Mathematics 20-2

Sturgeon Composite High School

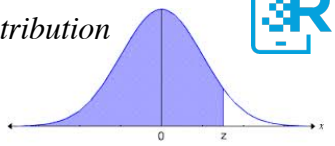
Measurement

Conversion Factors

Imperial to Imperial	Metric to Metric	Imperial to Metric	Metric to Imperial
1 ft = 12 in	1 cm = 10 mm	1 in = 2.54 cm	1 cm = 0.3937 in
1 yd = 3 ft	1 cm = 0.01 m	1 ft = 0.3048 m	1 m = 3.2808 ft
1 yd = 36 in	1 m = 1000 mm	1 yd = 0.9144 m	1 m = 1.0936 yds
1 mi = 5280 ft	1 m = 100 cm	1 mi = 1.6093 km	1 km = 0.6214 mi
1 mi = 1760 yds	1 km = 1000 m		

Statistics

Normal Distribution



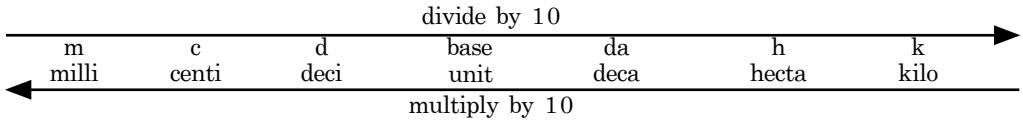
$$z = \frac{x-\mu}{\sigma}$$

$$95\%CI = \mu \pm 1.96\sigma$$

$$P = normalcdf(lower, upper, \mu, \sigma)$$

$$x = invNorm(Probability, \mu, \sigma)$$

Metric Staircase



Quadratics

Quadratic Functions

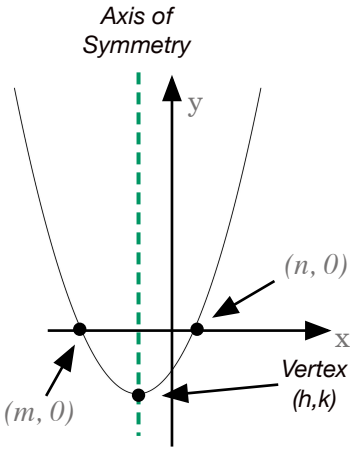
$$y = ax^2 + bx + c$$

$$y = a(x-m)(x-n)$$

$$y = a(x-h)^2 + k$$

Quadratic Equation

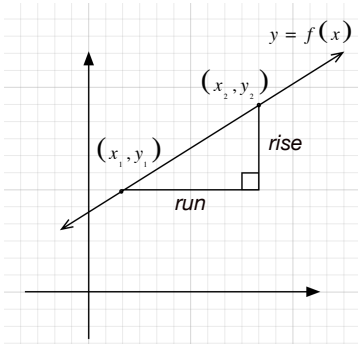
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$



Linear Relations

Slope Formula

$$m = \frac{rise}{run} \text{ or } \frac{y_2 - y_1}{x_2 - x_1}$$



Linear Relation Equations

$$y = mx + b$$

$$(y - y_1) = m(x - x_1)$$

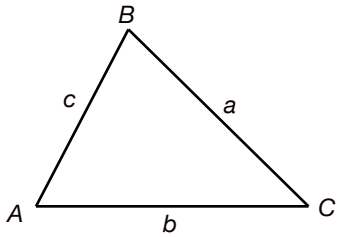
$$Ax + By + C = 0$$

Distance Formula

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

Trigonometry

Oblique Triangles



Sine Law

$$\frac{\sin(A)}{a} = \frac{\sin(B)}{b} = \frac{\sin(C)}{c}$$

$$\frac{a}{\sin(A)} = \frac{b}{\sin(B)} = \frac{c}{\sin(C)}$$

Cosine Law

$$a^2 = b^2 + c^2 - 2bc \cdot \cos(A)$$

$$b^2 = a^2 + c^2 - 2ac \cdot \cos(B)$$

$$c^2 = a^2 + b^2 - 2ab \cdot \cos(C)$$

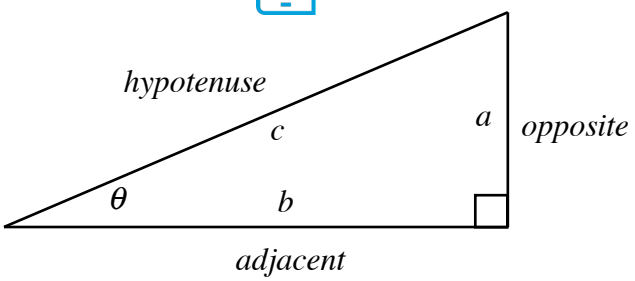
$$A = Cos^{-1}\left[\frac{b^2 + c^2 - a^2}{2bc}\right]$$

