

# Applied Mathematics Grade 11

## Formula Sheet

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### TRIGONOMETRY

#### SOH CAH TOA

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

#### Sine Law

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

#### Pythagorean Theorem

$$c^2 = a^2 + b^2 \quad \text{or} \quad \text{hyp}^2 = \text{leg}^2 + \text{leg}^2$$

#### Cosine Law

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

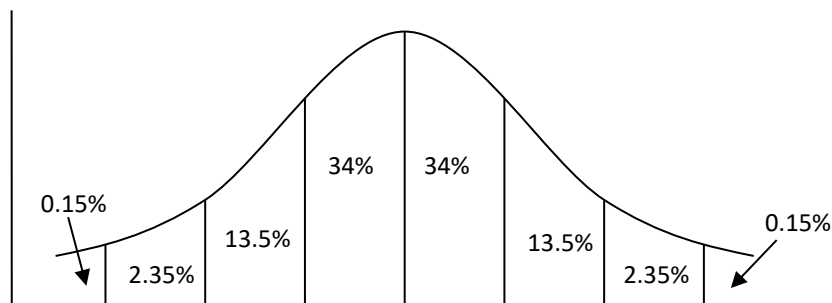
$$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$$

#### 180° RULE

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### STATISTICS

#### Normal Curve:



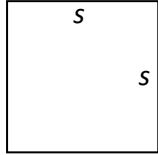
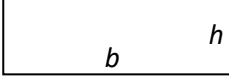
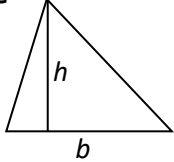
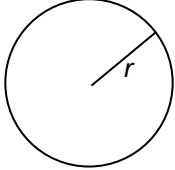
#### Z-scores:

$$z = \frac{x - \bar{x}}{\sigma} \quad \text{OR} \quad x = z\sigma + \bar{x}$$

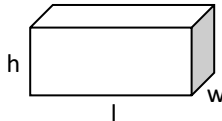
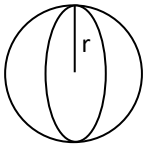
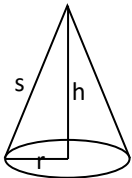
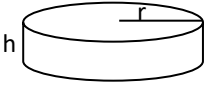
## DESIGN & MEASUREMENT

Circumference:  $C = \pi d$  or  $C = 2\pi r$

Area Formulas:

<b>Square</b>  $A = s^2$	<b>Rectangle</b>  $A = bh$
<b>Triangle</b>  $A = \frac{1}{2}bh$	<b>circle</b>  $A = \pi r^2$

Surface Area & Volume Formulas:

Figure Name	Diagram	Formula
Rectangular Solid		$SA = 2lw + 2lh + 2wh$  $V = lwh$
Sphere		$SA = 4\pi r^2$  $V = \frac{4}{3}\pi r^3$
Cone		$SA = \pi rs + \pi r^2$  $V = \frac{1}{3}\pi r^2 h$
Cylinder		$SA = 2\pi rh + 2\pi r^2$  $V = \pi r^2 h$