Full paper C1

Paper 1 style · Non-calculator · Foundation

80 marks
1 hour 30 minutes

Name	Date	Score / 80

Answer ALL questions. Write your answers in the spaces provided. You must write down all the stages in your working. You must **not** use a calculator. Diagrams are **NOT** accurately drawn unless it says so.

Help on the longer questions

Underlined words tell you what the question wants.

Remember reminds you of a fact you need.

1 **Write** the number 27 642 **correct to the nearest thousand**.

.....

(1)

(Total for Question 1 is 1 mark)

---

2 **Write** 0.7 as a percentage.

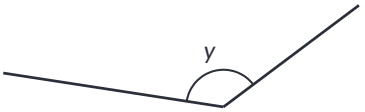
..... %

(1)

(Total for Question 2 is 1 mark)

---

3 **Write down** the mathematical name for the type of angle marked *y*.



.....

(1)

(Total for Question 3 is 1 mark)

---

4 **Write** these numbers in order of size.
Start with the smallest number.

0.35 0.3 0.05 0.4 0.34

.....

(1)

(Total for Question 4 is 1 mark)

Turn over ►

5 **Find** the square root of 81

.....

(1)

(Total for Question 5 is 1 mark)

6 Nadia buys

3 muffins at £1.45 each

2 identical drinks.

Nadia pays with a £10 note.

She gets £3.15 change.

How much does Nadia pay for each drink?

> **Remember** Change = money paid − total cost. Add up all the costs first.

£ .....

(4)

(Total for Question 6 is 4 marks)

7 The table shows the number of hours that Amir and Beth worked on each of four days last week.

	Monday	Tuesday	Wednesday	Thursday
Amir	5	8	7	4
Beth	6	5	7	8

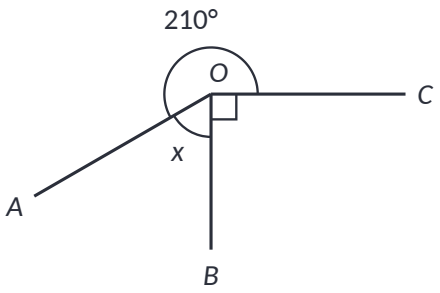
On the grid, draw a suitable diagram or chart for this information.

Remember Check the scale on the axis: what does one square stand for? Label bars and use a ruler.

(4)

(Total for Question 7 is 4 marks)

8 *OA*, *OB* and *OC* are three straight lines.



Remember Straight line = 180°. Around a point = 360°. Triangle = 180°. Quadrilateral = 360°. Isosceles: two equal base angles. Write the reason for each angle.

(a) **Work out** the size of the angle marked *x*.

.....°

(2)

(b) **Give a reason for your answer**.

(1)

(Total for Question 8 is 3 marks)

9 Here is a number machine.



> **Remember** Go forwards through the machine for the output. To find the input, work backwards using the inverse (× becomes ÷).

(a) **Work out** the output when the input is 6

.....

(1)

(b) **Work out** the input when the output is 31

.....

(2)

(c) **Show that** there is a number for which the output is the same as the input.

(2)

(Total for Question 9 is 5 marks)

---

10 There are 30 goats and 45 hens on a farm.
Write as a ratio the number of goats to the number of hens.
Give your ratio **in its simplest form**.

.....

(2)

(Total for Question 10 is 2 marks)

11

Remember BIDMAS: Brackets, Indices, Divide and Multiply, then Add and Subtract.

(a) **Work out** $-15 \div -5$

.....

(1)

(b) **Find** the value of 3^4

.....

(1)

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

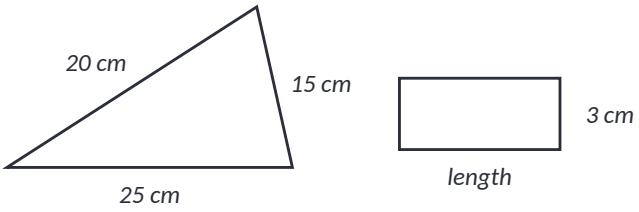
$$24 \div 4 + 2 - 1 = 3$$

(1)

(Total for Question 11 is 3 marks)

---

12 The diagram shows a triangle and a rectangle.



The perimeter of the rectangle is a third of the perimeter of the triangle.
Work out the length of the rectangle.

Remember Perimeter: add all the sides. Rectangle area = length × width. Triangle area = ½ × base × height.

..... cm

(4)

(Total for Question 12 is 4 marks)

---

13 There are only £5 notes and £10 notes in a purse.
Jo takes at random a note from the purse.

> **Remember** Probabilities add up to 1. P(event) = number of ways it can happen ÷ total number of outcomes. AND means multiply.

