Half paper C4

Paper 3 style · Calculator · Foundation

36 marks
about 35–40 minutes

Name	Date	Score / 36

Answer ALL questions. Write your answers in the spaces provided. You must write down all the stages in your working. You may 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** 14 529 **correct to the nearest 1000**

.....

(1)

(Total for Question 1 is 1 mark)

---

2 **Simplify** $2t + 5t - 4t$

.....

(1)

(Total for Question 2 is 1 mark)

---

3 **Write down** all the factors of 30

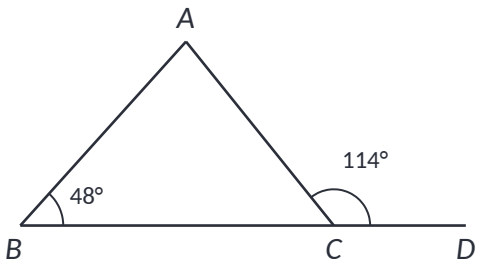
.....

(2)

(Total for Question 3 is 2 marks)

Turn over ►

4



BCD is a straight line.

ABC is a triangle.

Show that triangle *ABC* is an isosceles triangle.

Give a reason for each stage of your working.

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

(4)

(Total for Question 4 is 4 marks)

---

5 A swimming school has two offers.

Offer 1	**Offer 2**
First 2 lessons free All other lessons normal price	All lessons 15% off the normal price

The normal price of a swimming lesson is £18

Maya is going to have 10 swimming lessons.

Which is the cheaper offer for 10 lessons, Offer 1 or Offer 2?

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 5 is 3 marks)

6

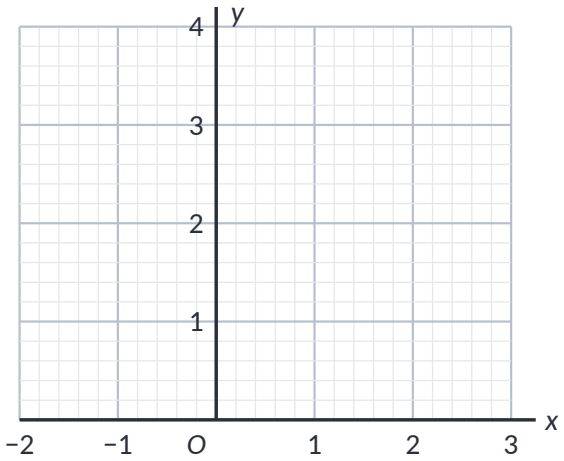
Remember y = mx + c: m is the gradient (up ÷ across), c is where the line crosses the y-axis.

(a) **Complete** the table of values for $y = \frac{1}{2}x + 2$

x	−2	−1	0	1	2	3
y	1				3	

(2)

(b) On the grid, draw the graph of $y = \frac{1}{2}x + 2$ for values of x from −2 to 3



(2)

(c) **Use your graph** to find the value of x when $y = 2.8$

$x =$ .....

(1)

(Total for Question 6 is 5 marks)

7 The ratio of the cost of one metre of cotton fabric to the cost of one metre of silk fabric is 3 : 7

Complete the table of costs.

	2 m	4 m	6 m	10 m
cotton fabric	£9			
silk fabric				

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

(3)

(Total for Question 7 is 3 marks)

8 Leo has a van.
He is going to use the van to deliver boxes.
Each box is a cuboid, 40 cm by 40 cm by 50 cm (height).
The space for boxes in the van has
maximum length 2.4 m
maximum width 1.6 m
maximum height 1.5 m
The space for boxes is empty.
Leo wants to put as many boxes as possible into the van.
He can put 4 boxes into the van in one minute.
Assume that the space for boxes is in the shape of a cuboid.

Remember Volume of a cuboid = length × width × height. Make all the units the same first (1 m = 100 cm).

(a) **Work out** how many minutes it should take Leo to put as many boxes as possible into the van.

..... minutes

(4)

(b) The space for boxes might **not** be in the shape of a cuboid.
Explain how this could affect the time it would take Leo to put as many boxes as possible into the van.

