Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Without sufficient working, correct answers may be awarded no marks.
- Answer the questions in the spaces provided
  – *there may be more space than you need*.
- **Calculators may be used.**
- You must **NOT** write anything on the formulae page.
- Anything you write on the formulae page will gain NO credit.

Information

- The total mark for this paper is 100.
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question*.

Advice

- Read each question carefully before you start to answer it.
- Check your answers if you have time at the end.

Turn over ▶
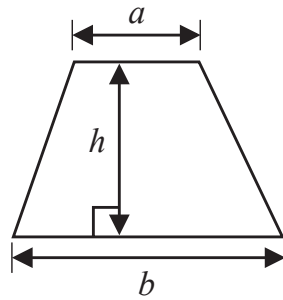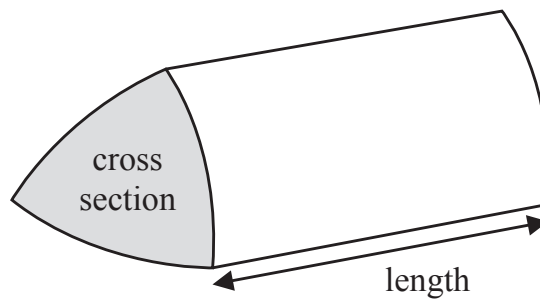
Pearson

International GCSE Mathematics
Formulae sheet – Foundation Tier

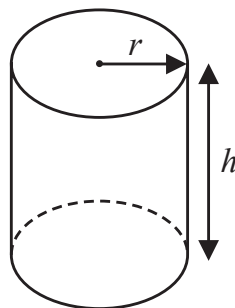**Area of trapezium** = $\frac{1}{2}(a + b)h$

Volume of prism = area of cross section $\times$ length

Volume of cylinder = $\pi r^2 h$

Curved surface area of cylinder = $2\pi rh$

Answer ALL TWENTY EIGHT questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 (a) Write in figures the number seven thousand and fifty four.

7054 ①

....

(1)

(b) Write the number 78 263 correct to the nearest 100

78 300 ①

....

(1)

(c) Write down the value of the 7 in the number 673 000

70 000 ①

....

(1)

(d) Write a number in the box to make the calculation correct.

$9 \times$ [2000 ①] $= 18\,000$

(1)

(e) Write a number in the box to make the calculation correct.

$53.7 \div$ [10000 ①] $= 0.005\,37$

(1)

(Total for Question 1 is 5 marks)

2 Here is a list of numbers.

$$9 \quad 11 \quad 13 \quad 15 \quad 21 \quad 60$$

From the numbers in the list, write down

(a) the even number

60 ①

(1)

(b) the square number

9 ①

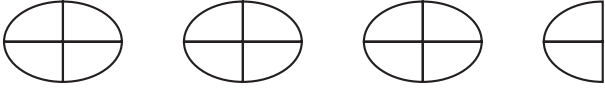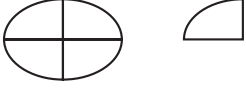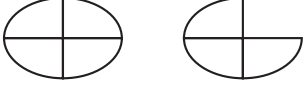(1)

(c) the multiple of 7

21 ①

(1)

(d) the factor of 30

15 ①

(1)
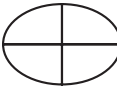
(Total for Question 2 is 4 marks)

3 Peter owns boarding kennels for dogs.

The pictogram shows information about the number of dogs that were at the kennels each day from Monday to Thursday last week.

Monday	⊕ ⊕ ⊕ ◖ 28
Tuesday	⊕ ◿ 10
Wednesday	⊕ ◖ 14
Thursday	⊕ ⊕ ◖ 20
Friday	⊕ ⊕ ◿ 18

Key: ⊕ represents 8 dogs

(a) How many dogs were at the kennels on Monday?

28 ✓

(1)

18 dogs were at the kennels on Friday.

(b) Show this information on the pictogram.

(1)

Peter gave each dog 2 biscuits each day.

(c) Work out the total number of biscuits that Peter gave the dogs during the five days from Monday to Friday last week.

Total number of dogs : 28 + 10 + 14 + 20 + 18 = 90

Kennels: 90 × 2 = 180 ✓ ✓

180

(2)

(Total for Question 3 is 4 marks)

5

4 Here is a sequence of patterns made from sticks.
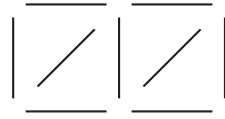
Pattern number 1   Pattern number 2   Pattern number 3
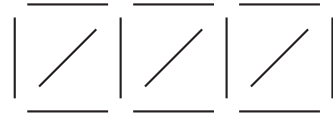
(a) In the space below, draw Pattern number 4

①

(1)

(b) Complete the table.

