Full paper G2

Paper 2 style · 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 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** 2583 **to the nearest 10**

.....

(1)

(Total for Question 1 is 1 mark)

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2 **Write** a fraction in the box to make the calculation correct.

$$1 - \frac{2}{7} = \square$$

(1)

(Total for Question 2 is 1 mark)

---

3 Here is a list of numbers.

2 5 5 6 6 6 9 9

Write down the mode of the numbers.

.....

(1)

(Total for Question 3 is 1 mark)

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4 **Write down** a 3 digit number that is a multiple of 4

.....

(1)

(Total for Question 4 is 1 mark)

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5 **Write** 0.65 as a percentage.

.....%

(1)

(Total for Question 5 is 1 mark)

6 **Write** the following numbers in order of size.
Start with the smallest number.

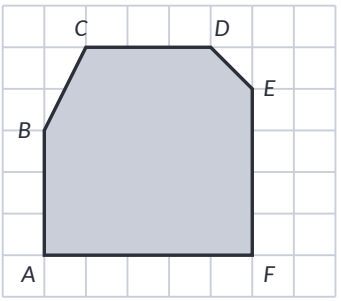
−9 −4 6 −1 2 12

.....

(1)

(Total for Question 6 is 1 mark)

7 Here is polygon *ABCDEF* on a square grid.



Remember Count the sides and look for equal sides, parallel sides and right angles.

(a) **Write down** the mathematical name of the polygon.

.....

(1)

(b) Which side of the polygon is parallel to the side *CD*?

.....

(1)

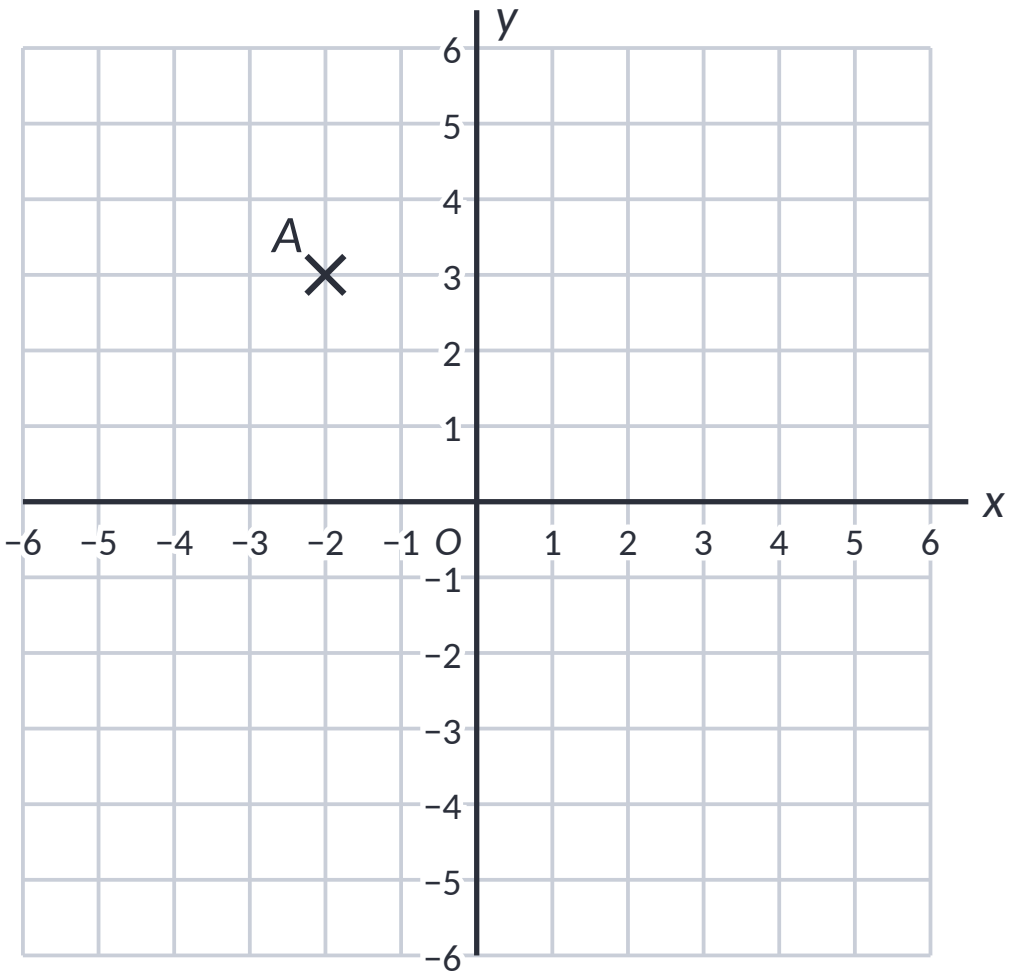
(c) **Write down** a side of the polygon that is perpendicular to the side *AF*.