(a) **Write down** the probability that Jo takes a note with a value of more than £20

.....

(1)

(b) There are only 1p coins and 5p coins in a jar.
The total value of the coins in the jar is 60p.
The total value of the 1p coins is the same as the total value of the 5p coins.
Liam takes at random a coin from the jar.
Find the probability that Liam takes a 1p coin.

.....

(2)

(Total for Question 13 is 3 marks)

14 **Work out** 364×47

> **Remember** Line up the digits. To divide by a decimal, multiply both numbers by 10 (or 100) first. Check with an estimate.

.....

(3)

(Total for Question 14 is 3 marks)

15 Owen recorded the times that 15 adults took to complete a quiz.
He showed his results in a stem and leaf diagram.

3	8 9
4	2 5 5 7
5	0 1 3 6 8
6	4 6 9
7	2

Key: 3 | 8 represents 38 minutes

Remember Put the leaves in order and always write a key. Median = the middle value; range = biggest − smallest.

(a) **Find** the median.

..... minutes

(1)

(b) **Find** the range.

..... minutes

(2)

(c) Owen also recorded the times that 15 children took to complete the quiz.
For the children, the median was 58 minutes.
Compare the times that the adults took with the times that the children took.

(1)

(Total for Question 15 is 4 marks)

16 Pens are sold in packs of 5, in packs of 10 and in packs of 20

Pack of 5 pens	Pack of 10 pens	Pack of 20 pens
£2.40	**£4.50**	**£9.40**

Which pack gives the best value for money?

You must show how you get your answer.

> **Remember** Find the cost of the same amount for each one (e.g. per 100 g or per item), then compare. Write a conclusion.

(3)

(Total for Question 16 is 3 marks)

---

17 **Solve** $3(2x - 4) = 24$

> **Remember** Do the same to both sides. Undo + with −, undo × with ÷. Expand brackets first.

$x =$ .....

(3)

(Total for Question 17 is 3 marks)

---

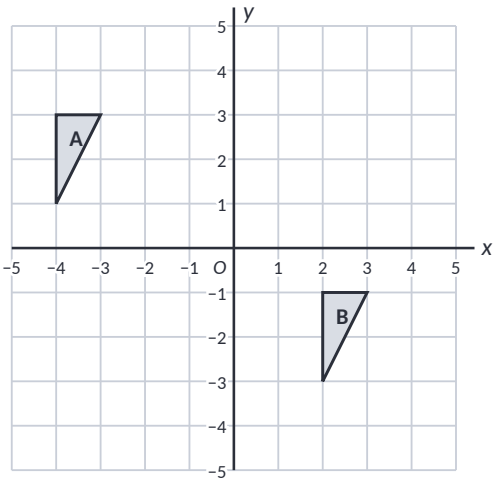
18 **Write down** the value of 7^0

.....

(1)

(Total for Question 18 is 1 mark)

19



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

(2)

(Total for Question 19 is 2 marks)

20 Here are the first four terms of an arithmetic sequence.

3 10 17 24

Find an expression, **in terms of *n***, for the *n*th term of this sequence.

.....

(2)

(Total for Question 20 is 2 marks)

21

> **Remember** Add/subtract: make the denominators the same. Multiply: top × top, bottom × bottom. Divide: flip the second fraction and multiply. Change mixed numbers to top-heavy first.

(a) **Work out** $4\frac{2}{3} - 1\frac{3}{4}$

.....

(2)

(b) Lucy was asked to work out $1\frac{3}{4} \times \frac{2}{3}$

Here is her working and her answer.

$$1\frac{3}{4} \times \frac{2}{3} = \frac{7}{4} \times \frac{2}{3}$$
$$= \frac{14}{12}$$
$$= 1\frac{4}{12}$$

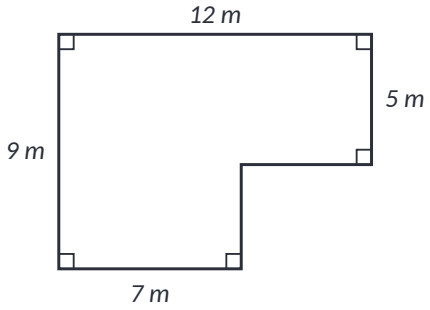
Lucy's answer is wrong.

What mistake has Lucy made?

(1)

(Total for Question 21 is 3 marks)

22 The diagram shows a plan of a floor.



Ruby is going to cover the floor with paint.
Ruby has 4 tins of paint.
There are 2 litres of paint in each tin.
Ruby thinks 1 litre of paint will cover 10 m^2 of floor.