Pattern number	1	2	3	4	5
Number of sticks	5	9	13	17	21

①

(1)

(c) Work out the number of sticks in Pattern number 10

pattern : 4n + 1

4(10) + 1 = 41 ①

41

(1)

Connor says that in Pattern number 25 there are 102 sticks.

(d) Explain why Connor is wrong.

The number of Sticks are always an odd number.

①

(1)

(Total for Question 4 is 4 marks)

5 The diagram shows three points, *A*, *B* and *C*, marked on a grid.
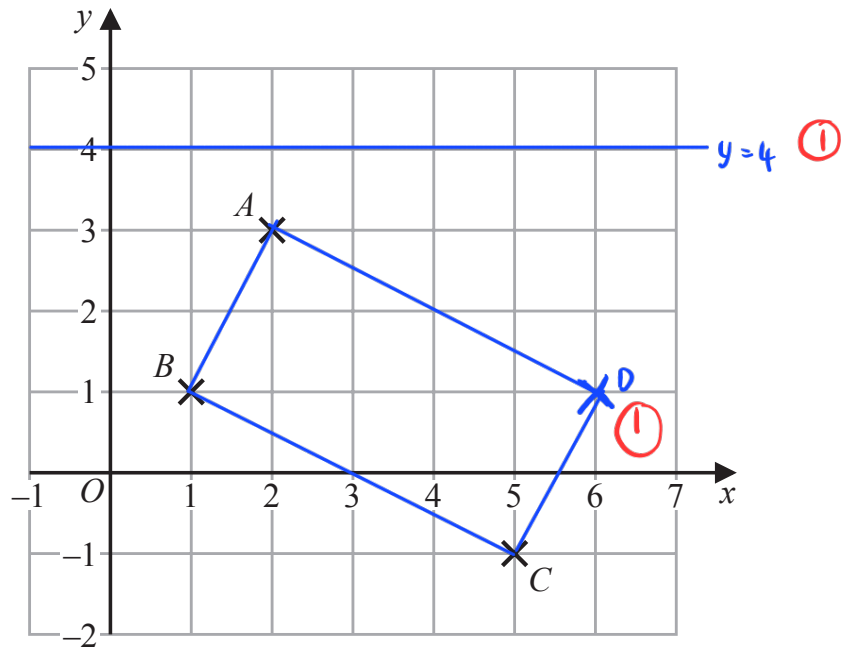
(a) Write down the coordinates of point *A*

(2 , 3)

(1)

(b) On the grid, mark with a cross (×) the point *D* so that *ABCD* is a rectangle.

(1)

(c) Find the coordinates of the midpoint of *AC*

$A(2,3)$, $C(5,-1)$

midpoint AC : $\left(\dfrac{2+5}{2} , \dfrac{3-1}{2} \right)$

$= (3.5, 1)$ ②

(3.5 , 1)

(2)

(d) On the grid, draw the line with equation *y* = 4

(1)

(Total for Question 5 is 5 marks)

6 (a) Write down the mathematical name of this polygon.
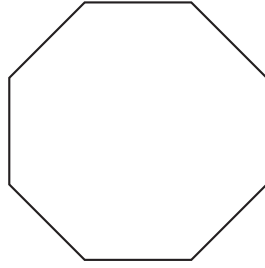
octagon ①

(1)

(b) Measure the length of the line *AB*
Give your answer in centimetres.

A ————————————————— *B*
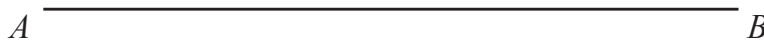
8.6 ①

.... cm

(1)

Here are six triangles drawn on a grid of squares.

