Full paper G3

Paper 3 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** 45% as a fraction.

.....

(1)

(Total for Question 1 is 1 mark)

---

2 **Work out** $\frac{1}{5}$ of 35

.....

(1)

(Total for Question 2 is 1 mark)

---

3 **Write down** two factors of 15

(1)

(Total for Question 3 is 1 mark)

---

4 **Simplify** $4p \times 2$

.....

(1)

(Total for Question 4 is 1 mark)

---

5 **Find** $\sqrt{2.89}$

.....

(1)

(Total for Question 5 is 1 mark)

6

On the grid, draw a quadrilateral with

exactly one line of symmetry

and rotational symmetry of order 1

(2)

(Total for Question 6 is 2 marks)

7 The table shows the total number of pears sold and the total number of bananas sold in a shop in each of three weeks.

	Week 1	Week 2	Week 3
Number of pears	74	69	81
Number of bananas	58	72	65

In total for the three weeks, more pears than bananas were sold.
How many more?

> **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 7 is 3 marks)

8 Here are the first five terms of a number sequence.

4 11 18 25 32

(a) **Write down** the next two terms of this sequence.

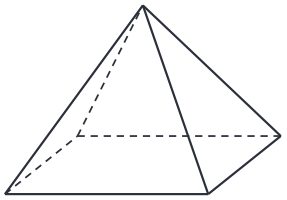
(1)

(b) Leo says that 70 is a term in this sequence.
Leo is wrong.
Explain why.

(1)

(Total for Question 8 is 2 marks)

9 The diagram shows a solid square-based pyramid.



(a) **Write down** the number of faces of the pyramid.

.....

(1)

(b) **Write down** the number of edges of the pyramid.

.....

(1)

(Total for Question 9 is 2 marks)

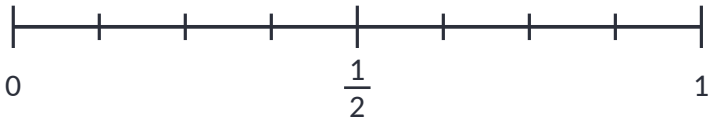
10 Here is a list of 8 numbers.

1 3 3 4 5 6 6 8

Mo picks at random one of these numbers.

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

(a) On the probability scale below, mark with a cross (×) the probability that Mo picks a number 10



(1)

(b) On the probability scale below, mark with a cross (×) the probability that Mo picks a number greater than 3



(1)

(c) **Find** the probability that Mo picks an odd number.

.....

(2)

(Total for Question 10 is 4 marks)

---

11 Ava wants to make 40 cards.
She needs 3 ribbons for each card.
Ava has 4 packs of ribbons.
There are 28 ribbons in each pack.
Has Ava got enough ribbons to make all 40 cards?
Show how you get your answer.

> **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 11 is 3 marks)

---

12 **Write** 75 centimetres as a fraction of 2 metres.
Give your answer in its simplest form.

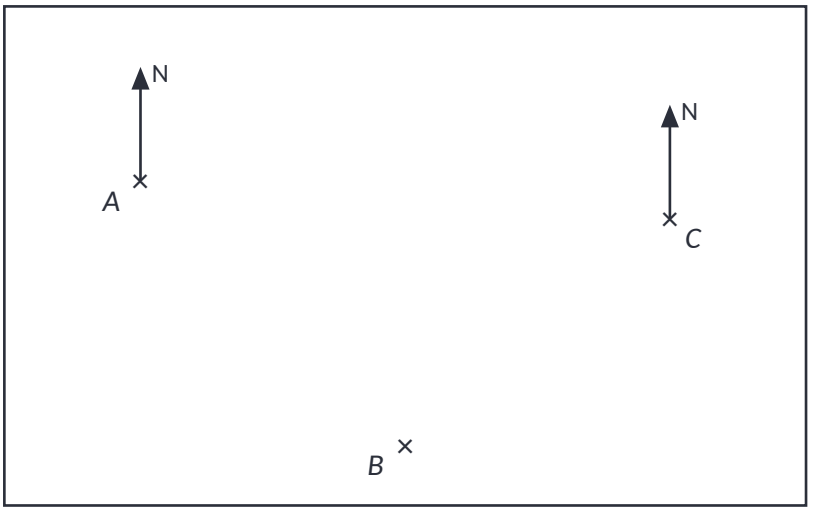
.....

(2)

(Total for Question 12 is 2 marks)

13 ✎ **Complete this question on paper (printed at actual size)**

The accurately drawn map shows the positions of three points, *A*, *B* and *C*, in a park.



