros (€) and a blue jacket for $180.

These are the exchange rates.

€1 = 76.05 rupees
1 rupee = $0.0152

Work out which jacket is the cheapest and by how many rupees.

Grey jacket

€1 = 76.05r
€165 = x
⇒ $x = \frac{€165}{€1} \times 76.05r = 12548.25r$ //

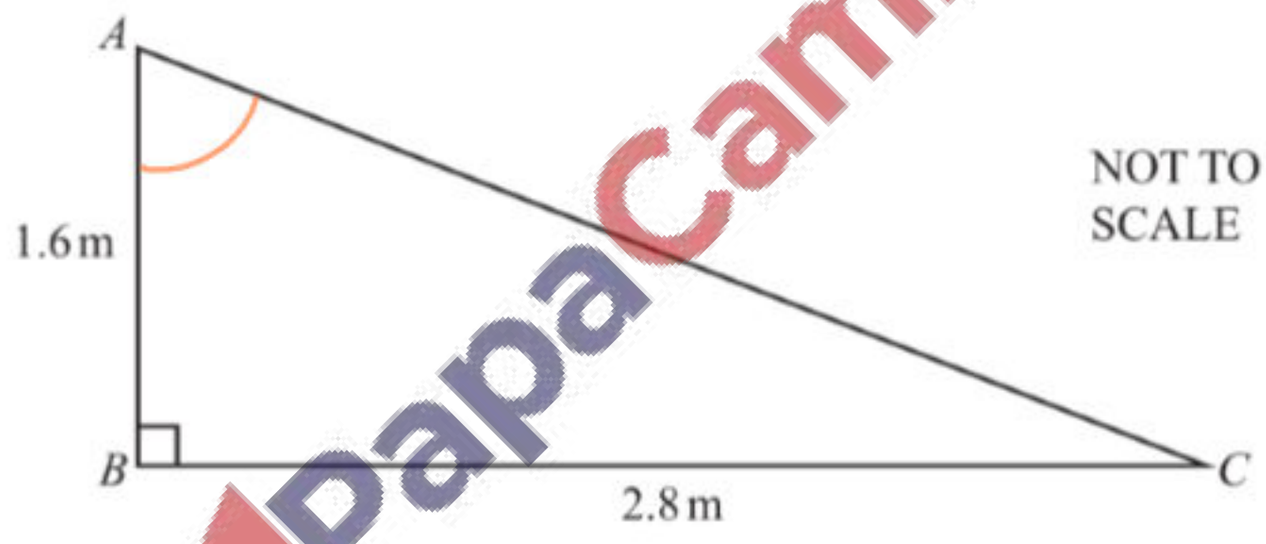
Blue jacket

1r = $0.0152
y = $180
⇒ $y = \frac{\$180}{\$0.0152} \times 1r = 11842.11r$ // (2dp)

* Difference = 12548.25r − 11842.11r
= 706.14r //

The ..... blue ..... jacket is cheapest by ..... 706.14 ..... rupees [4]

23



(a) Calculate AC.

* $AC^2 = AB^2 + BC^2$
⇒ $AC = (\sqrt{1.6^2 + 2.8^2})$ m
⇒ AC = 3.22 m // (3 sig. figs)

$AC =$ ..... 3.22 ..... m [2]

(b) Calculate the size of angle BAC.