A B C

D E F
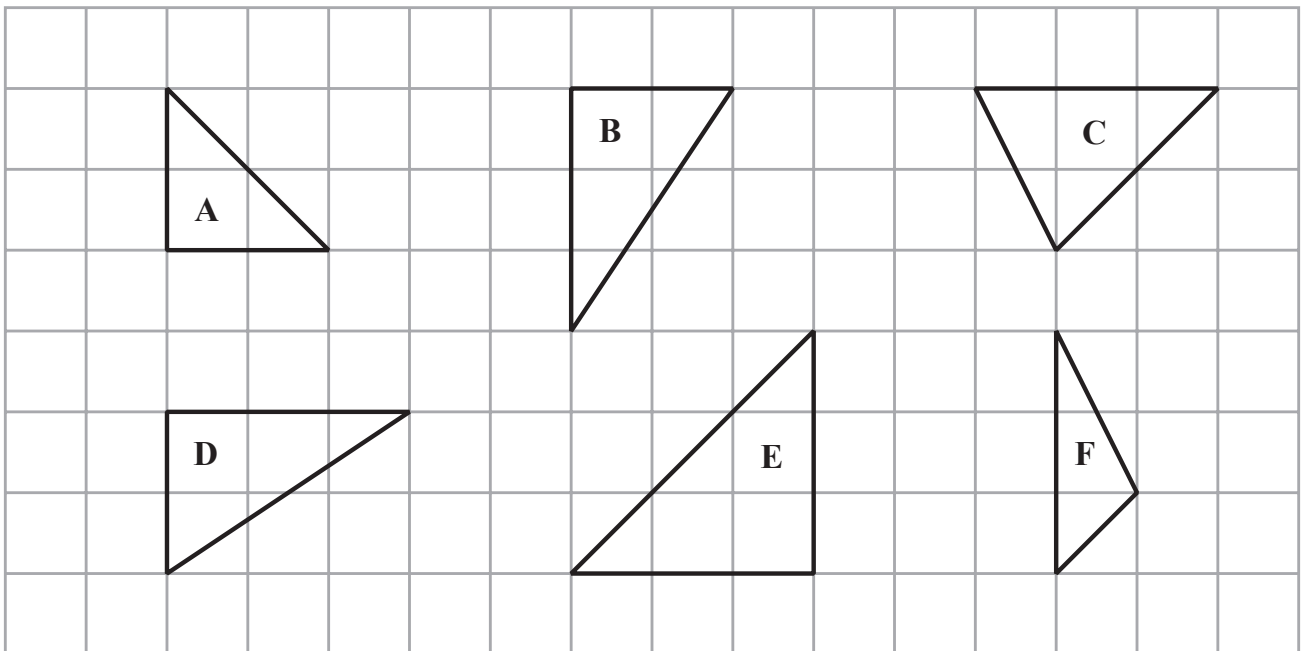
Two of these triangles are congruent.

(c) Write down the letters of these two triangles.

B ① D

.... and ....

(1)

(Total for Question 6 is 3 marks)

8

7 The diagram shows a fair 6-sided spinner.
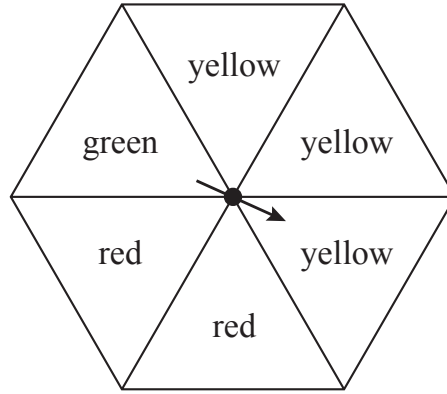
Mario spins the arrow on the spinner once.

| impossible | unlikely | evens | likely | certain |

Write down the word from the box that best describes the likelihood that the arrow will land on

(i) green

unlikely ①

(1)

(ii) yellow

evens ①

(1)

(iii) blue

impossible ①

(1)

(Total for Question 7 is 3 marks)

8 A hall has 26 rows of seats.
There are 14 seats in each row.

Annie sells tickets for $\frac{3}{4}$ of the seats in the hall for a concert.

She sells each ticket for 15 euros.

Work out the total amount Annie gets from selling tickets.

Total number of seats : 26 × 14 = 364 ①

Seats sold : $\frac{3}{4}$ × 364 = 273 ①

Amount Annie gets : 273 × 15 = 4095 ①

4095
.... euros

(Total for Question 8 is 3 marks)

