GRADE 9 · GEC 2026 PREDICTION

Mathematics Paper 2 Memorandum

Space and Shape (Geometry) · Measurement · Data Handling

TOTAL 75 marks **TIME** 2 hours (+ 15 minutes reading time)

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An unofficial prediction paper in the format of the GEC Mathematics Paper 2, following its 2026 scope. It is not set by the Department of Basic Education.

- Section A: one mark for each correct answer. There are no half marks.
- Section B: one ✓ = one mark. Accept any other mathematically correct method; consistent accuracy applies. A geometry statement without its reason loses the reason mark.
- Every Section A question has a short worked answer, so a learner can see WHY the option is right.

SECTION A — ANSWER KEY

No.	Ans	No.	Ans	No.	Ans	No.	Ans	No.	Ans
1	B	10	A	19	A	28	A	37	B
2	D	11	C	20	D	29	B	38	C
3	C	12	C	21	D	30	B	39	C
4	C	13	D	22	C	31	A	40	A
5	D	14	A	23	C	32	C	41	B
6	C	15	A	24	A	33	C	42	D
7	A	16	B	25	B	34	D	43	B
8	D	17	D	26	B	35	A	44	D
9	A	18	B	27	D	36	A	45	B

SECTION A — WORKED ANSWERS

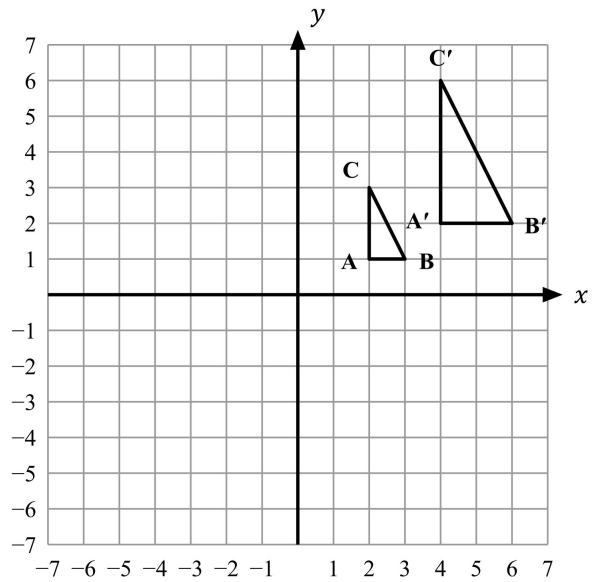
No.	Answer	Working
1.	**B** x and 64° are vertically opposite angles.	Where two straight lines cross, the angles opposite each other are equal: x = 64° (vert opp ∠s)
2.	**D** ∠3 and ∠6	Alternate angles lie between the parallel lines, on opposite sides of the transversal: ∠3 and ∠6. ∠1 and ∠5 are corresponding, ∠3 and ∠5 are co-interior, and ∠1 and ∠4 are vertically opposite.
3.	**C** $x + y$ = 90°, because AB ⊥ CD	∠BOC = 90°, because AB ⊥ CD. x and y together make up ∠BOC, so $x + y$ = 90°.
4.	**C** 20°	x + 30° + 2x = 90° (PQ ⊥ RS) 3x + 30° = 90° 3x = 60°, so x = 20°
5.	**D** 35°	2x + 15° + 3x − 10° = 180° (∠s on a str line) 5x + 5° = 180° 5x = 175°, so x = 35°

