Half paper C6

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** $\frac{3}{100}$ as a decimal.

.....

(1)

(Total for Question 1 is 1 mark)

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2 **Write** 0.08 as a percentage.

..... %

(1)

(Total for Question 2 is 1 mark)

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3 **Write** the number 13 451 **correct to the nearest hundred**.

.....

(1)

(Total for Question 3 is 1 mark)

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4 Here are the first 4 terms of a sequence.

40 34 28 22

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

(a) **Write down** the next term in the sequence.

.....

(1)

(b) **Explain** how you got your answer.

(1)

(c) **Work out** the 10th term of the sequence.

.....

(1)

(Total for Question 4 is 3 marks)

5 This is part of a bus timetable between Avon and Elton.

Avon	07 15	07 45	08 10	08 30	08 50
Barton	07 24	07 54	08 19	08 39	08 59
Calder	07 35	08 05	08 30	08 50	09 10
Dunham	07 44	08 14	08 39	08 59	09 19
Elton	07 53	08 23	08 48	09 08	09 28

Remember 60 minutes = 1 hour. Count on in steps to the next hour. Read across the row for one bus or train.

(a) How many minutes should the 07 15 bus take to go from Avon to Elton?

..... minutes

(1)

(b) Sam goes from Barton to Elton by bus.
Sam takes 12 minutes to get from his house to the bus stop in Barton.
He takes 10 minutes to get from the bus stop in Elton to work.
Sam has to get to work by 9 am.
He leaves his house at 8.05 am.
Does Sam get to work by 9 am?
You must show all your working.

(3)

(Total for Question 5 is 4 marks)

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6 Last year the cost of a gym membership was £480
This year the cost of the gym membership has been increased to £540
Write down the increase in the cost of the gym membership as a fraction of last year's cost.

.....

(2)

(Total for Question 6 is 2 marks)

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7 Here are the marks 16 students got in a science test.

54	61	67	58	72	65	70	63
59	74	68	61	77	66	52	69

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

(a) Show this information in a stem and leaf diagram.



Key:

(3)

(b) One of these students is going to be chosen at random.
The pass mark in the science test is 62
Leo writes,

The probability that this student failed the science test is $\frac{1}{4}$

Leo is wrong.
Explain why.

(2)

(Total for Question 7 is 5 marks)

8 **(a)** Sam is asked to find the value of $20 - 4 \times 3$

Here is his working.

$$20 - 4 \times 3 = 16 \times 3 = 48$$

Sam's answer is wrong.

Explain what Sam has done wrong.

(1)

(b) Ali is asked to find the range of the numbers 6 2 9 4 7

Here is his working.

$$\text{Range} = 7 - 6 = 1$$

This is wrong.

Explain why.

(1)

(Total for Question 8 is 2 marks)

9 Amy, Ben and Cal share a sum of money.

Amy gets $\frac{1}{6}$ of the money.

Ben gets $\frac{1}{3}$ of the money.

Cal gets the rest of the money.

Amy gets £4.50

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

(a) **Work out** how much money Ben gets.

£ .....

(2)

(b) **Find** the ratio

amount of money Amy gets : amount of money Cal gets

Give your answer in the form $a : b$ where a and b are whole numbers.

.....

(3)

(Total for Question 9 is 5 marks)

10 *ABC* is an isosceles right-angled triangle.

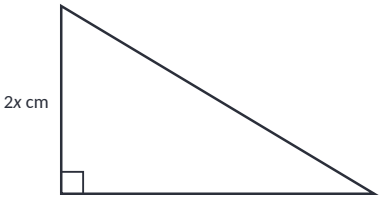


Diagram NOT accurately drawn

The area of the triangle is 72 cm²

Work out the value of *x*.

Remember Triangle = ½ × base × height. Trapezium = ½ × (a + b) × height. Use the perpendicular height.

x = ...

(3)

(Total for Question 10 is 3 marks)

11 **Work out** the value of $\frac{3.36 \times 10^8}{1.2 \times 10^3}$

Give your answer in standard form.

.....