10

9 Here is a sketch of triangle *ABC*
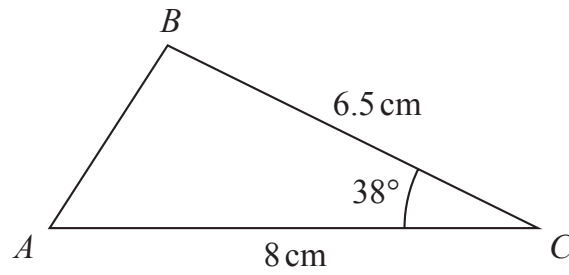
Diagram **NOT**
accurately drawn

AC = 8 cm   *BC* = 6.5 cm   angle *ACB* = 38°

In the space below, make an accurate drawing of triangle *ABC*
The line *AC* has been drawn for you.
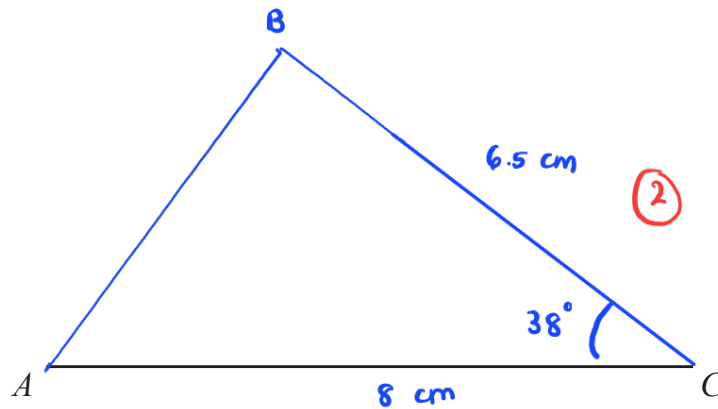
(Total for Question 9 is 2 marks)

10 Adriana makes some cupcakes.

She sells each cupcake for £2.20

Mike buys 6 of these cupcakes.
He pays with a £20 note.

(a) Work out how much change Mike should receive.

$$6 \times 2.20 = 13.20 \quad ①$$

$$20 - 13.20 = 6.80 \quad ①$$

£ ....6.80................

(2)

Greta sells balloons.

She sells each balloon for £0.85

Stefan has £50 to spend on balloons.

(b) Work out the greatest number of balloons he can buy.

$$\text{No. of balloons} : \frac{50}{0.85} = 58.82 \quad ①$$

$$= 58 \text{ balloons} \quad ①$$

........58................

(2)

(Total for Question 10 is 4 marks)

11 Trisha asked 90 people to name their favourite type of cheese to put on a pizza. She is going to draw a pie chart for her results.

55 of the 90 people said that mozzarella was their favourite.

(a) Work out the size of the angle on the pie chart for the sector representing mozzarella.

$$\frac{55}{90} \times 360° = 220°$$

220 °

(2)

Haashir asked a different group of people to name their favourite ice cream flavour. He used his results to draw this pie chart.
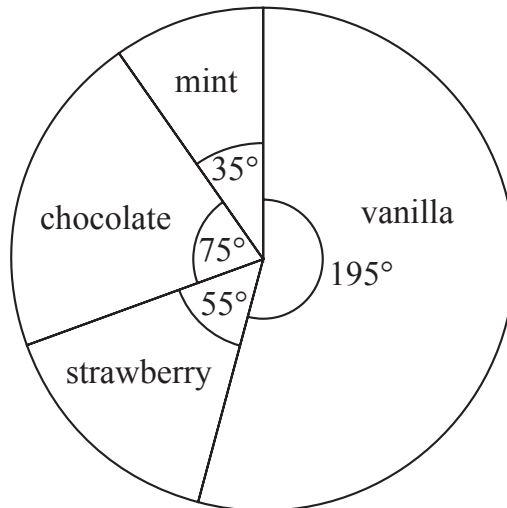
39 of the people Haashir asked said that vanilla was their favourite.

(b) Work out how many of the people Haashir asked said that chocolate was their favourite.

$$39 \times \frac{75°}{195°} = 15$$

15

(2)

(Total for Question 11 is 4 marks)

13

12 A circle has radius 8.5 cm

Work out the circumference of the circle.
Give your answer correct to 3 significant figures.

$$\text{circumference} = 2 \times \pi \times 8.5 \quad \text{①}$$
$$= 53.4 \quad \text{①}$$

53.4 .... cm

(Total for Question 12 is 2 marks)

13 (a) Expand $x(3 - x)$

$3x - x^2$ ①

....
(1)

(b) Factorise fully $12a - 18b$

$6(2a - 3b)$ ②

$6(2a - 3b)$

....
(2)

There are 8 slices of cheese in each small pack of cheese.
There are 20 slices of cheese in each large pack of cheese.

Afreen buys h small packs of cheese and j large packs of cheese.
She buys a total of T slices of cheese.