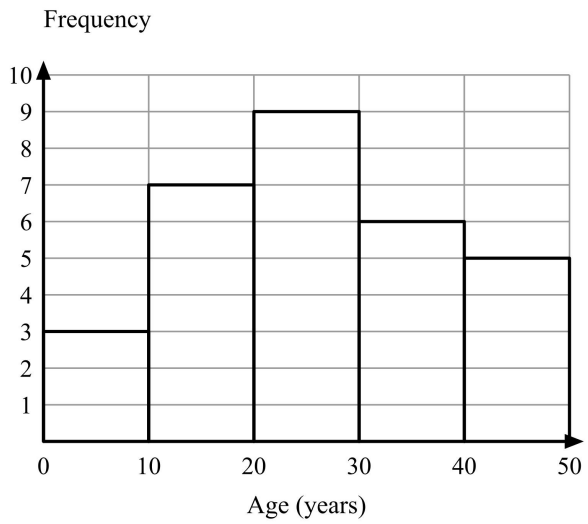
No.	Answer	Working
6.	**C** 35°	$3y - 25° = y + 45°$ (alt ∠s; AB ∥ CD) $2y = 70°$, so $y = 35°$
7.	**A** 75°	Draw PK ∥ AB through P. ∠APK = 34° (alt ∠s; AB ∥ PK) ∠KPC = 41° (alt ∠s; PK ∥ CD) $x = 34° + 41° = 75°$
8.	**D** a right-angled isosceles triangle	One angle is 90°, so the triangle is right-angled. Two angles are equal, so two sides are equal: isosceles.
9.	**A** a trapezium	A trapezium has exactly one pair of parallel sides. A parallelogram and a rhombus have two pairs, and a kite has none.
10.	**A** The diagonals bisect each other at right angles.	The diagonals of a rhombus bisect each other at right angles; those of a parallelogram only bisect each other. Every parallelogram has parallel opposite sides and equal opposite angles. Equal diagonals belong to a rectangle.
11.	**C** 115°	$x = 47° + 68° = 115°$ (ext ∠ of △)
12.	**C** 115°	Sum of the interior angles of a pentagon = (5 − 2) × 180° = 540° Fifth angle = 540° − (100° + 120° + 95° + 110°) = 540° − 425° = 115°
13.	**D** SAS	Two sides and the angle BETWEEN them are equal: SAS.
14.	**A** 12,5 cm	△ADE ||| △ABC (∠∠∠: Â common; corresp ∠s, DE ∥ BC) AB = 4 + 6 = 10 cm BC = $\frac{5 \times 10}{4}$ = 12,5 cm
15.	**A** (3 ; 5)	Reflection in the x-axis: $(x\ ;\ y) \rightarrow (x\ ;\ -y)$ A(3 ; −5) → A′(3 ; 5)
16.	**B** (3 ; 7)	Reflection in the y-axis: $(x\ ;\ y) \rightarrow (-x\ ;\ y)$ E(−3 ; 7) → E′(3 ; 7)
17.	**D** (−1 ; 6)	Reflection in the line $y = x$: $(x\ ;\ y) \rightarrow (y\ ;\ x)$ C(6 ; −1) → C′(−1 ; 6)
18.	**B** P′(5 ; 2) and Q′(3 ; −1)	Reflection in the line $y = x$: $(x\ ;\ y) \rightarrow (y\ ;\ x)$ P(2 ; 5) → P′(5 ; 2) and Q(−1 ; 3) → Q′(3 ; −1)
19.	**A** (2 ; 2)	$(x\ ;\ y) \rightarrow (x + 4\ ;\ y - 3)$ D(−2 ; 5) → D′(2 ; 2): from the second quadrant into the first
20.	**D** (1 ; −3)	Rotation through 90° clockwise about the origin: $(x\ ;\ y) \rightarrow (y\ ;\ -x)$ K(3 ; 1) → K′(1 ; −3)
21.	**D** a rotation through 90° anticlockwise about the origin	Rotation through 90° anticlockwise about the origin: $(x\ ;\ y) \rightarrow (-y\ ;\ x)$, so P(4 ; −2) → (2 ; 4) = P′ A reflection in $y = x$ gives (−2 ; 4), a reflection in the y-axis (−4 ; −2), and a rotation through 180° (−4 ; 2).
22.	**C** (−6 ; 12)	Enlargement by a scale factor of 3 about the origin: $(x\ ;\ y) \rightarrow (3x\ ;\ 3y)$ C(−2 ; 4) → C′(−6 ; 12)
23.	**C** 12 cm and 6 cm²	Every length is multiplied by $\frac{1}{2}$, so the perimeter becomes $24 \times \frac{1}{2}$ = 12 cm The area is multiplied by $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$, so it becomes $24 \times \frac{1}{4}$ = 6 cm²
24.	**A** The area doubles, but the perimeter does not double.	Before: area = 6 × 4 = 24 cm², perimeter = 2(6 + 4) = 20 cm After: area = 12 × 4 = 48 cm², perimeter = 2(12 + 4) = 32 cm The area doubles (48 = 2 × 24), but the perimeter does not (32 is not 2 × 20).

