

ACT FORMULAS

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

Slope-intercept

$y = mx + b$
 ← slope (pointing to m)
 ← y-intercept (pointing to b)

midpoint $(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2})$

distance $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

distance = rate × time

mean

= average

median

= middle # of an ordered list

mode

= most common #

Logarithms

$\log_b xy = \log_b x + \log_b y$

$\log_b x = y \rightarrow b^y = x$

$\log_b \frac{x}{y} = \log_b x - \log_b y$

Probability

Odds of something happening, 0 = never, 1 = always

Probability of outcome = $\frac{\# \text{ of desired outcomes}}{\text{total \# of possible outcomes}}$

Probability of 2 independent events

→ and ⇒ multiply
 ↘ or ⇒ add

Exponent Rules

$x^n x^m = x^{n+m}$ $\frac{x^n}{x^m} = x^{n-m}$
 $(x^n)^m = x^{n \cdot m}$ $x^{-n} = \frac{1}{x^n}$
 $x^{\frac{1}{n}} = \sqrt[n]{x}$

Combinations

* order does not matter


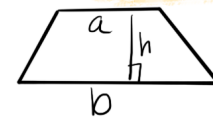
possible combinations = # of A · # of B · # of C ...

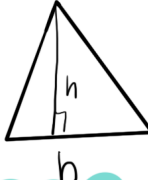
Percentage

x percent of a given # = $n(\frac{x}{100})$

percent a # n is of m = $(\frac{100n}{m})$

Area

 or  $\Rightarrow l \times w$
 $l \times h$
 $\left(\frac{a+b}{2}\right) \times h$

 $\frac{b \times h}{2}$

Perimeter

adding all sides of an object ex. $2l + 2w$

Volume of Rectangular Solid = $l \times w \times h$

Pythagorean Thm  $a^2 + b^2 = c^2$

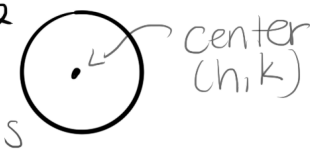
Quadratic Equation $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Circles

Area = πr^2

Circumference = $2\pi r = \pi d$

Equation $\rightarrow (x-h)^2 + (y-k)^2 = r^2$



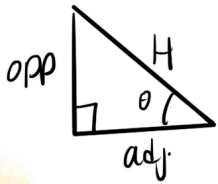
Length of arc

$= 2\pi r \left(\frac{x}{360}\right)$ measure of arc



Area of Sector

$= \pi r^2 \left(\frac{x}{360}\right)$ measure of arc



SOH CAH TOA

$\sin \theta = \frac{\text{opp}}{\text{H}}$ $\cos \theta = \frac{\text{adj}}{\text{H}}$ $\tan \theta = \frac{\text{opp}}{\text{adj}}$

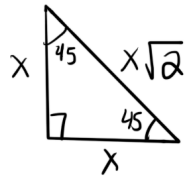
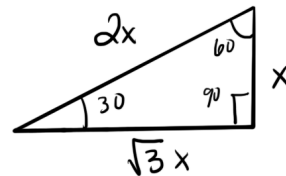
$\sin^{-1} \theta = \arcsin$

$\csc \theta = \frac{1}{\sin \theta}$

$\sec \theta = \frac{1}{\cos \theta}$

$\cot \theta = \frac{\cos \theta}{\sin \theta}$

Special Triangles



$\sin^2 \theta + \cos^2 \theta = 1$

amplitude left/right

$a \sin(bx + c) + d$

$\frac{2\pi}{b}$ = period up/down