(c) Write down a formula for T in terms of h and j

$T = 8h + 20j$ ③

$T = 8h + 20j$

....
(3)

(Total for Question 13 is 6 marks)

14

14

1 dollar = 0.85 euros
1 dollar = 6.45 yuan

(a) Change 720 dollars to euros.

$720 \times 0.85 = 612$

612 ①

.... 612 euros

(1)

(b) Change 2580 yuan to euros.

$\dfrac{2580}{6.45} \times 0.85$ ①

$= 400 \times 0.85$

$= 340$ ①

.... 340 euros

(2)

(Total for Question 14 is 3 marks)

15 Finn is asked to find the value of $5 + 3^2 + 12$

Here is his working and his answer.

$$5 + 3^2 + 12 = 8^2 + 12$$
$$= 64 + 12$$
$$= 76$$

Finn's answer is wrong.

(a) Explain what Finn has done wrong in his working.

Finn should have squared the 3 first before added to 5.

(1)

(1)

(b) Write one pair of brackets in this calculation so that the answer is correct.

$$2 \times 6 - \left(4^2 - 14\right) = 10$$

(1)

(1)

(c) Work out the value of $x^2 + 5y$ when $x = -3$ and $y = 2$
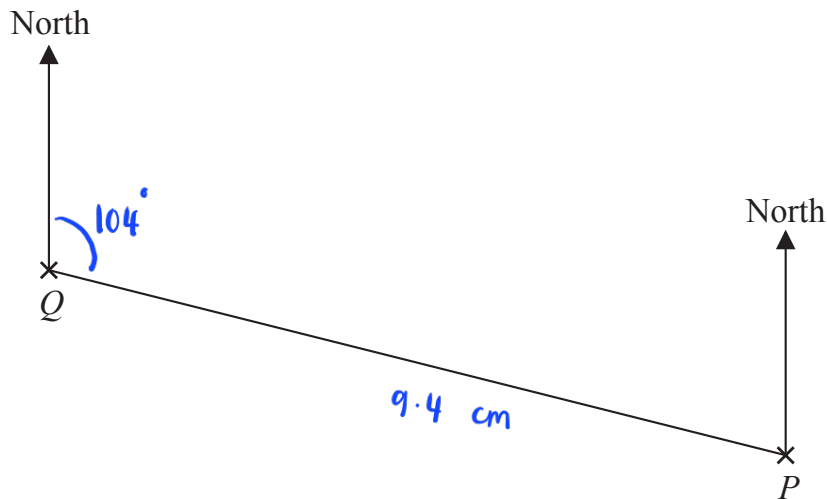
$(-3)^2 + 5(2)$ *(1)*

$9 + 10 = 19$ *(1)*

.... 19

(2)

(Total for Question 15 is 4 marks)

16 The scale drawing shows the positions of two airports *P* and *Q*

North

)104°

✗
Q

9.4 cm

North

✗
P

scale: 1 cm represents 50 km

(a) Find, by measuring, the bearing of *P* from *Q*

104 ①

.... °

(1)

A small plane flies directly from *P* to *Q*
The plane takes 2 hours to fly from *P* to *Q*

(b) Work out the average speed of the plane.
Give your answer in km/h

distance = 9.4 × 50 km = 470 km ①

speed = $\dfrac{470 \text{ km}}{2 \text{ h}}$ = 235 km/h ① ①

235
.... km/h

(3)

(Total for Question 16 is 4 marks)

17 Show that $4\frac{2}{3} \div 1\frac{1}{5} = 3\frac{8}{9}$

$$\frac{14}{3} \div \frac{6}{5} \quad \text{①}$$

$$= \frac{14}{3} \times \frac{5}{6} \quad = \frac{70 \div 2}{18 \div 2}$$
$$\quad \text{①}$$

$$= \frac{35}{9}$$

$$= \frac{9}{9} + \frac{9}{9} + \frac{9}{9} + \frac{8}{9} \quad \text{①}$$

$$= 3\frac{8}{9}$$

(Total for Question 17 is 3 marks)

18 A biased spinner can land on green or on yellow or on brown or on pink.

The table gives the probabilities that, when the spinner is spun, it will land on green or on yellow or on brown.

Colour	green	yellow	brown	pink
Probability	0.32	0.13	0.28	

Timucin spins the spinner 200 times.

Work out an estimate for the number of times the spinner lands on pink.

P (pink) = 1 − 0.32 − 0.13 − 0.28

= 0.27 ①

0.27 × 200 = 54 ①
①

54
....