Scale: 1 cm represents 200 metres

Nia walks in a straight line from *A* to *B*.
She then walks in a straight line from *B* to *C*.
Ali walks in a straight line from *A* to *C*.
Nia walks more metres than Ali.

Remember Measure from North, clockwise, and always use 3 figures (e.g. 065°). A back bearing: add or subtract 180°.

(a) How many more?

..... metres

(3)

(b) **Find** by measurement the bearing of *A* from *C*.

..... °

(1)

(Total for Question 13 is 4 marks)

14 Here is the shoe size of each of 12 girls in a class.

3 4 4 5 5 5 6 6 6 6 7 8

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

(a) **Find** the median.

.....

(1)

(b) **Work out** the range.

.....

(1)

(c) For the shoe sizes of each of 12 boys in the class,
the median size is 7
the range is 4
Compare the distribution of the shoe sizes of the girls with the distribution of the shoe sizes of the boys.

(2)

(Total for Question 14 is 4 marks)

---

15 **Work out** $\frac{3.85 \times 12.4}{8 - 2.36}$

.....

(2)

(Total for Question 15 is 2 marks)

---

16 On the centimetre grid, draw an isosceles triangle with an area of 10 cm²

(2)

(Total for Question 16 is 2 marks)

17

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) **Expand** $4(3 - 5x)$

.....

(1)

(b) **Solve** $\frac{2y}{5} = 8$

$y =$ .....

(2)

(c) **Factorise** $6q + 9$

.....

(1)

(Total for Question 17 is 4 marks)

18 (a) **Write** 4870 **correct to 2 significant figures**.

.....

(1)

(b) **Write** 0.0638 **correct to 1 significant figure**.

.....

(1)

(Total for Question 18 is 2 marks)

---

19 There are 320 marbles in a bag.

The marbles are blue or white or green.

$\frac{5}{8}$ of the marbles are blue.

72 of the marbles are white.

What percentage of the marbles are green?

> **Remember** Fraction of an amount: ÷ by the bottom, × by the top. Percentage: 10% = ÷ 10, 1% = ÷ 100, or use a multiplier (35% = 0.35).

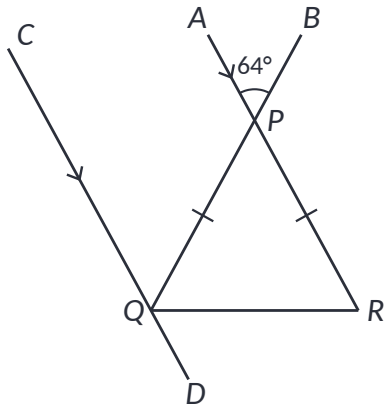
..... %

(4)

(Total for Question 19 is 4 marks)

---

20 In the diagram, *PQR* is an isosceles triangle with *PQ* = *PR*.



APR and *CQD* are parallel lines.
BPQ is a straight line.
Angle *APB* = 64°
Work out the size of angle *CQR*.
Give a reason for each stage of your working.

> **Remember** Alternate angles are equal (Z). Corresponding angles are equal (F). Co-interior angles add up to 180° (C). Name the rule you use.

.....°

(5)

(Total for Question 20 is 5 marks)

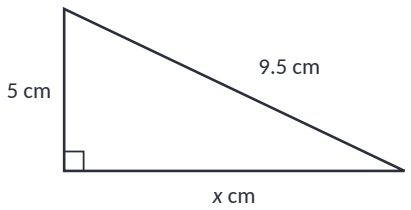
21 **Work out** the lowest common multiple (LCM) of 18 and 42

.....

(2)

(Total for Question 21 is 2 marks)

22 Here is a right-angled triangle.



Work out the value of x.
Give your answer **correct to 3 significant figures**.

x = ...

(2)

(Total for Question 22 is 2 marks)

23 $T = 3m^2 - 7$

Remember Put the numbers in place of the letters, using brackets for negatives. Then follow BIDMAS.

(a) **Work out** the value of T when $m = -4$

T = ...

(2)

(b) **Make q the subject** of the formula $h = 5q - 2$

.....

(2)

(Total for Question 23 is 4 marks)

24 Ali, Ben and Cat are playing a game with cards.
Ali has some cards.
Ben has three times as many cards as Ali.
Cat has 4 cards fewer than Ben.
In total they have 52 cards.

the number of cards Ali has : the number of cards Cat has = 1 : p

Work out the value of p.