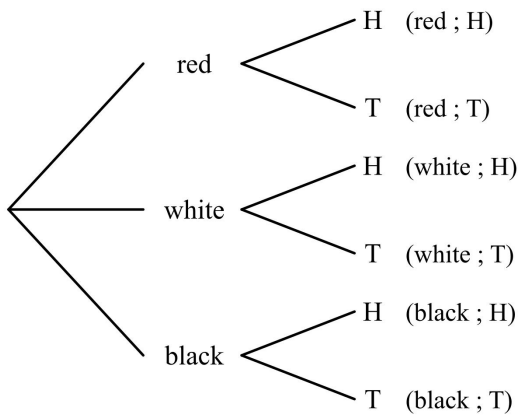
No.	Answer	Working
25.	**B** 6 000 cm²	breadth² = 1,3² − 1,2² = 1,69 − 1,44 = 0,25 (Pyth) breadth = $\sqrt{0,25}$ = 0,5 m Area = 1,2 × 0,5 = 0,6 m² 1 m² = 10 000 cm², so the area is 0,6 × 10 000 = 6 000 cm²
26.	**B** A sphere has one curved surface, and no edges or vertices.	A sphere has only one curved surface: no flat faces, no edges and no vertices. A cylinder has 2 flat circular faces and 1 curved surface, 2 curved edges and no vertices.
27.	**D** net P	Net P: the row of four squares folds round into four sides of the cube, and the two squares above and below it close the top and the bottom. Nets Q, R and S each fold two of their squares onto the same face of the cube.
28.	**A** a square-based pyramid	A square base with a triangle on each of its sides: the four triangles fold up and meet at one vertex, which makes a square-based pyramid.
29.	**B** 8 faces, 12 edges, 6 vertices	A regular octahedron has 8 faces that are equilateral triangles, 12 edges and 6 vertices. Check with Euler's formula: $F + V - E$ = 8 + 6 − 12 = 2
30.	**B** 360 cm³	Area of the triangle = $\frac{1}{2}$ × 6 × 8 = 24 cm² V = 24 × 15 = 360 cm³
31.	**A** 290 cm²	height = 300 ÷ (5 × 5) = 12 cm TSA = 2(5 × 5) + 4(5 × 12) = 50 + 240 = 290 cm²
32.	**C** How many litres of water does your household use in a month?	Only this question gives numerical data about how much water is used, which can be organised and compared. The other questions ask for opinions or reasons.
33.	**C** observing the gate and counting the cars with a tally table	The cars can be counted as they pass: observation with a tally table gives accurate data. A questionnaire or an interview only gives people's guesses.
34.	**D** 200 households chosen at random from all parts of the town	All 8 000 households are the population, not a sample. A random sample from all parts of the town represents the population; the other two samples are biased.
35.	**A** 11	Sort the answers by two criteria, gender and answer: Men: 9 said yes, and 20 − 9 = 11 said no Women: 18 said yes, and 30 − 18 = 12 said no
36.	**A** 6	In order: 3 ; 3 ; 5 ; 6 ; 7 ; 8 ; 9 The median is the middle (4th) value: 6
37.	**B** outlier 31 m; range 19 m	31 m is much larger than all the other heights: it is an outlier. Range = 31 − 12 = 19 m
38.	**C** Only very active learners were asked, so the sample does not represent all Grade 9 learners.	Athletes exercise more than most learners, so this sample over-estimates how much Grade 9 learners exercise: the results are biased.
39.	**C** R3 500	Food: $\frac{105°}{360°}$ × R12 000 = R3 500
40.	**A** The daily sales of Shop A are more consistent than those of Shop B.	The means are equal, so neither shop sold more on average. Shop A's range (R300) is much smaller than Shop B's (R1 500): its sales vary less, so they are more consistent.
41.	**B** $\frac{1}{6}$	The two-way table has 2 × 6 = 12 equally likely outcomes. Tails with a 5 or a 6: (T ; 5) and (T ; 6), which is 2 outcomes. P(tails and more than 4) = $\frac{2}{12} = \frac{1}{6}$

