

## Math 30-3 Formula Sheet

### Linear Relations

Slope:

$$m = \frac{\text{rise}}{\text{run}}$$

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

Direct linear relation:  $y = mx$

Partial linear relation:  $y = mx + b$

### Tolerance

Ways of expressing manufacturing tolerances:

maximum value  
minimum value

nominal value  $\pm \frac{1}{2}$  (tolerance)

minimum value  $\begin{matrix} +\text{tolerance} \\ -0 \end{matrix}$

maximum value  $\begin{matrix} +0 \\ -\text{tolerance} \end{matrix}$

### Statistics

Mean:

$$\bar{x} = \frac{\text{sum of values}}{\text{number of values}}$$

Percentile ranking:

$$PR = \frac{b}{n} \times 100$$

$$PR = \frac{\text{number of values below}}{\text{number of values}}$$

### Probability

Probability:

$$P(A) = \frac{\text{number of occurrences of event A}}{\text{total number of possible outcomes}}$$

### Odds

odds in favour =

favourable outcomes : unfavourable outcomes

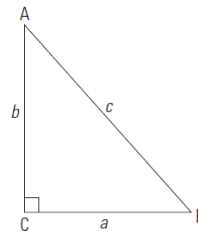
odds against =

unfavourable outcomes : favourable outcomes

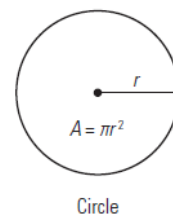
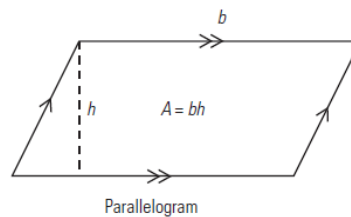
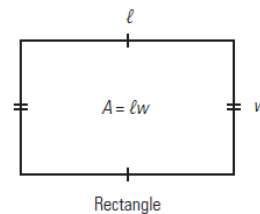
### Geometry

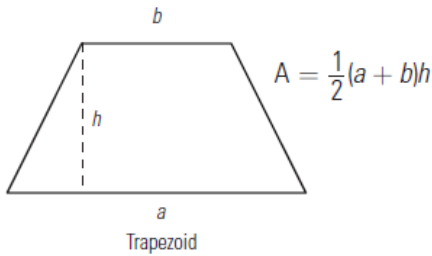
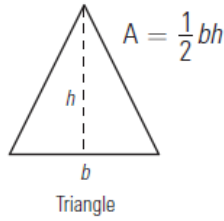
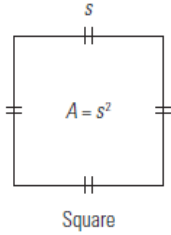
Pythagorean theorem:

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



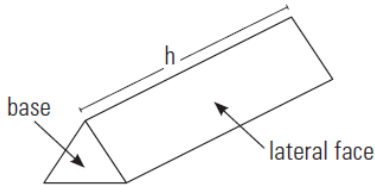
Area of geometric figures:





Volume of prism:

$$V = A_{\text{base}} \times h$$



## Polygons

sum of interior angles =  $180^\circ(n - 2)$

measure of interior angle of regular polygon

$$= \frac{180^\circ(n - 2)}{n}$$

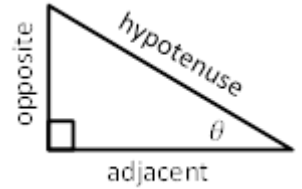
## Trigonometry

Primary trigonometric ratio

$$\sin\theta = \frac{\text{opposite side}}{\text{hypotenuse}}$$

$$\cos\theta = \frac{\text{adjacent side}}{\text{hypotenuse}}$$

$$\tan\theta = \frac{\text{opposite side}}{\text{adjacent side}}$$



Sine law:

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

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

Cosine law:

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

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

## Compound Interest

$$A = P \left(1 + \frac{r}{n}\right)^{nt}$$

where:

$A$  is the amount of money you have to repay for the loan.

$P$  is the principal

$r$  is the annual interest rate as a decimal.

$n$  is the number of compounding periods per year.

$t$  is the term of the loan in years.