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

p = ...

(5)

(Total for Question 24 is 5 marks)

---

25 Kai is going to buy 12 tins of paint.
Here is some information about the cost of tins of paint from each of two shops.

Paint Plus	**Colour Store**
4 tins for £30	Pack of 6 tins normal price £50 15% off the normal price

Kai wants to buy the 12 tins of paint as cheaply as possible.
Should Kai buy the paint from Paint Plus or from Colour Store?
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)

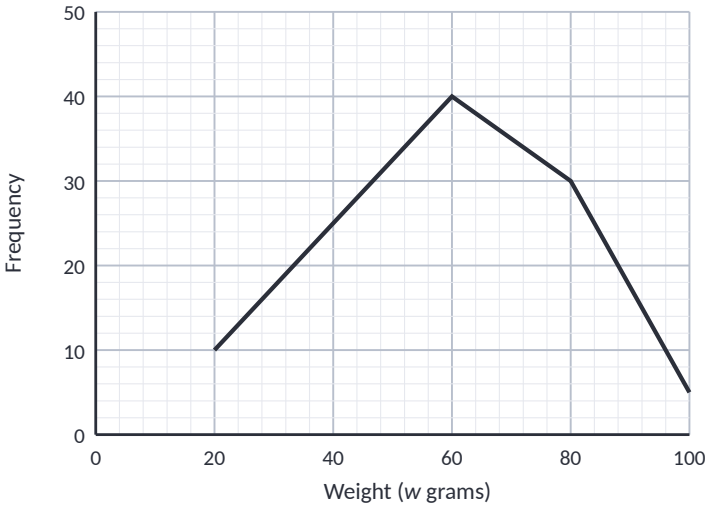
(Total for Question 25 is 4 marks)

---

26 The table gives information about the weights, in grams, of some apples.

Weight (w grams)	Frequency
$0 < w \leqslant 20$	10
$20 < w \leqslant 40$	25
$40 < w \leqslant 60$	40
$60 < w \leqslant 80$	20
$80 < w \leqslant 100$	5

Omar draws a frequency polygon for the information in the table.



Write down two mistakes that Omar has made.

(2)

(Total for Question 26 is 2 marks)

27 Jake runs for 20 minutes at an average speed of 6 miles per hour.
He then runs for 30 minutes at an average speed of 10 miles per hour.
It takes Sara 42 minutes to run the same total distance that Jake runs.
Work out Sara's average speed.
Give your answer in miles per hour.

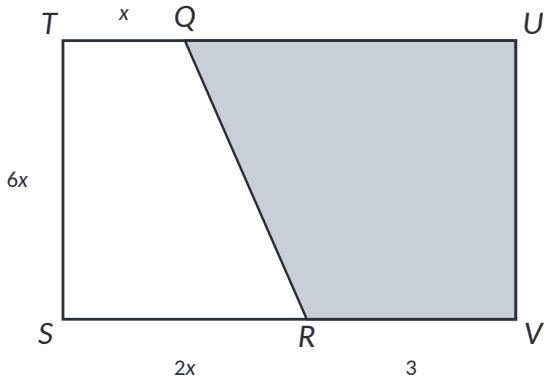
> **Remember** Speed = distance ÷ time. Distance = speed × time. Time = distance ÷ speed. Change minutes to hours: ÷ 60 (30 min = 0.5 h).

..... miles per hour

(4)

(Total for Question 27 is 4 marks)

28 The diagram shows rectangle *STUV*.
TQU and *SRV* are straight lines.
All measurements are in cm.



The area of trapezium *QUVR* is *A* cm²
Show that $A = 3x^2 + 18x$

> **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 28 is 3 marks)

29 **Change** 25 metres per second to kilometres per hour.

..... kilometres per hour

(2)

(Total for Question 29 is 2 marks)

30 The value of Kim's van has decreased by 20%
The van now has a value of £11 200
Work out the value of Kim's van before the decrease.

£ .....