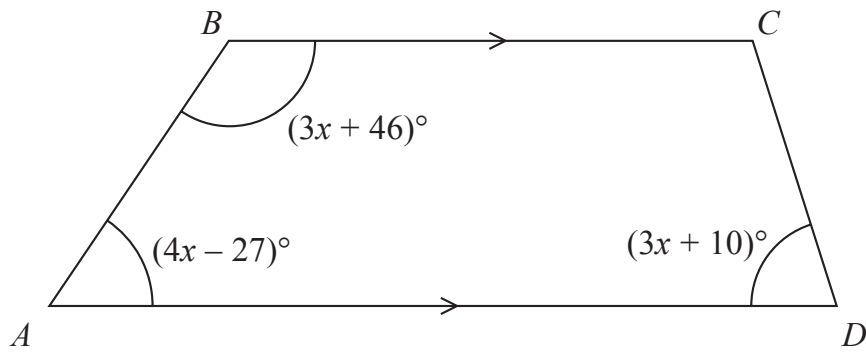**(Total for Question 18 is 3 marks)**

19 *ABCD* is a trapezium.

Diagram **NOT** accurately drawn

BC is parallel to *AD*

Find the size of the largest angle inside the trapezium.

$(4x - 27) + (3x + 46) = 180$ ①

$7x = 180 - 19$

$7x = 161$

$x = 23$ ①

$ABC = 3(23) + 46 = 115$

$BAD = 4(23) - 27 = 65$ ①

$ADC = 3(23) + 10 = 79$

$BCD = 180 - 79 = 101$

① 115 °

....

(Total for Question 19 is 4 marks)

20

20 (a) Complete the table of values for $y = x^2 - x - 4$

x	-3	-2	-1	0	1	2	3
y	8	2	-2	-4	-4	-2	2

(2)

(2)

(b) On the grid below, draw the graph of $y = x^2 - x - 4$ for values of x from -3 to 3

(2)

(2)
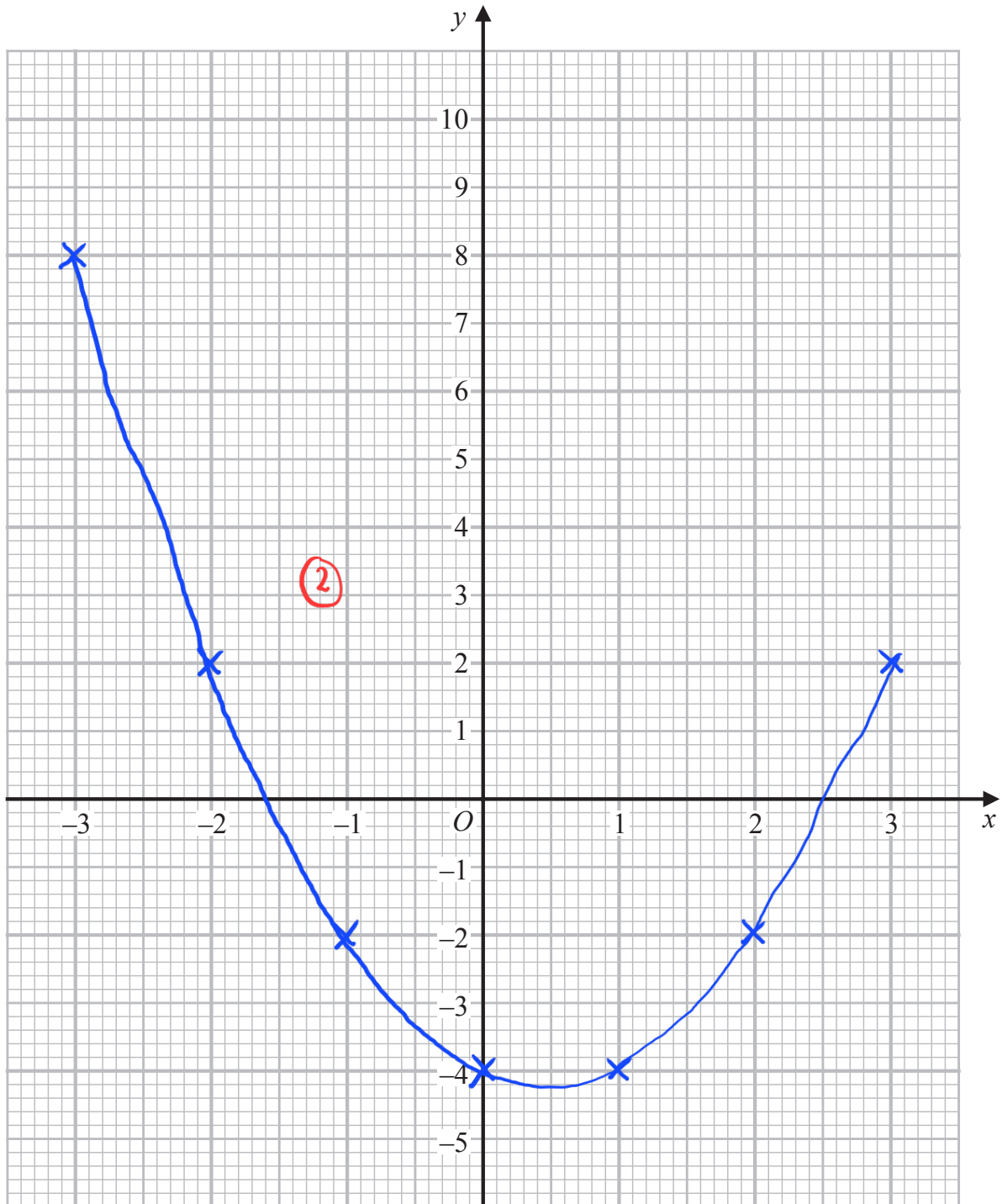
(Total for Question 20 is 4 marks)