> **Remember** Perimeter: add all the sides. Rectangle area = length × width. Triangle area = ½ × base × height.

(a) Assuming Ruby is correct, does she have enough paint to cover the floor?
You must show all your working.

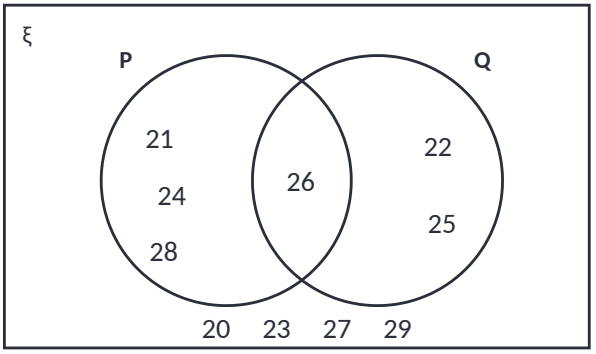
(4)

(b) Actually, 1 litre of paint will cover 12 m^2 of floor.
Does this affect your answer to part (a)?
You must give a reason for your answer.

(1)

(Total for Question 22 is 5 marks)

23 Here is a Venn diagram.



Remember Fill the overlap (in both) first. Every number from ξ goes somewhere, even outside the circles.

(a) **Write down** the numbers that are in set P'

.....

(1)

(b) A number is chosen at random from the universal set, ξ
Find the probability that this number is in the set $P \cup Q$

.....

(2)

(Total for Question 23 is 3 marks)

---

24 Ahmed drives a distance of 389 kilometres on a motorway in Spain.
He pays 1.94 euros for every 10 kilometres he drives.

Remember Round every number to 1 significant figure first, then work it out. Say if you rounded up or down.

(a) **Work out** an estimate for the total amount that Ahmed pays.

..... euros

(3)

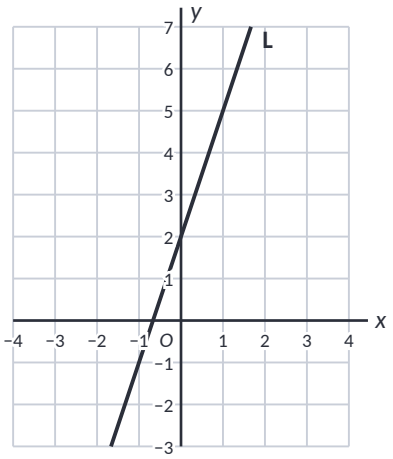
(b) Is your answer to part (a) an underestimate or an overestimate?
Give a reason for your answer.

(1)

(Total for Question 24 is 4 marks)

---

25 Here is a straight line **L** drawn on a grid.



Remember y = mx + c: m is the gradient (up ÷ across), c is where the line crosses the y-axis.

(a) **Find** an equation for **L**.

.....

(3)

(b) **M** is a different straight line with equation $y = 4x$

Write down the equation of a straight line parallel to **M**.

.....

(1)

(Total for Question 25 is 4 marks)

26 Megan has some small boxes, some medium boxes and some large boxes.
She has a total of 500 boxes.
$\frac{2}{5}$ of the 500 boxes are empty.
For the empty boxes,

number of small boxes : number of medium boxes = 1 : 3
number of medium boxes : number of large boxes = 3 : 4

Work out the percentage of Megan's boxes that are empty small boxes.

> **Remember** Add the ratio parts to find the total number of parts. One part = amount ÷ total parts. Then multiply.

..... %

(5)

(Total for Question 26 is 5 marks)

---

27 In a sale, normal prices are reduced by 20%
The sale price of a bike is £360
Work out the normal price of the bike.

£ .....

(2)

(Total for Question 27 is 2 marks)

---

28 **Solve** $x + 9 \leqslant 3 - \frac{1}{2}x$

> **Remember** Solve like an equation. On a number line: ● means "included" ($\leqslant$ or $\geqslant$), ○ means "not included" ($<$ or $>$).

.....