(1)

(Total for Question 8 is 5 marks)

9

Remember Expand: multiply every term inside the bracket. Factorise: take out the highest common factor. Quadratics: two numbers that multiply to the last term and add to the middle.

(a) **Factorise** $6p + 15$

.....

(1)

(b) **Choose** two words from the box below to make this statement correct.

expression	equation	formula	identity
inequality	term	factor	multiple

$7x$ is a ..... in the ..... $7x - 2y$

(2)

(Total for Question 9 is 3 marks)

10 Here is a sequence of patterns made with counters.



pattern number 1 pattern number 2 pattern number 3

> **Remember** Find the difference between terms. nth term = difference × n + (first term − difference).

(a) **Find** an expression, **in terms of *n***, for the number of counters in pattern number *n*.

.....

(2)

(b) Amy has 90 counters.
Can Amy make a pattern in this sequence using all 90 of her counters?
You must show how you get your answer.

(2)

(Total for Question 10 is 4 marks)

---

11 A silver bar has a mass of 3.8 kg.
The density of silver is 10.5 g/cm^3
Work out the volume of the silver bar.
Give your answer **correct to 3 significant figures**.

> **Remember** Density = mass ÷ volume. Mass = density × volume. Volume = mass ÷ density. Pressure = force ÷ area.

..... cm^3

(3)

(Total for Question 11 is 3 marks)

---

12 **Work out** $(3.6 \times 10^5) \times (2.5 \times 10^{-8})$
Give your answer as an ordinary number.

.....

(2)

(Total for Question 12 is 2 marks)

TOTAL FOR PAPER IS 36 MARKS

C4 mark scheme

Q		Answer	Mark	Notes
1		15 000	B1	
2		$3t$	B1	
3		1, 2, 3, 5, 6, 10, 15, 30	B2	B2 (B1 for at least 5 correct and none wrong)
4		Angle $ACB = 66°$, angle $BAC = 66°$, two equal angles	M1 M1 C1 C1	M1 for 180 − 114 (= 66) M1 for 180 − 48 − 66 (= 66) C1 angles on a straight line add up to 180° C1 angles in a triangle add up to 180° and a conclusion
5		Offer 1 (£144 compared with £153)	M1 M1 C1	M1 for 8 × 18 (= 144) M1 for 10 × 18 × 0.85 (= 153) C1 Offer 1 with 144 and 153
6	(a)	1.5, 2, 2.5, 3.5	B2	B2 all correct (B1 for 2 or 3 correct)
	(b)	Straight line from (−2, 1) to (3, 3.5)	B2	B2 (B1 for at least 3 points plotted correctly)
	(c)	1.6	B1	B1 ft from their graph
7		cotton: £9, £18, £27, £45; silk: £21, £42, £63, £105	B3	B3 all correct (B2 for 5 or 6 correct, B1 for 3 or 4 correct)
8	(a)	18	M1 M1 M1 A1	M1 for converting to cm M1 for 240 ÷ 40, 160 ÷ 40 and 150 ÷ 50 (6, 4, 3) M1 for 6 × 4 × 3 (= 72) A1 for 18
	(b)	Fewer boxes might fit, so it would take less time	C1	C1
9	(a)	$3(2p + 5)$	B1	
	(b)	term, expression	B1 B1	B1 for term B1 for expression

Mark scheme continues ►

Q		Answer	Mark	Notes
10	(a)	$4n + 2$	M1 A1	M1 for $4n + k$ A1 cao
	(b)	Yes: $4n + 2 = 90$ gives $n = 22$	M1 C1	M1 for $4n + 2 = 90$ or continuing the sequence C1 Yes with pattern 22
11		362	M1 M1 A1	M1 for 3.8 kg = 3800 g M1 for 3800 ÷ 10.5 (= 361.9…) A1 for 362
12		0.009	M1 A1	M1 for 9×10^{-3} A1 cao

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

Score ____ / 36