(2)

(Total for Question 30 is 2 marks)

TOTAL FOR PAPER IS 80 MARKS

G3 mark scheme

Q		Answer	Mark	Notes
1		$\frac{45}{100}$ or $\frac{9}{20}$	B1	
2		7	B1	
3		Any two of 1, 3, 5, 15	B1	
4		8*p*	B1	
5		1.7	B1	
6		e.g. a kite or an isosceles trapezium	B2	B2 (B1 for a quadrilateral with one line of symmetry or order 1 only)
7		29	M1 M1 A1	M1 for 74 + 69 + 81 (= 224) or 58 + 72 + 65 (= 195) M1 for 224 − 195 A1 cao
8	(a)	39, 46	B1	
	(b)	The terms go ..., 60, 67, 74, ... so 70 is not a term (70 − 4 = 66 is not a multiple of 7)	C1	C1
9	(a)	5	B1	
	(b)	8	B1	
10	(a)	Cross at 0	B1	
	(b)	Cross at $\frac{5}{8}$	B1	
	(c)	$\frac{4}{8}$	M1 A1	M1 for 4 odd numbers A1 oe
11		No: she needs 120 ribbons but has 112	M1 M1 C1	M1 for 40 × 3 (= 120) M1 for 4 × 28 (= 112) C1 No with 120 and 112

Mark scheme continues ►

Q		Answer	Mark	Notes
12		$\frac{3}{8}$	M1 A1	M1 for $\frac{75}{200}$ A1 cao
13	(a)	508	M1 M1 A1	M1 for measuring at least two lengths (4.9–5.0, 4.5–4.7, 7.0–7.1 cm) M1 for (AB + BC − AC) × 200 A1 for 460 to 560
	(b)	274	B1	B1 for 272 to 276
14	(a)	5.5	B1	
	(b)	5	B1	
	(c)	The boys have larger shoe sizes on average (higher median); the girls' sizes are more varied (larger range)	C1 C1	C1 for comparing medians in context C1 for comparing ranges in context
15		8.4645390071	M1 A1	M1 for 47.74 or 5.64 A1 for 8.4645...
16		e.g. base 4 cm and height 5 cm with the apex above the midpoint of the base	B2	B2 (B1 for a triangle with area 10 cm² or an isosceles triangle)
17	(a)	$12 - 20x$	B1	
	(b)	20	M1 A1	M1 for $2y = 40$ A1 cao
	(c)	$3(2q + 3)$	B1	
18	(a)	4900	B1	
	(b)	0.06	B1	
19		15	M1 M1 M1 A1	M1 for $\frac{5}{8} \times 320$ (= 200) M1 for 320 − 200 − 72 (= 48) M1 for 48 ÷ 320 × 100 A1 cao

Mark scheme continues ►

Q		Answer	Mark	Notes
20		122	M1 M1 M1 A1 C1	M1 angle $QPR = 64°$ (vertically opposite angles are equal) M1 angle PQR = angle PRQ = (180 − 64) ÷ 2 (= 58) M1 for 180 − 58 A1 for 122 C1 reasons including base angles of an isosceles triangle and co-interior angles add up to 180°
21		126	M1 A1	M1 for listing multiples or prime factors 2×3^2 and $2 \times 3 \times 7$ A1 cao
22		8.08	M1 A1	M1 for $\sqrt{(9.5^2 - 5^2)}$ A1 for 8.07 to 8.08
23	(a)	41	M1 A1	M1 for $3 \times 16 - 7$ A1 cao
	(b)	$q = \frac{h + 2}{5}$	M1 A1	M1 for $h + 2 = 5q$ A1 oe
24		2.5	M1 M1 A1 M1 A1	M1 for $a + 3a + 3a - 4 = 52$ M1 for $7a = 56$ A1 for $a = 8$ M1 for 8 : 20 A1 cao
25		Colour Store (£85 compared with £90)	M1 M1 M1 C1	M1 for 3×30 (= 90) M1 for 50×0.85 (= 42.50) M1 for 2×42.50 (= 85) C1 Colour Store with 90 and 85
26		1. He plotted the points at the end of each class instead of at the midpoints 2. The point for $60 < w \leqslant 80$ is plotted at 30 instead of 20	C2	C1 for each mistake
27		10	M1 M1 M1 A1	M1 for $6 \times 20/60$ (= 2) M1 for $10 \times 30/60$ (= 5) M1 for 7 ÷ (42/60) A1 cao
28		$QU = 2x + 3 - x = x + 3$; $A = \frac{1}{2}(x + 3 + 3) \times 6x = 3x^2 + 18x$	M1 M1 A1	M1 for $QU = x + 3$ M1 for $\frac{1}{2}(x + 3 + 3) \times 6x$ A1 for a complete correct method leading to $3x^2 + 18x$
29		90	M1 A1	M1 for $25 \times 3600 \div 1000$ A1 cao

Mark scheme continues ►

Q	Answer	Mark	Notes
30	14 000	M1 A1	M1 for 11 200 ÷ 0.8 A1 cao

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

Score ____ / 80