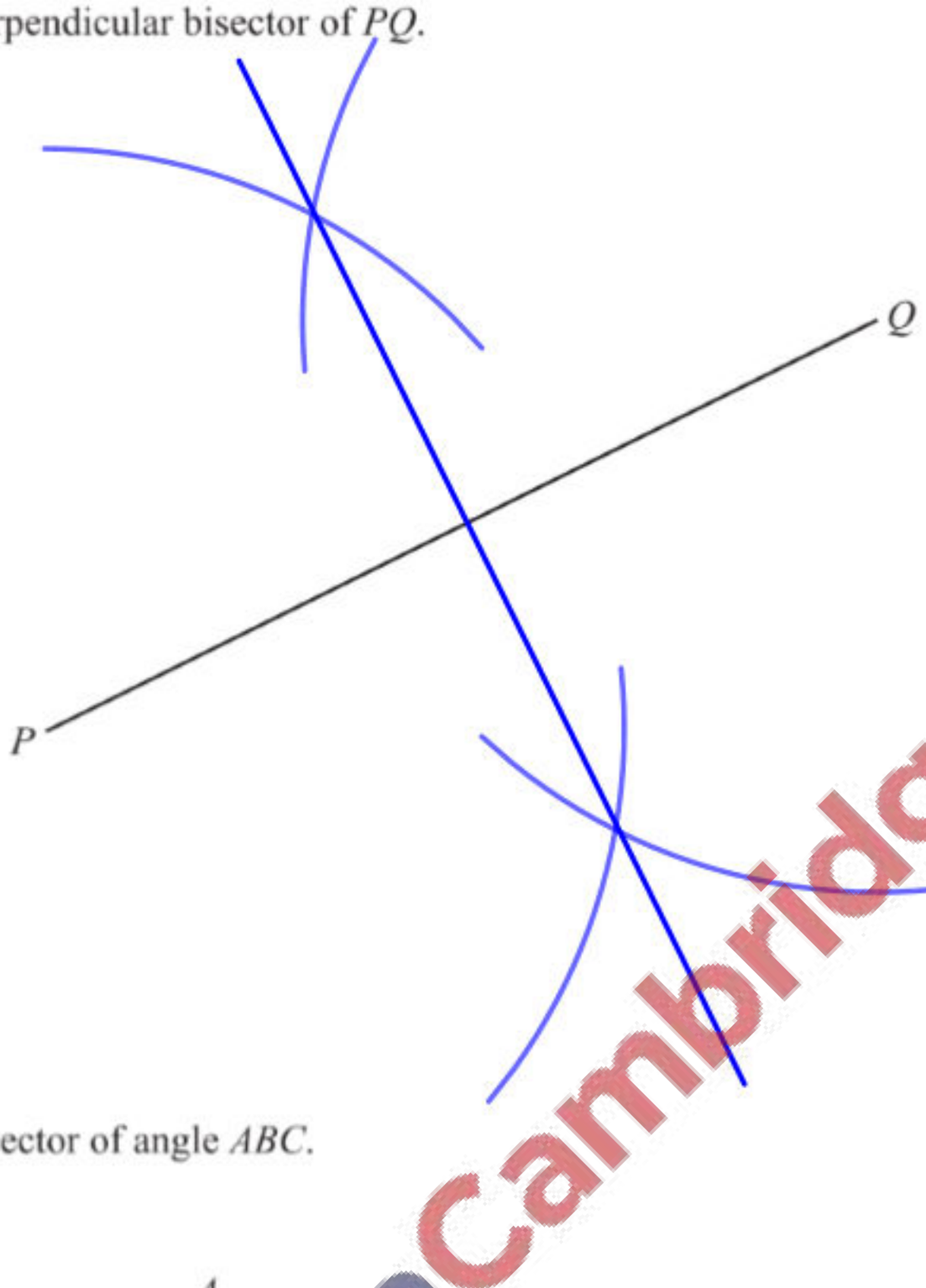
* $\tan B\hat{A}C = \frac{2.8\,m}{1.6\,m}$
⇒ $B\hat{A}C = \tan^{-1}\left(\frac{2.8}{1.6}\right)$
⇒ $B\hat{A}C = 60.3°$ (1 dp) //

Angle $BAC =$ ..... 60.3° ..... [2]

Question 24 is printed on the next page.

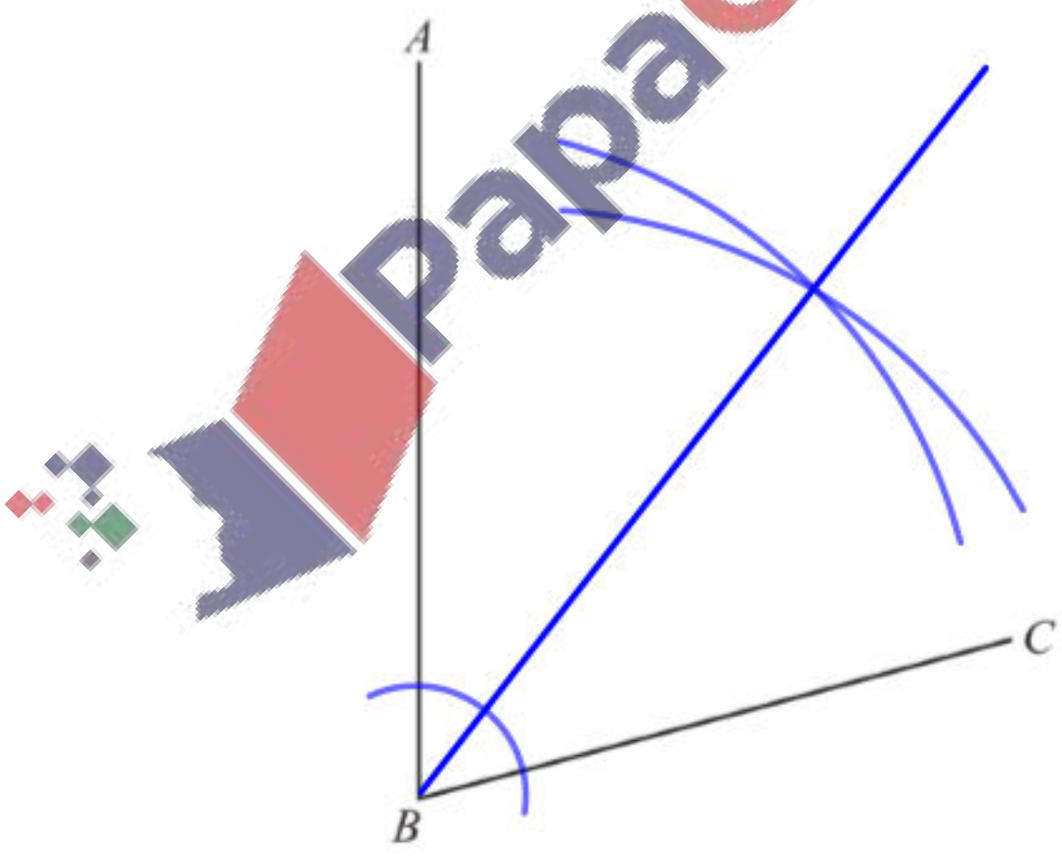
24 In this question, **use a straight edge and compasses only** and show all your construction arcs.

(a) Construct the perpendicular bisector of PQ.



[2]

(b) Construct the bisector of angle ABC.



[2]