Half paper C1

Paper 2 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

Remember Collect like terms: the same letter (and power) together. Watch the sign in front of each term.

(a) **Simplify** $9w - 4w + 2w$

.....

(1)

(b) **Simplify** $t^3 + t^3$

.....

(1)

(c) **Simplify** $8 + 5h + 2k - 9h - 6k$

.....

(2)

(Total for Question 1 is 4 marks)

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2 **Write** 0.047 38 **correct to one significant figure**.

.....

(1)

(Total for Question 2 is 1 mark)

Turn over ►

3 Here are four fractions.

$$\frac{3}{5} \quad \frac{13}{20} \quad \frac{7}{10} \quad \frac{5}{8}$$

Write these fractions in order of size.
Start with the smallest fraction.

.....

(2)

(Total for Question 3 is 2 marks)

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4 The probability that it will rain tomorrow is 0.37
What is the probability that it will **not** rain tomorrow?

.....

(1)

(Total for Question 4 is 1 mark)

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5 Nadia is going to buy 120 birthday cards.
Here is some information about the cost of cards in two shops.

Card Corner	**Post Shop**
Pack of 20 cards for £2.79	Pack of 10 cards for £1.60 Buy 2 packs get 1 pack free

Nadia wants to buy the cards as cheaply as possible.
Which shop should Nadia buy the 120 cards from?
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.

(4)

(Total for Question 5 is 4 marks)

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6 **Find** the value of $\frac{\sqrt{(18.6 - 2.3)}}{(4.1 + 0.25)^2}$

Write down all the figures on your calculator display.

.....

(2)

(Total for Question 6 is 2 marks)

7

> **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** $6 - 18m$

.....

(1)

(b) **Factorise fully** $3x^2y + 9xy^2$

.....

(2)

(Total for Question 7 is 3 marks)

8

> **Remember** $A \times 10^n$ where A is between 1 and 10. Big numbers: positive power. Small numbers: negative power.

(a) **Write** 3.9×10^{-2} as an ordinary number.

.....

(1)

(b) **Work out** the value of $(3.5 \times 10^4) \times (6 \times 10^5)$

Give your answer in standard form.

.....

(2)

(Total for Question 8 is 3 marks)

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9 The table shows the probabilities that a biased dice will land on 2, on 3, on 4, on 5 and on 6

Number on dice	1	2	3	4	5	6
Probability		0.12	0.2	0.16	0.14	0.18

Leo rolls the biased dice 300 times.

Work out an estimate for the total number of times the dice will land on 1 or on 4

> **Remember** Estimated number = probability × number of trials. The probabilities add up to 1.

.....

(3)

(Total for Question 9 is 3 marks)

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10 Sam drove 48 km from Ashby to Bolton.
He then drove 66 km from Bolton to Crewe.
Sam's average speed from Ashby to Bolton was 64 km/h.
Sam took 75 minutes to drive from Bolton to Crewe.

> **Remember** Speed = distance ÷ time. Distance = speed × time. Time = distance ÷ speed. Change minutes to hours: ÷ 60 (30 min = 0.5 h).

(a) **Work out** Sam's average speed for his total drive from Ashby to Crewe.

..... km/h

(4)

(b) Ella drove from Derby to Leeds.
Her average speed for the first part of the journey was 70 km/h.
Her average speed for the second part was 50 km/h.
Ella says that her average speed for the whole journey is the mean of 70 km/h and 50 km/h.
If Ella is correct, what does this tell you about the two parts of her journey?

(1)

(Total for Question 10 is 5 marks)

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11 Raj wants to invest £20 000 for 3 years in a bank.

Town Bank	City Bank
Compound interest 3% for each year	Compound interest 5% for the first year 1% for each extra year

Which bank will give Raj the most interest at the end of 3 years?
You must show all your working.

> **Remember** Use a multiplier: amount × (1 + rate)^n, e.g. 3% for 4 years → × 1.03^4. Interest = final amount − original.

(3)

(Total for Question 11 is 3 marks)

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12 A number, n, is rounded **to 2 decimal places**.
The result is 3.82
Using inequalities, write down the error interval for n.

.....

(2)

(Total for Question 12 is 2 marks)

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13 **Solve** $x^2 + 3x - 28 = 0$

> **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.

.....

(3)

(Total for Question 13 is 3 marks)

TOTAL FOR PAPER IS 36 MARKS

C1 mark scheme

Q		Answer	Mark	Notes
1	(a)	$7w$	B1	
	(b)	$2t^3$	B1	
	(c)	$8 - 4h - 4k$	B2	B2 (B1 for two terms correct)
2		0.05	B1	
3		$\frac{3}{5}, \frac{5}{8}, \frac{13}{20}, \frac{7}{10}$	M1 A1	M1 for converting to decimals or a common denominator A1 cao
4		0.63	B1	
5		Post Shop (£12.80 compared with £16.74)	M1 M1 M1 C1	M1 for 6 × 2.79 (= 16.74) M1 for 12 packs needed at Post Shop M1 for 8 × 1.60 (= 12.80) C1 Post Shop with correct figures
6		0.2133611229	M1 A1	M1 for 4.037... or 18.9225 A1 for 0.21336...
7	(a)	$6(1 - 3m)$	B1	
	(b)	$3xy(x + 3y)$	B2	B2 (B1 for a partial factorisation)
8	(a)	0.039	B1	
	(b)	2.1×10^{10}	M1 A1	M1 for 21×10^9 A1 cao
9		108	M1 M1 A1	M1 for 1 − (0.12 + 0.2 + 0.16 + 0.14 + 0.18) (= 0.2) M1 for (0.2 + 0.16) × 300 A1 cao
10	(a)	57	M1 M1 M1 A1	M1 for 48 ÷ 64 (= 0.75 h) M1 for 0.75 + 1.25 (= 2 h) M1 for 114 ÷ 2 A1 cao
	(b)	The two parts took the same amount of time	C1	C1

Mark scheme continues ►

Q	Answer	Mark	Notes
11	**Town Bank (£1854.54 compared with £1422.10)**	M1 M1 C1	M1 for $20\,000 \times 1.03^3$ (= 21 854.54) M1 for $20\,000 \times 1.05 \times 1.01^2$ (= 21 422.10) C1 Town Bank with correct figures
12	$3.815 \leqslant n < 3.825$	B2	B2 (B1 for one end correct)
13	$x = 4$, $x = -7$	M1 A1 A1	M1 for $(x \pm 4)(x \pm 7)$ A1 for $(x - 4)(x + 7)$ A1 for both values

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

Score ____ / 36