(3)

(Total for Question 28 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS

C1 mark scheme

Q		Answer	Mark	Notes
1		28 000	B1	
2		70	B1	
3		obtuse	B1	
4		0.05, 0.3, 0.34, 0.35, 0.4	B1	
5		9	B1	
6		1.25	M1 M1 M1 A1	M1 for 3 × 1.45 (= 4.35) M1 for 10 − 3.15 (= 6.85) M1 for (6.85 − 4.35) ÷ 2 A1 cao
7		Dual bar chart (or composite bar chart) with all bars correct	B4	B1 for a suitable chart type B1 for a correct linear scale and labels B1 for a key or clear labelling of Amir and Beth B1 for all 8 bars correct
8	(a)	60	M1 A1	M1 for 360 − 210 − 90 A1 cao
	(b)	Angles around a point add up to 360°	C1	C1
9	(a)	10	B1	
	(b)	13	M1 A1	M1 for (31 + 8) ÷ 3 A1 cao
	(c)	Input 4: 4 × 3 − 8 = 4	M1 A1	M1 for 3x − 8 = x or trials A1 for 4 shown to give 4
10		2 : 3	M1 A1	M1 for 30 : 45 or a partly simplified ratio A1 cao

Mark scheme continues ►

Q		Answer	Mark	Notes
11	(a)	3	B1	
	(b)	81	B1	
	(c)	$24 \div (4 + 2) - 1 = 3$	B1	
12		7	M1 M1 M1 A1	M1 for 25 + 20 + 15 (= 60) M1 for 60 ÷ 3 (= 20) M1 for (20 − 2 × 3) ÷ 2 A1 cao
13	(a)	0	B1	
	(b)	$\frac{30}{36}$	M1 A1	M1 for 30 one-penny coins and 6 five-penny coins A1 for $\frac{30}{36}$ oe
14		17 108	M1 M1 A1	M1 for a complete method with no more than one arithmetic error M1 for partial products 14 560 and 2548 (or equivalent) A1 cao
15	(a)	51	B1	
	(b)	34	M1 A1	M1 for 72 − 38 A1 cao
	(c)	The children took longer on average (their median was higher)	C1	C1 ft
16		Pack of 10 (45p per pen compared with 48p and 47p)	M1 M1 C1	M1 for a method to compare at least two packs, e.g. cost per pen M1 for all three compared correctly C1 pack of 10 with correct figures
17		6	M1 M1 A1	M1 for $6x - 12 = 24$ or $2x - 4 = 8$ M1 for $6x = 36$ or $2x = 12$ A1 cao
18		1	B1	
19		Translation by $\begin{pmatrix} 6 \\ -4 \end{pmatrix}$	B1 B1	B1 translation B1 for the vector
20		$7n - 4$	M1 A1	M1 for $7n + k$ A1 cao

Mark scheme continues ►

Q		Answer	Mark	Notes
21	(a)	$2\frac{11}{12}$	M1 A1	M1 for a common denominator of 12 A1 for $2\frac{11}{12}$ oe
	(b)	$\frac{14}{12}$ is $1\frac{2}{12}$, not $1\frac{4}{12}$: she made a mistake changing to a mixed number	C1	C1
22	(a)	No: the floor is 88 m² but the paint covers only 80 m²	M1 M1 M1 C1	M1 for a method to find the area of one part M1 for a complete method for the area (= 88) M1 for 4 × 2 × 10 (= 80) C1 No with correct figures
	(b)	Yes: 8 litres now cover 96 m², which is enough for 88 m²	C1	C1 ft
23	(a)	20, 22, 23, 25, 27, 29	B1	
	(b)	$\frac{6}{10}$	M1 A1	M1 for 6 numbers in $P \cup Q$ or a denominator of 10 A1 oe
24	(a)	80	M1 M1 A1	M1 for rounding to 400 and 2 M1 for 400 ÷ 10 × 2 A1 for 80 (accept 76 to 80 from other sensible rounding)
	(b)	Overestimate: both numbers were rounded up	C1	C1
25	(a)	$y = 3x + 2$	M1 M1 A1	M1 for gradient 3 M1 for intercept 2 A1 oe
	(b)	$y = 4x + c$ (any $c \neq 0$), e.g. $y = 4x + 1$	B1	B1
26		5	M1 M1 M1 M1 A1	M1 for $\frac{2}{5} \times 500$ (= 200) M1 for combining the ratios 1 : 3 : 4 M1 for 200 ÷ 8 (= 25) M1 for 25 ÷ 500 × 100 A1 cao
27		450	M1 A1	M1 for 360 ÷ 0.8 or 360 ÷ 80 × 100 A1 cao

Mark scheme continues ►

Q	Answer	Mark	Notes
28	$x \leqslant -4$	M1 M1 A1	M1 for $x + \frac{1}{2}x \leqslant 3 - 9$ or $2x + 18 \leqslant 6 - x$ M1 for $1.5x \leqslant -6$ or $3x \leqslant -12$ A1 cao

B1 = mark for a correct answer · **M1** = method mark · **A1** = accurate answer after M1 · **C1** = reason · **cao** = correct answer only

Score ____ / 80