

Reference Sheet for Integrated Algebra I

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1 Exponent Rules

$$a^n a^m = a^{n+m}$$

$$ab^n = a^n b^n$$

$$a^0 = 1$$

$$(a^m)^n = a^{mn}$$

$$a^{\frac{m}{n}} = (n\sqrt[n]{a})^m$$

$$a^{-m} = \frac{1}{a^m}$$

$$\left(\frac{a^m}{a^n}\right) = a^{(m-n)}$$

2 Area / Perimeter & Volume

$$\text{Triangle Area} = \left(\frac{1}{2}\right) * (\text{Base}) * (\text{Height})$$

$$\text{Rectangle Perimeter} = 2(l + w)$$

$$\text{Rectangle Area} = (l * w)$$

$$\text{Square Perimeter} = (4 * s)$$

$$\text{Square Area} = (s^2) \text{ or } \frac{1}{2} * \text{diagonal} * \text{diagonal} \text{ (You can use this for the Rhombus too.)}$$

$$\text{Cube Volume} = (e^3)$$

$$\text{Trapezoid Area} = \text{height} * \left(\frac{\text{sum of bases}}{2}\right)$$

$$\text{Circle Area} = \pi * r^2$$

$$\text{Right Circular Cylinder Volume} = \pi * r^2 * h$$

$$\text{Right Circular Cylinder Surface Area} = 2 * \pi * r * h$$

3 Error

$$\text{Percentage error} = \left(\frac{\text{Total assumed error}}{\text{Total measurement}}\right)$$

$$\text{Percentage error of area} = \frac{(\text{Area assuming error}) - (\text{Area we measured})}{(\text{Area we measured})}$$

$$\text{Percentage error of volume} = \frac{(\text{Volume, assuming error}) - (\text{Volume we measured})}{(\text{Volume we measured})}$$

4 Trig Ratios

$$\sin = \frac{\text{opp}}{\text{hyp}}$$

$$\cos = \frac{\text{adj}}{\text{hyp}}$$

$$\tan = \frac{\text{opp}}{\text{adj}}$$

5 Degrees to and from Radian Conversion

$$\text{radius} = \text{degrees} * \frac{\pi}{180}$$

$$\text{degrees} = \text{radians} * \frac{180}{\pi}$$

$$\pi \approx 3.1428$$

6 Slope

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$y = m * x + b \text{ Slope intercept form}$$

$$(a, b)y - b = m * (x - a) \text{ Point slope form}$$

7 Inequalities

- Reverse the sign when both sides are multiplied or divided by the same negative number.
- Reverse the sign when you take the reciprocal of both sides.

8 Probability

Mutually Exclusive $P(A \text{ or } B) = P(A) + P(B)$

Not Mutually Exclusive $P(A) + P(B) - P(\text{Both } A \text{ and } B \text{ Simultaneously})$

Independent $P(A) * P(B)$

Dependent $P(A) * P(B)$ Given event A occurs first.