

Arithmetic & number properties

- ✓ **Order of operations:** PEMDAS (parentheses, exponents, multiply/divide, add/subtract)
- ✓ **Exponents:**
 - $a^m \cdot a^n = a^{m+n}$
 - $(a^m)^n = a^{mn}$
 - $\frac{a^m}{a^n} = a^{m-n}$
 - $a^{-n} = \frac{1}{a^n}$
- ✓ **Roots:** $\sqrt{a} \cdot \sqrt{b} = \sqrt{ab}$

Fractions, decimals, percents

- ✓ **Percent:** $\frac{\text{part}}{\text{whole}} = \frac{\%}{100}$
- ✓ **Percent change:** $\frac{\text{new} - \text{original}}{\text{original}} \times 100\%$

Algebra

- ✓ **Slope:** $m = \frac{y_2 - y_1}{x_2 - x_1}$
- ✓ **Slope-intercept form:** $y = mx + b$
- ✓ **Point-slope form:** $y - y_1 = m(x - x_1)$

Geometry

- ✓ **Triangles:**
 - **Sum of interior angles:** 180°
 - **Area:** $A = \frac{1}{2}bh$
 - **Pythagorean theorem:** $a^2 + b^2 = c^2$
- ✓ **3D figures:**
 - **Rectangular prism:** $V = lwh$, $SA = 2(lw + lh + wh)$
 - **Cube:** $V = s^3$, $SA = 6s^2$
 - **Cylinder:** $V = \pi r^2 h$, $SA = 2\pi r^2 + 2\pi rh$
 - **Cone:** $V = \frac{1}{3}\pi r^2 h$, $SA = \pi r^2 + \pi r\ell$, with slant height ℓ
 - **Sphere:** $V = \frac{4}{3}\pi r^3$, $SA = 4\pi r^2$
- ✓ **Quadrilaterals and polygons:**
 - **Interior angles of a polygon** with n sides: $(n - 2) \cdot 180^\circ$
 - **Rectangle:** $A = lw$, $P = 2l + 2w$
 - **Square:** $A = s^2$, $P = 4s$
 - **Parallelogram:** $A = bh$
 - **Trapezoid:** $A = \frac{1}{2}(b_1 + b_2)h$
- ✓ **Circles:**
 - **Circumference:** $C = 2\pi r = \pi d$
 - **Area:** $A = \pi r^2$
 - **Arc length:** $\frac{\theta}{360^\circ} \cdot 2\pi r$
 - **Sector area:** $\frac{\theta}{360^\circ} \cdot \pi r^2$