GRADE 8 · NOVEMBER EXAM 2026

Preparation: Paper 2 Memorandum

Space and Shape (Geometry) · Measurement · Data Handling

TOTAL 145 marks **TIME** self-paced

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A preparation worksheet for the Grade 8 Mathematics November examination: every type of question in the scope appears at least twice.

- One ✓ = one mark. Accept any other mathematically correct method.
- Consistent accuracy applies: an error carried forward is penalised only once.
- Mark your own work, then redo every question that you got wrong.

QUESTION 1

1.1	equal ✓	✓ answer	(1)
1.2	180° ✓	✓ answer	(1)
1.3.1	$3x - 15° = x + 45°$ ✓ (vertically opposite angles) ✓ $x = 30°$ ✓	✓ equation ✓ reason ✓ answer	(3)
1.3.2	AÊC = 3(30°) − 15° = 75° CÊB = 180° − 75° = 105° ✓ (angles on a straight line) ✓	✓ answer ✓ reason	(2)
1.4	$2y + 70° + y + 20° = 180°$ ✓ (angles on a straight line) ✓ $3y = 90°$, so $y = 30°$ ✓	✓ equation ✓ reason ✓ answer	(3)
1.5.1	$5k + 4° = 2k + 40°$ ✓ (vertically opposite angles) ✓ $3k = 36°$, so $k = 12°$ ✓	✓ equation ✓ reason ✓ answer	(3)
1.5.2	PT̂R = 5(12°) + 4° = 64° PT̂S = 180° − 64° = 116° ✓ (angles on a straight line) ✓	✓ answer ✓ reason	(2)
1.6	$3x + 15° = x + 55°$ ✓ (corresponding angles, AB ∥ CD) ✓ $2x = 40°$, so $x = 20°$ ✓	✓ equation ✓ reason ✓ answer	(3)
1.7	$3y - 20° = y + 60°$ ✓ (alternate angles, PQ ∥ RS) ✓ $2y = 80°$, so $y = 40°$ ✓	✓ equation ✓ reason ✓ answer	(3)

1.8	$2z + 30° + 3z - 20° = 180°$ ✓ (co-interior angles, KL ∥ MN) ✓ $5z = 170°$, so $z = 34°$ ✓	✓ equation ✓ reason ✓ answer	(3)
		TOTAL	**[24]**

