Math 0980 Exam Formula Sheet

Cycle 1

$$\text{Mean of } n \text{ values} = \frac{(1^{\text{st}} \text{ value}) + (2^{\text{nd}} \text{ value}) + \cdots + (\text{last value})}{\text{total number of values}}$$

$$\text{Midpoint of } (a, b) \text{ and } (c, d) = \left(\frac{a+c}{2}, \frac{b+d}{2}\right)$$

Common Conversions:

1 ft = 12 in.	1 in. = 2.54 cm	1 L = 1,000 mL	1 kg ≈ 2.2 lb
1 mi = 5,280 ft	1 km = 1,000 m	1 lb = 16 oz	1 min = 60 sec
1 yd = 3 ft	1 m = 100 cm	1 kg = 1,000 g	1 hr = 60 min
1 km ≈ 0.62 mi	1 cm = 10 mm	1 g = 1,000 mg	1 yr = 52 weeks
1 mi ≈ 1.61 km	1 gal = 4 qt	1 ton = 2,000 lb	1 week = 7 days

$$\text{Percent Change} = \frac{\text{final} - \text{initial}}{\text{initial value}} \cdot 100 \qquad \text{Multiplier} = \frac{\text{final value}}{\text{initial value}}$$

Cycle 2

$$\text{Weighted Mean} = \frac{(1^{\text{st}} \text{ value} \cdot 1^{\text{st}} \text{ weight}) + (2^{\text{nd}} \text{ value} \cdot 2^{\text{nd}} \text{ weight}) + \cdots + (\text{last value} \cdot \text{last weight})}{\text{sum of weights}}$$

Exponent Rules: $x^a x^b = x^{a+b}$ | $\frac{x^a}{x^b} = x^{a-b}$ | $x^0 = 1$ | $(x^a)^b = x^{ab}$ | $(xy)^a = x^a y^a$ | $\left(\frac{x}{y}\right)^a = \frac{x^a}{y^a}$

Associative Properties: Addition: $a + (b + c) = (a + b) + c$ Multiplication: $(ab)c = a(bc)$

Commutative Properties: Addition: $a + b = b + a$ Multiplication: $ab = ba$

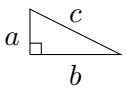
$$\text{Probability of an event occurring} = \frac{\text{number of favorable outcomes}}{\text{number of possible outcomes}}$$

Cycle 3

Slope: $m = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$ **Point-Slope Form:** $y - y_1 = m(x - x_1)$ **Slope-Intercept Form:** $y = mx + b$

$$\text{Distance Formula: } d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Quadratic Formula: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ **Pythagorean Theorem:** $a^2 + b^2 = c^2$



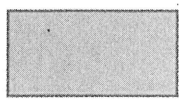
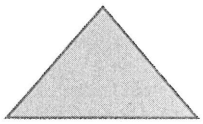
Cycle 4

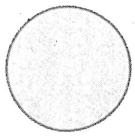
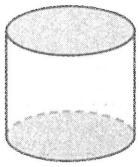
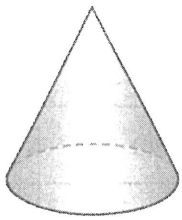
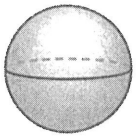
Negative Exponent Rules: $x^{-a} = \frac{1}{x^a}$ | $\frac{1}{x^{-a}} = x^a$

$$\text{Standard Deviation} = \sqrt{\frac{(1^{\text{st}} \text{ value} - \text{mean})^2 + (2^{\text{nd}} \text{ value} - \text{mean})^2 + \cdots + (\text{last value} - \text{mean})^2}{\text{total number of values}}}$$

Deviation of Data Value: deviation = data value − mean **z-score:** $z = \frac{\text{data value} - \text{mean}}{\text{standard deviation}}$

Direct Variation: $y = kx$ **Inverse Variation:** $y = \frac{k}{x}$

Rectangle	$A = lw$	
Parallelogram	$A = bh$	
Triangle	$A = \frac{1}{2}bh$	
Trapezoid	$A = \frac{1}{2}h(B + b)$	

Circle	$d = 2r$, $A = \pi r^2$, $C = 2\pi r = \pi d$	
Cylinder	$V = \pi r^2 h$, $S = 2\pi r^2 + 2\pi rh$	
Cone	$V = \frac{1}{3}\pi r^2 h$	
Sphere	$V = \frac{4}{3}\pi r^3$, $S = 4\pi r^2$	
Rectangular prism	$V = lwh$