.....

(1)

(Total for Question 7 is 3 marks)

8 Here is a centimetre grid.



Remember (x, y): go along first, then up. Midpoint: add the x values and halve, add the y values and halve.

(a) **Write down** the coordinates of point *A*.

(1)

(b) On the grid, mark with a cross (×) the point with coordinates (4, −2)
Label this point *B*.

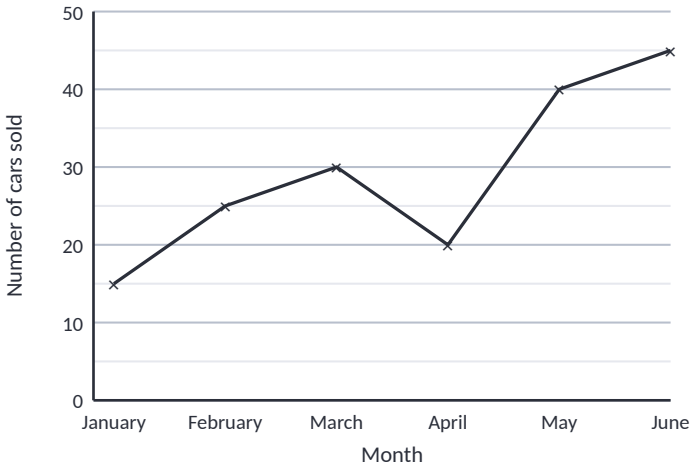
(1)

(c) On the grid, draw the circle with
centre (−1, 1)
and radius 3 cm.

(2)

(Total for Question 8 is 4 marks)

9 The graph shows information about the number of cars sold by a garage in each of six months last year.



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

(a) How many cars were sold by the garage in February?

.....

(1)

(b) For this garage, write down the ratio of the number of cars sold in January to the number of cars sold in June.

.....

(2)

(Total for Question 9 is 3 marks)

10 Ravi wants to book a holiday.
The holiday will cost £1680
Ravi will pay a deposit of £240
He will then pay the rest of the cost in 8 equal monthly payments.
How much is each monthly payment?

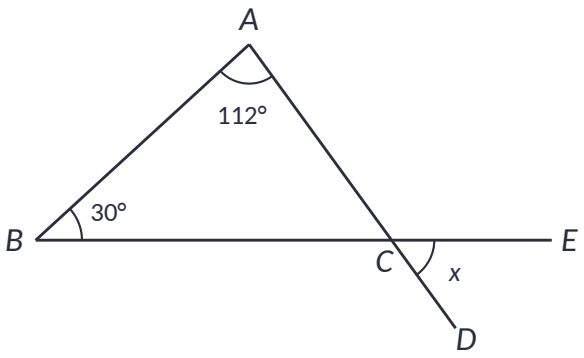
Remember Write down each cost or amount as you work it out, then add them up. Write money with 2 decimal places (£4.50). 100p = £1.

£ .....

(3)

(Total for Question 10 is 3 marks)

11 The diagram shows a triangle *ABC*.



ACD and *BCE* are straight lines.

Work out the size of the angle marked *x*.

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.

.....°

(3)

(Total for Question 11 is 3 marks)

12 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 42

.....

(1)

(b) Here is a different number machine.
The number machine is not complete.



When the input is 5, the output is 108
Complete the number machine.

(2)

(Total for Question 12 is 3 marks)

13 Jess works in a furniture shop.
During the last three months she sold 210 sofas.

64 sofas were sold without cushions.
50 sofas were medium sofas.
20 of the small sofas were sold without cushions.
72 of the 90 large sofas were sold with cushions.