QUESTION 2

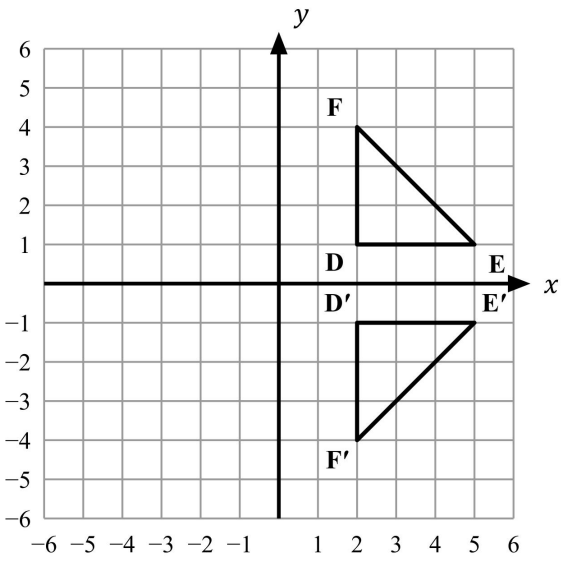
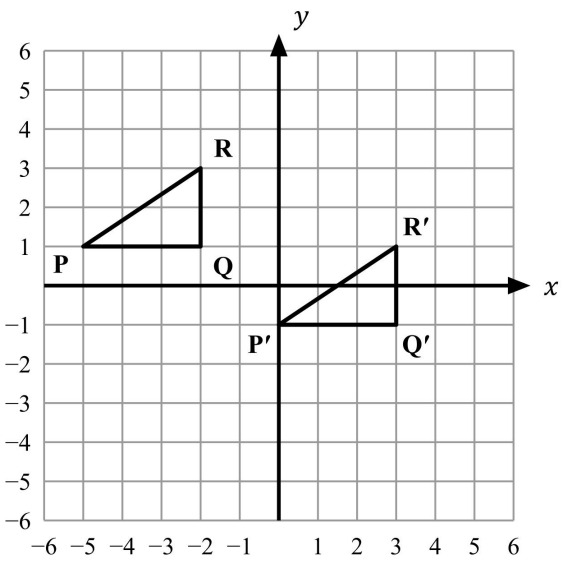
2.1.1	Rhombus ✓	✓ answer	(1)
2.1.2	Kite ✓	✓ answer	(1)
2.1.3	True ✓	✓ answer	(1)
2.1.4	False ✓	✓ answer	(1)
2.2	$\hat{Q} = \hat{R}$ (angles opposite equal sides) ✓ $2\hat{Q} = 180° - 40° = 140°$ (sum of the angles of a triangle) ✓ $\hat{Q} = 70°$ ✓	✓ $\hat{Q} = \hat{R}$ with reason ✓ angle sum with reason ✓ answer	(3)
2.3.1	$2x + 3x + 4x = 180°$ (sum of the angles of a triangle) ✓ $9x = 180°$, so $x = 20°$ ✓	✓ equation with reason ✓ answer	(2)
2.3.2	$\hat{M} = 4(20°) = 80°$ ✓	✓ answer	(1)
2.4.1	$\hat{C} = 52°$ ✓ (angles opposite equal sides) ✓	✓ answer ✓ reason	(2)
2.4.2	$\hat{B} = 180° - 52° - 52° = 76°$ ✓	✓ answer	(1)
2.5.1	$3x + 10° = 5x - 30°$ (opposite angles of a parallelogram) ✓ $2x = 40°$, so $x = 20°$ ✓	✓ equation with reason ✓ answer	(2)
2.5.2	$\hat{A} = 3(20°) + 10° = 70°$ ✓ $\hat{B} = 180° - 70° = 110°$ (co-interior angles, AD ∥ BC) ✓	✓ $\hat{A} = 70°$ ✓ $\hat{B}$ with reason	(2)
2.6.1	$2y + 15° + 3y + 15° = 180°$ (co-interior angles, KN ∥ LM) ✓ $5y = 150°$, so $y = 30°$ ✓	✓ equation with reason ✓ answer	(2)
2.6.2	$\hat{K} = 2(30°) + 15° = 75°$ ✓ $\hat{M} = \hat{K} = 75°$ (opposite angles of a parallelogram) ✓	✓ $\hat{K} = 75°$ ✓ $\hat{M}$ with reason	(2)

2.7	$\frac{QR}{BC} = \frac{PQ}{AB}$ ($\triangle ABC \mid\mid\mid \triangle PQR$) $\frac{QR}{6} = \frac{10}{4}$ ✓ QR = 15 cm ✓	✓ ratio of corresponding sides ✓ answer	(2)
2.8	$\frac{YZ}{EF} = \frac{XY}{DE}$ ($\triangle DEF \mid\mid\mid \triangle XYZ$) $\frac{YZ}{12} = \frac{6}{9}$ ✓ YZ = 8 cm ✓	✓ ratio of corresponding sides ✓ answer	(2)
		TOTAL	**[25]**