21 Nancy has some coins with a total value of 85 pence.
She has only 2 pence coins and 5 pence coins.
The ratio

$$\text{number of 2 pence coins} : \text{number of 5 pence coins} = 1 : 3$$

Nancy has more 5 pence coins than 2 pence coins.

How many more?

let no. of 2 pence coins = x

5 pence coins = $3x$

$2x + 5(3x) = 85$ ①

$17x = 85$

$x = \dfrac{85}{17} = 5$ ①

2 pence = 5 coins

5 pence = 15 coins ①

$15 - 5 = 10$

10 ①

(Total for Question 21 is 4 marks)

22 (a) Write 76 000 000 in standard form.

7.6×10^7 ①

(1)

(b) Write 5.4×10^{-4} as an ordinary number.

0.00054 ①

(1)

(Total for Question 22 is 2 marks)

22

23
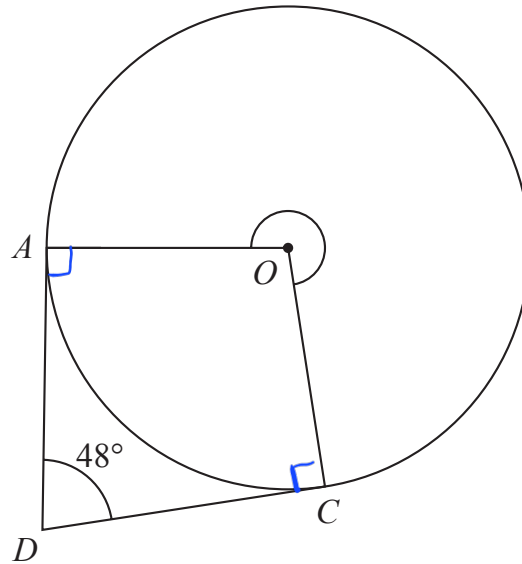
A and *C* are points on a circle, centre *O*
DA is the tangent to the circle at *A* and *DC* is the tangent to the circle at *C*

Angle *ADC* = 48°

Work out the size of reflex angle *AOC*

$D\omega = DAO = 90°$ ①

$AOC = 360° - 48° - 90° - 90°$

$= 132°$ ①

$AOC \ (reflex) = 360° - 132°$

$= 228°$ ①

228 °

(Total for Question 23 is 3 marks)

24 Charlotte buys a painting for $680
The value of the painting increases by 4% each year.

Work out the value of the painting at the end of 3 years.
Give your answer correct to the nearest $

$$680 \times 1.04^3 = 764.91 \;②$$
$$\approx 765 \;①$$

$ ....765.......

(Total for Question 24 is 3 marks)

---

25 Change a speed of 27 kilometres per hour to a speed in metres per second.

$$\frac{27 \text{ km}}{1 \text{ hour}} \times \frac{1000 \text{ m}}{1 \text{ km}} \times \frac{1 \text{ hour}}{3600 \text{ s}} \;①$$

$$= \frac{27\,000 \text{ m}}{3600 \text{ s}} \;① = 7.5 \text{ m/s} \;①$$

.......7.5....... m/s

(Total for Question 25 is 3 marks)

24

26 Team **A** and Team **B** take part in a quiz league.

After 11 rounds, Team **A** has a mean score per round of 17
After 9 rounds, Team **B** has a mean score per round of 18

Both teams take part in a further round.
After this round, both teams have a mean score per round of 18.5

In the further round, Team **A** scored more points than Team **B**.