Use this information to complete the two-way table.

	Small	Medium	Large	Total
With cushions				
Without cushions				
Total				

Remember Rows and columns add up to the totals. Fill in the easy gaps first, then use them to find the rest.

(3)

(Total for Question 13 is 3 marks)

14 The box below contains three mathematical symbols.

=	<	>

From the box, choose a symbol to make each of the following statements correct.

(a) $\frac{3}{5}$ ..... $\frac{3}{7}$

(1)

(b) -4×-2 ..... $10 - 2$

(1)

(Total for Question 14 is 2 marks)

15 The table shows information about the number of pets owned by each of 200 households.

Number of pets	Frequency
0	12
1	58
2	74
3	36
4	20

Remember Mean from a table = total of (value × frequency) ÷ total frequency. For groups, use the midpoint of each group.

(a) **Work out** the total number of pets owned by these households.

.....

(2)

(b) **Find** the median number of pets owned by these households.

.....

(2)

(Total for Question 15 is 4 marks)

16 On a scale drawing, a field has length 15.5 cm and width 8.4 cm.
The real length of the field is 62 metres.
Work out, in metres, the real width of the field.

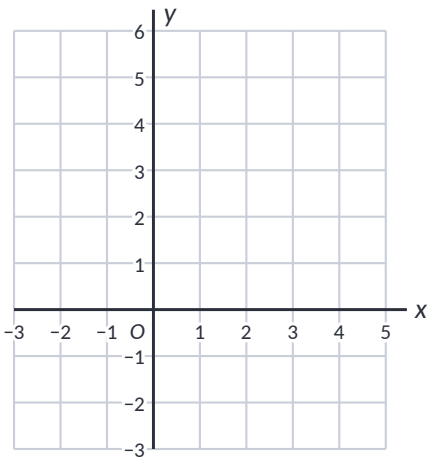
> **Remember** Real distance = map distance × scale. 100 cm = 1 m, 1000 m = 1 km (100 000 cm = 1 km).

..... metres

(3)

(Total for Question 16 is 3 marks)

17 On the grid below, draw the graph of $y = 3 - x$ for values of x from −2 to 4



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

(3)

(Total for Question 17 is 3 marks)

18 This sign was in a dentist's waiting room.

> 96 appointments were missed last month.
> These missed appointments were a total of 28.8 hours.

Work out the mean length of time for each missed appointment.
Give your answer in minutes.

> **Remember** Mean = total ÷ how many. Median = middle value when in order. Mode = most common. Range = biggest − smallest.

..... minutes

(3)

(Total for Question 18 is 3 marks)

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19 Zara buys a 5 kg box of nuts for £24.50
She puts the nuts into bags to sell.
Each bag contains 200 g of nuts.
Zara fills as many bags as possible.
She will sell each bag for the same price.
Zara wants to make a profit of at least 40%
Assuming she sells all the bags, what is the lowest price Zara should charge for each bag?

> **Remember** Percentage change = change ÷ original × 100. Multipliers: increase by 5% → × 1.05, decrease by 5% → × 0.95.

£ .....

(5)

(Total for Question 19 is 5 marks)

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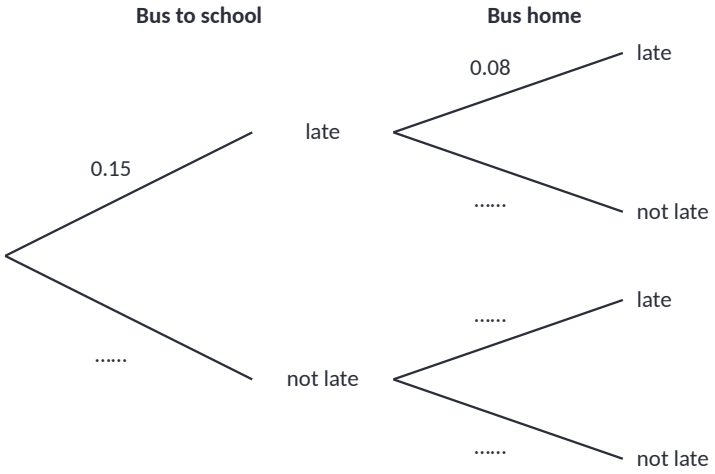
20 Tom gets a bus at the same time each morning to go to school.
He gets a bus at the same time each afternoon to come home.
The probability that the bus to school arrives late is 0.15
The probability that the bus home arrives late is 0.08 every day.
The probability tree diagram shows some of this information.