QUESTION 3

3.1	$AB^2 = AC^2 + BC^2$ ✓	✓ answer	(1)
3.2	$LM^2 = KL^2 + KM^2$ ✓	✓ answer	(1)
3.3	$7^2 + 24^2 = 49 + 576 = 625$ ✓ $25^2 = 625$, so the triangle IS right-angled ✓	✓ $7^2 + 24^2 = 625$ ✓ conclusion	(2)
3.4	$6^2 + 9^2 = 36 + 81 = 117$ ✓ $11^2 = 121 \neq 117$ so the triangle is NOT right-angled ✓	✓ $6^2 + 9^2 = 117$ ✓ conclusion	(2)
3.5	$PR^2 = 8^2 + 15^2 = 289$ ✓ PR = $\sqrt{289}$ = 17 cm ✓	✓ $PR^2 = 289$ ✓ answer	(2)
3.6	$DF^2 = 4^2 + 6^2 = 52$ ✓ DF = $\sqrt{52}$ cm ✓	✓ $DF^2 = 52$ ✓ answer	(2)
3.7	$YZ^2 = 13^2 - 5^2 = 169 - 25 = 144$ ✓ YZ = $\sqrt{144}$ = 12 cm ✓	✓ $YZ^2 = 144$ ✓ answer	(2)
3.8	$h^2 = 10^2 - 6^2 = 64$ ✓ $h = \sqrt{64}$ = 8 m ✓	✓ $h^2 = 64$ ✓ answer	(2)
3.9	Ship A: $\sqrt{9^2 + 12^2} = \sqrt{225}$ = 15 km ✓ Ship B: $\sqrt{5^2 + 12^2} = \sqrt{169}$ = 13 km ✓ 15 − 13 = 2 km further ✓	✓ Ship A 15 km ✓ Ship B 13 km ✓ answer	(3)
3.10	$AD^2 = 13^2 - 5^2 = 144$, so AD = 12 cm ✓ $AC^2 = 12^2 + 16^2 = 400$ ✓ AC = $\sqrt{400}$ = 20 cm ✓	✓ AD = 12 cm ✓ $AC^2 = 400$ ✓ answer	(3)
		TOTAL	**[20]**

QUESTION 4

4.1	 D′(2 ; −1), E′(5 ; −1), F′(2 ; −4) ✓ Triangle drawn and vertices labelled ✓	✓ correct position ✓ labelled	(2)
4.2.1	(−5 ; 1) ✓	✓ answer	(1)
4.2.2	(4 ; −2) ✓	✓ answer	(1)
4.2.3	(−5 ; −1) ✓	✓ answer	(1)
4.2.4	(−1 ; 3) ✓	✓ answer	(1)
4.3.1	(6 ; 12) ✓	✓ answer	(1)
4.3.2	3^2 = 9 times larger ✓	✓ answer	(1)
4.4	 P′(0 ; −1), Q′(3 ; −1), R′(3 ; 1) ✓ Triangle drawn and vertices labelled ✓	✓ correct position ✓ labelled	(2)
4.5.1	(5 ; −3) ✓	✓ answer	(1)

4.5.2	(6 ; −1) ✓	✓ answer	(1)
4.6.1	A rotation of 180° about the origin ✓	✓ answer	(1)
4.6.2	A reflection in the x-axis ✓	✓ answer	(1)
4.6.3	A translation of 5 units to the right ✓	✓ answer	(1)
4.7	New side = 4 × 2 cm = 8 cm ✓ Area = 8 × 8 = 64 cm² ✓ **OR** Original area = 4 cm² The area grows 4² = 16 times ✓ 16 × 4 cm² = 64 cm² ✓	✓ side 8 cm, or area × 16 ✓ answer	(2)
		TOTAL	**[17]**

QUESTION 5

5.1.1	d = 18 cm ✓	✓ answer	(1)
5.1.2	$C = \pi \times 18$ ✓ = 56,55 cm ✓	✓ substitution ✓ answer	(2)
5.1.3	$A = \pi \times 9^2$ ✓ = 254,47 cm² ✓	✓ substitution ✓ answer	(2)
5.2.1	r = 5 m ✓	✓ answer	(1)
5.2.2	$C = \pi \times 10$ ✓ = 31,42 m ✓	✓ substitution ✓ answer	(2)
5.2.3	$A = \pi \times 5^2$ ✓ = 78,54 m² ✓	✓ substitution ✓ answer	(2)
5.3.1	Rectangle: 10 × 6 = 60 cm² ✓ Semicircle: $\frac{1}{2} \times \pi \times 3^2$ = 14,14 cm² ✓ Total: 60 + 14,14 = 74,14 cm² ✓	✓ area of the rectangle ✓ area of the semicircle ✓ answer	(3)
5.3.2	Straight sides: 10 + 6 + 10 = 26 cm ✓ Curved side: $\frac{1}{2} \times \pi \times 6$ = 9,42 cm ✓ Perimeter: 26 + 9,42 = 35,42 cm ✓	✓ straight sides ✓ half the circumference ✓ answer	(3)
5.4	Rectangle: 8 × 5 = 40 cm² ✓ Triangle: $\frac{1}{2} \times 8 \times 3$ = 12 cm² ✓ Total: 40 + 12 = 52 cm² ✓	✓ area of the rectangle ✓ area of the triangle ✓ answer	(3)
5.5.1	4,2 × 10 000 = 42 000 cm² ✓	✓ answer	(1)