No.	Answer	Working
42.	**D** $\frac{3}{10}$	Multiples of 3: 3 ; 6 ; 9 ; 12 ; 15 ; 18, which is 6 of the 20 cards P(multiple of 3) = $\frac{6}{20} = \frac{3}{10}$
43.	**B** 120	P(odd) = $\frac{3}{5}$, because 1, 3 and 5 are odd Expected number = $\frac{3}{5} \times 200 = 120$
44.	**D** 200	Expected number = 0,8 × 250 = 200
45.	**B** The relative frequency of heads is 0,62; it differs from the probability of 0,5 because the coin was tossed only 50 times.	Relative frequency of heads = $\frac{31}{50}$ = 0,62 The probability of heads is 0,5. Over only 50 tosses the relative frequency often differs from the probability; over many more tosses it gets closer to 0,5.

SECTION B

46.1	∠GHD = ∠EGB = 58° (corresp ∠s; AB ∥ CD) ✓✓	✓ statement ✓ reason	(2)
46.2	∠GHC = 180° − 58° = 122° (∠s on a str line) ✓ ∠KHC = $\frac{1}{2} \times 122° = 61°$ (HK bisects ∠GHC) ✓	✓ ∠GHC = 122° with reason ✓ answer	(2)
47	In △TBH and △TFL: $\hat{T}$ is common, and $\hat{B} = \hat{F} = 90°$ (both stand vertically) ✓ △TBH ||| △TFL (∠∠∠) ✓ TF = 1,8 + 4,5 = 6,3 m ✓ $\frac{h}{1,6} = \frac{6,3}{1,8}$ ✓ $h = \frac{1,6 \times 6,3}{1,8} = 5,6$ m ✓	✓ equal angles ✓ similar triangles ✓ TF = 6,3 m ✓ proportion ✓ answer	(5)
48.1	 A′(4 ; 2), B′(6 ; 2) and C′(4 ; 6) plotted ✓ △A′B′C′ drawn and labelled ✓	✓ vertices ✓ triangle labelled	(2)
48.2	B(3 ; 1) → (−2 ; −3) ✓	✓ image of B	(1)

49	Rectangle: 15 × 9 = 135 m² ✓ Flower bed: $\pi \times 2^2$ = 12,57 m² ✓ Grass: 135 − 12,57 = 122,43 m² ✓ Cost: 122,43 × R45 = R5 509,35 ✓ (R5 509,51 if the area is not rounded first.)	✓ rectangle ✓ circle ✓ grass area ✓ cost	(4)
50	$V = \pi r^2 h = \pi \times 0{,}6^2 \times 1{,}5 = 1{,}69646$ m³ ✓ 1 m³ = 1 000 litres, so the tank holds 1 696,46 litres ✓ Time = 1 696,46 ÷ 12 = 141,37 minutes ✓ 141,37 minutes ≈ 2 hours 21 minutes ✓	✓ volume ✓ litres ✓ minutes ✓ hours and minutes	(4)
51	 First two bars at heights 3 and 7 ✓ Next three bars at heights 9, 6 and 5 ✓ The bars touch, and both axes are labelled ✓	✓ first two bars ✓ last three bars ✓ bars touch, axes labelled	(3)
52.1	Sum = R4 500 + R4 800 + R5 000 + R5 200 + R5 500 + R6 000 + R35 000 = R66 000 Mean = R66 000 ÷ 7 = R9 428,57 ✓ Median = R5 200, the 4th of the 7 wages in order ✓	✓ mean ✓ median	(2)
52.2	The median ✓ R35 000 is an outlier: it pulls the mean above what six of the seven workers earn ✓	✓ median ✓ reason	(2)

53.1	 3 branches for the spinner ✓ 2 branches for the coin from each colour, giving all 6 outcomes ✓	✓ spinner branches ✓ coin branches and outcomes	(2)
53.2	P(white and heads) = $\frac{1}{6}$ ✓	✓ answer	(1)
		TOTAL	**[30]**

TOTAL: 75

HOW THIS PAPER WAS PREDICTED

This paper follows the GEC Mathematics Paper 2 scope for 2026: 53 skills, each tested exactly once — 45 by a multiple-choice question and 8 by a written question in Section B. The scope brings data handling and probability into Paper 2 (17 of its 53 skills), and neither the 2023 pilot nor the 2025 national Paper 2 had any of them: that is the biggest change to prepare for. The order of Section A is the order of the past papers, with data handling and probability added at the end. The scope names no Pythagoras skill; both past papers used the theorem inside area and triangle problems, so here it is a step in Question 25 only.