How many more?

Total Score (Team A) : $17 \times 11 = 187$

Total score (Team B) : $18 \times 9 = 162$ ①

Team A : $\dfrac{187 + x}{12} = 18.5$

$187 + x = 18.5 \times 12$

$x = 222 - 187 = 35$ ①

Team B : $\dfrac{162 + y}{10} = 18.5$

$162 + y = 185$

$y = 185 - 162 = 23$

$35 - 23 = 12$ ①

①

.... 12 ....

(Total for Question 26 is 4 marks)

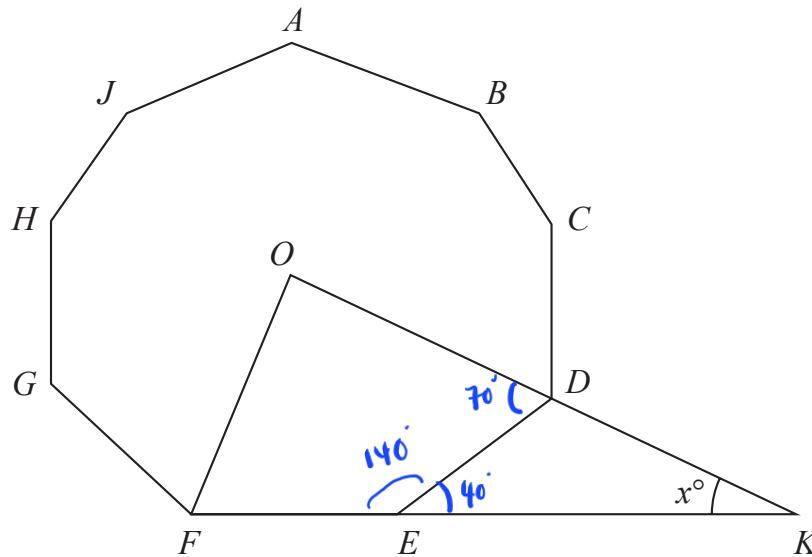**27** Here is a 9-sided regular polygon *ABCDEFGHJ*, with centre *O*

Diagram **NOT** accurately drawn

ODK and *FEK* are straight lines.

Work out the value of *x*

$$\text{interior angle of polygon} = \frac{(9-2)(180)}{9} = 140° \quad ①$$

$$DEK = 180° - 140° = 40°$$

$$EDK = 180° - \left(\frac{140}{2}\right) = 110° \quad ①$$

$$x = 180° - 110° - 40°$$

$$= 30° \quad ①$$

x = 30

(Total for Question 27 is 3 marks)

26

28 The diagram shows right-angled triangle *ABD*
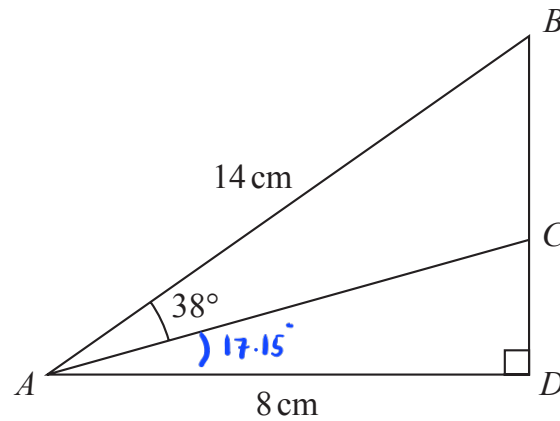
Diagram **NOT** accurately drawn

AB = 14 cm   *AD* = 8 cm

C is the point on *BD* such that angle *BAC* = 38°

Work out the length of *CD*
Give your answer correct to 3 significant figures.

$$\cos BAD = \frac{8}{14} \quad ①$$

$$BAD = \cos^{-1} \frac{8}{14} = 55.15\overset{\cdot}{}\ldots \quad ①$$

$$CAD = 55.15 - 38 = 17.15°$$

$$\tan 17.15 = \frac{CD}{8} \quad ①$$

$$CD = 8 \tan 17.15$$

$$= 2.47 \quad ①$$

2·47 .... cm

(Total for Question 28 is 4 marks)

TOTAL FOR PAPER IS 100 MARKS

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