5.5.2	85 000 ÷ 10 000 = 8,5 m² ✓	✓ answer	(1)
		TOTAL	**[21]**

QUESTION 6

6.1.1	V = 12 × 5 × 4 = 240 cm³ ✓	✓ answer	(1)
6.1.2	240 cm³ = 240 mℓ ✓	✓ answer	(1)
6.1.3	2(12 × 5) + 2(12 × 4) + 2(5 × 4) ✓ = 120 + 96 + 40 = 256 cm² ✓	✓ formula with substitution ✓ answer	(2)
6.2.1	V = 7³ = 343 cm³ ✓	✓ answer	(1)
6.2.2	6 × 7 × 7 ✓ = 294 cm² ✓	✓ 6 faces of 49 cm² ✓ answer	(2)
6.3	2,5 m³ = 2,5 kℓ = 2 500 ℓ ✓	✓ answer	(1)
6.4	64 ℓ = 64 000 cm³ = 40 × 40 × 40 so each edge is 40 cm ✓ Area = 6 × 40 × 40 = 9 600 cm² ✓	✓ edge = 40 cm ✓ answer	(2)
6.5	18 ℓ = 18 000 cm³ ✓ h = 18 000 ÷ (30 × 20) = 30 cm ✓	✓ 18 000 cm³ ✓ answer	(2)
		TOTAL	**[12]**

QUESTION 7

7.1.1	A population ✓	✓ answer	(1)
7.1.2	A sample ✓	✓ answer	(1)
7.2.1	0 | 9 1 | 2 4 6 8 9 2 | 2 5 5 5 7 3 | 0 1 Key: 1 | 2 means 12 ✓✓	✓ stems ✓ leaves in order	(2)
7.2.2	25 ✓	✓ answer	(1)
7.2.3	9 ; 12 ; 14 ; 16 ; 18 ; 19 ; 22 ; 25 ; 25 ; 25 ; 27 ; 30 ; 31 ✓ Median = the 7th value = 22 ✓	✓ data in order ✓ answer	(2)
7.2.4	Mean = $\frac{273}{13}$ ✓ = 21 ✓	✓ sum ÷ 13 ✓ answer	(2)
7.2.5	31 − 9 = 22 ✓	✓ answer	(1)

7.3.1	2 | 9 3 | 7 7 7 4 | 2 4 8 5 | 0 1 5 Key: 2 | 9 means 29 ✓✓	✓ stems ✓ leaves in order	(2)
7.3.2	37 ✓	✓ answer	(1)
7.3.3	29 ; 37 ; 37 ; 37 ; 42 ; 44 ; 48 ; 50 ; 51 ; 55 Median = $\frac{42+44}{2}$ ✓ = 43 ✓	✓ middle two values ✓ answer	(2)
7.3.4	Mean = $\frac{430}{10}$ ✓ = 43 ✓	✓ sum ÷ 10 ✓ answer	(2)
7.3.5	55 − 29 = 26 ✓	✓ answer	(1)
7.4.1	P(white) = $\frac{4}{12} = \frac{1}{3}$ ✓	✓ answer	(1)
7.4.2	P(not yellow) = $\frac{6}{12} = \frac{1}{2}$ ✓	✓ answer	(1)
7.4.3	$\frac{2+k}{12+k} = \frac{1}{2}$ ✓ $4 + 2k = 12 + k$, so $k = 8$: 8 black counters ✓ **OR** Black must equal all the other counters: 6 + 4 = 10 black counters ✓ 10 − 2 = 8 black counters must be added ✓	✓ equation, or 10 black needed ✓ answer	(2)
7.5.1	P(M) = $\frac{2}{11}$ ✓	✓ answer	(1)
7.5.2	P(vowel) = $\frac{4}{11}$ (A, E, A, I) ✓	✓ answer	(1)
7.6	$\frac{2+k}{10+k} = \frac{1}{3}$ ✓ $6 + 3k = 10 + k$, so $k = 2$: 2 red sweets ✓	✓ equation ✓ answer	(2)
		TOTAL	**[26]**

TOTAL: 145