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

(a) **Complete** the probability tree diagram.



(2)

(b) For a day that Tom goes to school,
work out the probability that the bus to school and the bus home will both arrive late.

.....

(2)

(Total for Question 20 is 4 marks)

21

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) **Simplify** $(y^4)^3$

.....

(1)

(b) **Expand and simplify** $3(x + 5) + 4(6 - 2x)$

.....

(2)

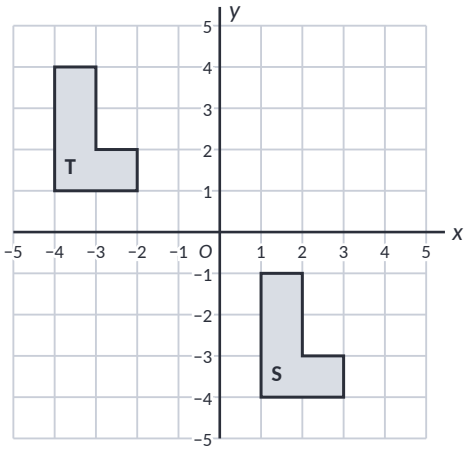
(c) **Factorise fully** $12a^3 + 4a^2b$

.....

(2)

(Total for Question 21 is 5 marks)

22



Describe fully the single transformation that maps shape **S** onto shape **T**.

(2)

(Total for Question 22 is 2 marks)

23 The length of a swimming pool is 50 metres, **correct to the nearest metre**.
Complete the error interval for the length of the swimming pool.

(2)

(Total for Question 23 is 2 marks)

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24 Park A has an area of 60 000 m^2
The greatest number of people allowed at an event in Park A is 480
Park B is a rectangle 500 m by 1500 m.
The greatest number of people allowed at an event in Park B is 5000
The area per person allowed for Park B is greater than the area per person allowed for Park A.

> **Remember** Find the value for 1 first (÷), then multiply. Compare like with like (e.g. people per m^2).

(a) How much greater?
Give your answer **correct to the nearest whole number**.

..... m^2

(4)

(b) Ben says,

"500 cm^2 is the same as 5 m^2 because there are 100 cm in 1 m so you divide by 100"

Ben's method is wrong.
Explain why.

(1)

(Total for Question 24 is 5 marks)

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25 The points *L*, *M* and *N* are such that *LMN* is a straight line.
The coordinates of *L* are (−2, 3)
The coordinates of *M* are (2, 9)
Given that *LM* : *MN* = 2 : 3,
find the coordinates of *N*.

> **Remember** (x, y): go along first, then up. Midpoint: add the x values and halve, add the y values and halve.

(4)

(Total for Question 25 is 4 marks)

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26 A new car cost £14 500

The value of the car decreases at a rate of 12% per year.

Work out the value of the car at the end of 3 years.

> **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 26 is 3 marks)

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27 In France, Amy pays 30 euros for 20 litres of diesel.

In Wales, Ben pays £40.50 for 7 gallons of the same type of diesel.

1 euro = £0.86

4.5 litres = 1 gallon

Amy thinks that diesel is cheaper in France than in Wales.

Is Amy correct?

You must show how you get your answer.

> **Remember** £ to another currency: multiply by the rate. Another currency to £: divide by the rate.

(4)

(Total for Question 27 is 4 marks)

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28 **Solve** the simultaneous equations

$$3x + 2y = 16$$

$$5x + 4y = 28$$

> **Remember** Make one letter have the same number in both equations, then add or subtract to remove it. Substitute back to find the other.

x = ...

y = ...