(2)

(Total for Question 11 is 2 marks)

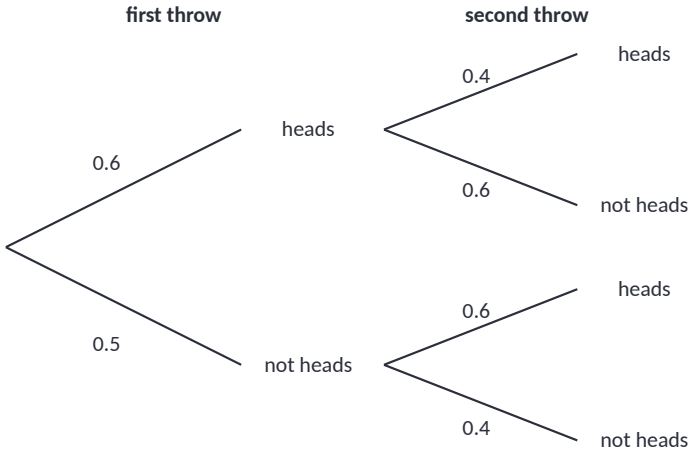
12 **Expand and simplify** $4(q + 2) - 3(2 - q)$

.....

(2)

(Total for Question 12 is 2 marks)

13 When a biased coin is thrown once, the probability that it will land on heads is 0.6
The biased coin is thrown twice.
Ravi draws this probability tree diagram.
The diagram is **not** correct.

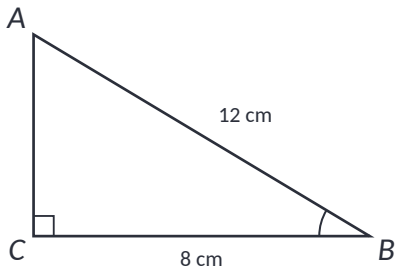


Write down two things that are wrong with the probability tree diagram.

(2)

(Total for Question 13 is 2 marks)

14 *ABC* is a right-angled triangle.



(a) **Work out** the size of angle *ABC*.
Give your answer **correct to 1 decimal place**.

.....°

(2)

(b) The length of the side *AB* is reduced by 1 cm.
The length of the side *BC* is still 8 cm.
Angle *ACB* is still 90°
Will the value of cos *ABC* increase or decrease?
You must give a reason for your answer.

(1)

(Total for Question 14 is 3 marks)

TOTAL FOR PAPER IS 36 MARKS

C6 mark scheme

Q		Answer	Mark	Notes
1		0.03	B1	
2		8	B1	
3		13 500	B1	
4	(a)	16	B1	
	(b)	Subtract 6 from the previous term	C1	C1
	(c)	−14	B1	
5	(a)	38	B1	
	(b)	Yes: at the stop 08 17, catches the 08 19 bus, arrives Elton 08 48, at work 08 58	M1 M1 C1	M1 for 08 05 + 12 min (= 08 17) M1 for the 08 19 bus arriving at 08 48 C1 Yes with 08 58
6		$\frac{1}{8}$	M1 A1	M1 for $\frac{60}{480}$ A1 oe
7	(a)	5 | 2 4 8 9 6 | 1 1 3 5 6 7 8 9 7 | 0 2 4 7 Key: 5 | 2 = 52 marks	B2 B1	B2 for a correct ordered diagram (B1 for unordered or one error) B1 for a correct key
	(b)	6 students scored less than 62, so the probability is $\frac{6}{16}$, not $\frac{1}{4}$	M1 C1	M1 for 6 students failed C1 for a correct explanation
8	(a)	He subtracted first; he should multiply first: 20 − 12 = 8	C1	C1
	(b)	He used the last and first numbers; range = largest − smallest = 9 − 2 = 7	C1	C1

Mark scheme continues ►

Q		Answer	Mark	Notes
9	(a)	9	M1 A1	M1 for 4.50 × 2 A1 cao
	(b)	1 : 3	M1 M1 A1	M1 for Cal gets $\frac{1}{2}$ M1 for $\frac{1}{6} : \frac{1}{2}$ or 4.50 : 13.50 A1 cao
10		6	M1 M1 A1	M1 for ½ × 2x × 2x = 72 M1 for $x^2 = 36$ A1 cao
11		2.8×10^5	M1 A1	M1 for 280 000 A1 cao
12		$7q + 2$	M1 A1	M1 for $4q + 8$ or $-6 + 3q$ A1 cao
13		1. On the first throw, "not heads" should be 0.4, not 0.5 2. On the second throw, heads should be 0.6 and not heads 0.4 on every pair of branches	C2	C1 for each correct point
14	(a)	48.2	M1 A1	M1 for $\cos^{-1}(8 \div 12)$ A1 for 48.2
	(b)	Increase: cos ABC = $\frac{8}{11}$, which is bigger than $\frac{8}{12}$	C1	C1

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

Score ____ / 36

Write your score on the front page