Grade 8 Mathematics Teacher Checklist

(Alberta Program of Studies — with Enrichment and Math 9 Sampler)

Strand	Skill / Outcome	Practice Example(s)	Done
Number	Identify perfect squares and square roots.	$\sqrt{64} = 8$; $12^2 = 144$.	☐
Number	Estimate non-perfect square roots.	$\sqrt{50}$ between 7 and 8; $\sqrt{50} \approx 7.07$.	☐
Number	Percents $\geq 0\%$ including $> 100\%$ and fractional percents.	150% of $20 = 30$; 0.5% of $400 = 2$.	☐
Number	Percent of a percent.	10% of 15% of $200 = 3$.	☐
Number	Ratios and rates (two- or three-term; unit rates).	$3:5$, $4:7:3$; 90 km/h.	☐
Number	Link ratios, rates, percents, fractions.	$2:5 = \frac{2}{5} = 0.4 = 40\%$.	☐
Number	Proportional reasoning; interpret a/b.	$P(\text{red}) = 3/8$; $12.50/5 = 2.50$.	☐
Number	Multiply and divide fractions and mixed numbers.	$\frac{3}{5} \times \frac{10}{9} = 2/3$; $2\frac{1}{2} \div \frac{3}{4} = 3\frac{1}{3}$.	☐
Number	Apply order of operations with fractions.	$\frac{3}{4} + 2\left(\frac{5}{6} \times \frac{3}{5}\right) = 7/4$.	☐
Number	Multiply and divide integers (sign rules, 2-digit).	$(-6) \times (-4) = 24$; $(-36) \div 9 = -4$.	☐
Number	Apply order of operations with integers.	$(-2) \times [5 + (-7)] = 4$.	☐
Patterns	Graph and analyze two-variable linear relations.	$y = 2x + 1$; points $(0,1), (1,3), (2,5)$.	☐
Patterns	Express relations in words, equations, tables, graphs.	"Twice a number plus 1" $\rightarrow y = 2x + 1$.	☐
Patterns	Solve linear equations: $ax = b$, $x/a = b$, $ax + b = c$, $(x + b)/a = c$, $a(x + b) = c$.	$3x = 15 \rightarrow x = 5$; $(x - 3)/5 = 4 \rightarrow x = 23$.	☐
Patterns	Verify solutions; distributive property; error analysis.	$3(2x + 5) - 4x = 2x + 15$; check $x = 7$ in $2x + 5 = 19$.	☐
Shape	Apply Pythagorean Theorem.	Legs $6, 8 \rightarrow$ hypotenuse 10.	☐
Shape	Construct nets for prisms and cylinders.	Draw net of triangular prism.	☐
Shape	Surface area of prisms and cylinders.	$SA_{cyl} = 2\pi r^2 + 2\pi rh$; $r = 3, h = 10$.	☐
Shape	Volume of prisms and cylinders.	$V_{cyl} = \pi r^2 h$; $r = 3, h = 10$.	☐
Shape	Orthographic views (top, front, side).	Sketch stacked cubes views.	☐
Shape	Congruence of polygons via transformations.	Reflect $\triangle ABC$ across x-axis, then translate.	☐

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Strand	Skill / Outcome	Practice Example(s)	Done
Statistics	Critique data displays; detect misleading graphs.	Fix truncated bar graph axis.	☐
Statistics	Construct/interpret bar, line, circle graphs.	Make circle graph for survey.	☐
Statistics	Central tendency and range.	Data $2, 4, 4, 6, 10$: mean 5.2, median 4, mode 4, range 8.	☐
Probability	Sample space, theoretical probability.	Die roll: $\{1, 2, 3, 4, 5, 6\}$; $P(\text{even}) = 3/6$.	☐
Probability	Probability of independent events.	$P(6 \text{ and H}) = 1/12$.	☐
Probability	Compare experimental vs theoretical.	Simulate 200 coin+die; compare to $1/12$.	☐
Number (Enrichment)	Full exponent laws (product, quotient, power, zero, negative).	$(2^3)(2^4) = 2^7$; $2^0 = 1$; $2^{-3} = 1/8$.	☐
Patterns (Enrichment)	Linear functions in slope-intercept form.	$y = 2x - 5$; slope 2, intercept -5.	☐
Patterns (Enrichment)	Distinguish linear vs nonlinear.	Compare $y = 2x + 1$ vs $y = x^2$.	☐
Shape (Enrichment)	Similarity of polygons; scale factor.	$\triangle ABC \sim \triangle DEF$; scale $3/2$.	☐
Shape (Enrichment)	Angle properties (triangle sum, parallel lines).	$\triangle$: $50 + 60 + x = 180 \to x = 70$; alternate angles equal.	☐
Shape (Enrichment)	Surface area and volume of composite solids.	Rectangular prism + half cylinder.	☐
Shape (Enrichment)	Circle geometry (tangent, central, inscribed).	Inscribed $35^\circ \to$ central 70°.	☐
Probability (Enrichment)	Dependent events.	Two cards without replacement.	☐
Math 9 Sampler	Expand exponent laws with variables.	$x^2 \cdot x^5 = x^7$; $(a^3b^2)^2 = a^6b^4$.	☐
Math 9 Sampler	Solve multi-step linear equations.	$3(x - 2) = 2x + 7 \to x = 13$.	☐
Math 9 Sampler	Work with linear relations; slope as rate of change.	From $(1, 3), (4, 9)$: slope $= 2$.	☐
Math 9 Sampler	Surface area/volume of composite solids.	Triangular prism + rectangular prism.	☐
Math 9 Sampler	Probability of compound events (tree diagrams).	Two dice: $P(\text{sum} = 7) = 6/36 = 1/6$.	☐