(3)

(Total for Question 28 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS

G2 mark scheme

Q		Answer	Mark	Notes
1		2580	B1	
2		$\frac{5}{7}$	B1	
3		6	B1	
4		e.g. 104	B1	
5		65	B1	
6		−9, −4, −1, 2, 6, 12	B1	
7	(a)	hexagon	B1	
	(b)	*AF*	B1	
	(c)	*AB* or *EF*	B1	
8	(a)	(−2, 3)	B1	
	(b)	Cross at (4, −2) labelled B	B1	
	(c)	Circle centre (−1, 1) radius 3	B2	B2 (B1 for a circle with correct centre or correct radius)
9	(a)	25	B1	
	(b)	1 : 3	M1 A1	M1 for 15 : 45 A1 cao
10		180	M1 M1 A1	M1 for 1680 − 240 (= 1440) M1 for 1440 ÷ 8 A1 cao
11		38	M1 A1 C1	M1 for angle *ACB* = 180 − 112 − 30 (= 38) A1 for x = 38 C1 angles in a triangle add up to 180° and vertically opposite angles are equal

Mark scheme continues ►

Q		Answer	Mark	Notes
12	(a)	3	B1	
	(b)	+ 7	M1 A1	M1 for 108 ÷ 9 (= 12) A1 for + 7
13		With: 50, 24, 72, 146 Without: 20, 26, 18, 64 Total: 70, 50, 90, 210	B3	B3 all correct (B2 for 8 or more correct, B1 for 5 or more correct)
14	(a)	>	B1	
	(b)	=	B1	
15	(a)	394	M1 A1	M1 for at least 3 products A1 cao
	(b)	2	M1 A1	M1 for the 100th and 101st values or cumulative totals A1 cao
16		33.6	M1 M1 A1	M1 for 62 ÷ 15.5 (= 4) M1 for 8.4 × 4 A1 cao
17		Straight line from (−2, 5) to (4, −1)	M1 M1 A1	M1 for at least 2 correct points M1 for at least 3 correct points plotted A1 for a correct line from $x = -2$ to $x = 4$
18		18	M1 M1 A1	M1 for 28.8 × 60 (= 1728) M1 for 1728 ÷ 96 A1 cao
19		1.38	M1 M1 M1 A1 A1	M1 for 5000 ÷ 200 (= 25) M1 for 24.50 × 1.4 (= 34.30) M1 for 34.30 ÷ 25 (= 1.372) A1 for 1.372 A1 for 1.38
20	(a)	0.85; 0.92 and 0.08, 0.92	B2	B2 all correct (B1 for 0.85 or 0.92)
	(b)	0.012	M1 A1	M1 for 0.15 × 0.08 A1 cao
21	(a)	y^{12}	B1	
	(b)	$39 - 5x$	M1 A1	M1 for $3x + 15$ or $24 - 8x$ A1 cao
	(c)	$4a^2(3a + b)$	B2	B2 (B1 for a partial factorisation)

Mark scheme continues ►

Q		Answer	Mark	Notes
22		Translation by $\begin{pmatrix} -5 \\ 5 \end{pmatrix}$	B1 B1	B1 translation B1 for the vector
23		49.5 m ⩽ length < 50.5 m	B2	B2 (B1 for one end correct)
24	(a)	25	M1 M1 M1 A1	M1 for 60 000 ÷ 480 (= 125) M1 for 500 × 1500 (= 750 000) M1 for 750 000 ÷ 5000 (= 150) A1 cao
	(b)	There are 100 × 100 = 10 000 cm^2 in 1 m^2, so 500 cm^2 = 0.05 m^2	C1	C1
25		(8, 18)	M1 M1 M1 A1	M1 for *LM* = 4 across and 6 up M1 for each part = 2 across and 3 up M1 for 2 + 6 or 9 + 9 A1 cao
26		9881.34	M1 M1 A1	M1 for 14 500 × 0.88 (= 12 760) M1 for 14 500 × 0.88^3 A1 for 9881.34 or 9881.35
27		No: France £1.29 per litre, Wales £1.286 per litre, so diesel is slightly cheaper in Wales	M1 M1 M1 C1	M1 for 30 × 0.86 (= 25.80) M1 for 7 × 4.5 (= 31.5) M1 for comparable values (1.29 and 1.2857…) C1 No with correct figures
28		*x* = 4, *y* = 2	M1 A1 A1	M1 for a correct method to eliminate one variable A1 for *x* = 4 A1 for *y* = 2

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

Score ____ / 80