Questions	Topic	2023	2025	2026 scope	This paper
1 – 7, 46	Geometry of straight lines	7	9	8	8
8 – 14, 47	Geometry of 2D shapes, congruency and similarity	11	14	8	8
15 – 23, 48	Transformation geometry	6	9	10	10
24, 25, 49	Area and perimeter	11	4	3	3
26 – 31, 50	3D objects, surface area and volume	10	9	7	7
32 – 40, 51, 52	Data handling	0	0	11	11
41 – 45, 53	Probability	0	0	6	6
	TOTAL	45	45	53	53

2023 and 2025: Section A questions (45 each). 2026 scope: skills listed. This paper: questions in Sections A and B.

Cognitive level	Marks	% of paper	CAPS target
1. Knowledge	19	25%	25%
2. Routine procedures	33	44%	45%
3. Complex procedures	14	19%	20%
4. Problem solving	9	12%	10%
TOTAL	75	100%	100%

Every skill in the 2026 Paper 2 scope, and the question that tests it:

2026 Paper 2 scope	Area	Question
Describe the angles formed by intersecting lines	Straight lines	1
Describe the angles formed by parallel lines cut by a transversal	Straight lines	2
Describe the angles formed by perpendicular lines	Straight lines	3
Solve problems with the angles formed by perpendicular lines	Straight lines	4
Solve problems with the angles formed by intersecting lines	Straight lines	5
Solve problems with parallel lines cut by a transversal	Straight lines	6, 7, 46
Define equilateral, isosceles and right-angled triangles	2D shapes	8
Define the parallelogram, rectangle, square, rhombus, trapezium and kite	2D shapes	9
The diagonals of rectangles, squares, parallelograms, rhombi and kites	2D shapes	10
The exterior angle of a triangle	2D shapes	11
The sum of the interior angles of a polygon	2D shapes	12
The minimum conditions for congruent and for similar triangles	2D shapes	13
Solve problems in triangles and quadrilaterals, with congruent and similar triangles	2D shapes	14, 47
Reflection in the x-axis	Transformations	15
Reflection in the y-axis	Transformations	16
Reflection in the line $y = x$	Transformations	17, 18
Translation within and across quadrants	Transformations	19
Rotation around a given point	Transformations	20
Identify a transformation from the coordinates of the image	Transformations	21
Coordinates after an enlargement or a reduction	Transformations	22
The effect of an enlargement or a reduction on perimeter and area	Transformations	23
Transformations on grid paper	Transformations	48
Doubling dimensions: the effect on perimeter and area	Area and perimeter	24
Perimeter and area of polygons	Area and perimeter	25
Perimeter and area of circles	Area and perimeter	49
Properties of spheres and cylinders	3D objects	26

2026 Paper 2 scope	Area	Question
Nets of cubes, prisms, pyramids and cylinders	3D objects	27, 28
The five Platonic solids: faces, edges and vertices	3D objects	29
Surface area, volume and capacity: triangular prisms	Surface area and volume	30
Surface area, volume and capacity: rectangular prisms	Surface area and volume	31
Surface area, volume and capacity: cylinders	Surface area and volume	50
Pose questions on social, economic and environmental issues	Data handling	32
Select and justify a method of collecting data	Data handling	33
Samples and populations	Data handling	34
Organise data by more than one criterion	Data handling	35
Measures of central tendency	Data handling	36
Measures of dispersion, extremes and outliers	Data handling	37
Analyse data: collection methods, summaries, error and bias	Data handling	38
Read and interpret data shown in different ways	Data handling	39
Compare two sets of data on the same issue	Data handling	40
Draw graphs: bar graphs, histograms, pie charts, broken-line graphs, scatter plots	Data handling	51
Summarise data in short paragraphs	Data handling	52
Compound events with two-way tables	Probability	41
The probability of outcomes, and predicted relative frequency	Probability	42 – 44
Compare relative frequency with probability	Probability	45
Compound events with tree diagrams	Probability	53