$$B = Cos^{-1}\left[\frac{a^2 + c^2 - b^2}{2ac}\right]$$

$$C = Cos^{-1}\left[\frac{a^2 + b^2 - c^2}{2ab}\right]$$

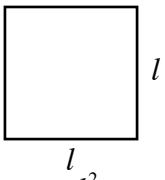
Pythagorean Theorem

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



2D Shapes

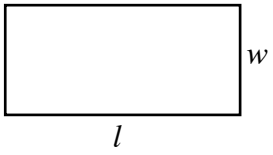
Square



$Area = l^2$

$Perimter = 4l$

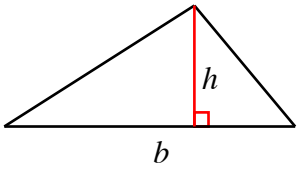
Rectangle



$Area = lw$

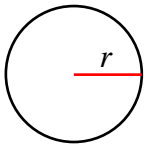
$Perimter = 2l + 2w$

Triangle



$Area = \frac{1}{2}bh$

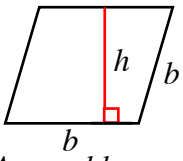
Circle



$Area = \pi r^2$

$Circumference = 2\pi r$

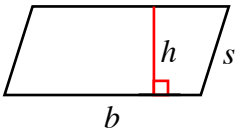
Rhombus



$Area = bh$

$Perimeter = 4b$

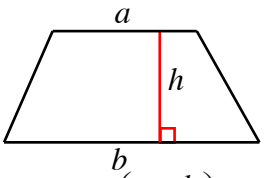
Parallelogram



$Area = bh$

$Perimeter = 2b + 2s$

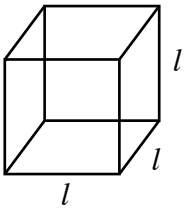
Trapezoid



$Area = \left(\frac{a+b}{2}\right)h$

3D Objects

Cube

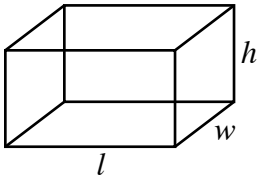


$Volume = l^3$

$TSA = 6l^2$

$LSA = 4l^2$

Rectangular Prism

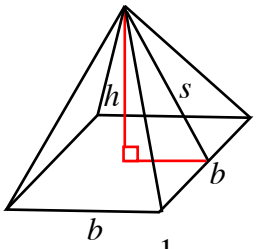


$Volume = lwh$

$TSA = 2lw + 2lh + 2wh$

$LSA = 2lh + 2wh$

Square Pyramid

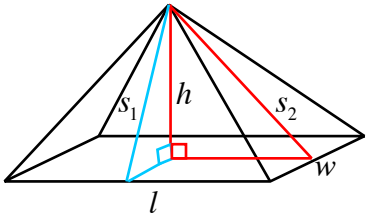


$Volume = \frac{1}{3}b^2h$

$TSA = b^2 + 2bs$

$LSA = 2bs$

Rectangular Pyramid

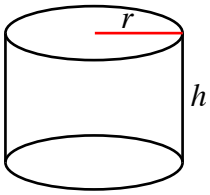


$Volume = \frac{1}{3}lwh$

$TSA = lw + ls_1 + ws_2$

$LSA = ls_1 + ws_2$

Cylinder

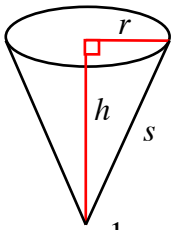


$Volume = \pi r^2 h$

$TSA = 2\pi r^2 + 2\pi rh$

$LSA = 2\pi rh$

Cone

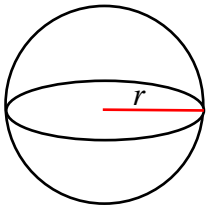


$Volume = \frac{1}{3}\pi r^2 h$

$TSA = \pi r^2 + \pi rs$

$LSA = \pi rs$

Sphere



$Volume = \frac{4}{3}\pi r^3$

$TSA = 4\pi r^2$

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AUGMENT

hp REVEAL