30-3

Charts and Formulas

Statistics
Mean = sum of data ÷ number of values
Trimmed mean = sum of trimmed data ÷ number of values
Weighted mean = sum of (weights × values) ÷ sum of weights
$\text{Median}_{\text{odd number of values}}$ = middle value when data is ordered
$\text{Median}_{\text{even number of values}}$ = sum of middle two values when data is ordered ÷ 2
Mode = the value that occurs most often
Percentile rank for x: $(B + 0.5E) \div N \times 100$, where B represents the number of scores below x, E represents the number of scores equal to x, and N represents the number of scores; digits to the right of the decimal point are not used for a percentile rank

Metric Units

Length	Capacity	Mass
kilometre (km) 1 km = 1000 m	kilolitre (kL) 1 kL = 1000 L	kilogram (kg) 1 kg = 1000 g 1000 kg = 1 t
hectometre (hm) 1 hm = 100 m	hectolitre (hL) 1 hL = 100 L	hectogram (hg) 1 hg = 100 g
decametre (dam) 1 dam = 10 m	decalitre (daL) 1 daL = 10 L	decagram (dag) 1 dag = 10 g
metre (m) 1 m = 100 cm	litre (L) 1 L = 1000 mL	gram (g) 1 g = 1000 mg
decimetre (dm) 1 dm = 0.1 m	decilitre (dL) 1 dL = 0.1 L	decigram (dg) 1 dg = 0.1 g
centimetre (cm) 1 cm = 0.01 m 1 cm = 10 mm	centilitre (cL) 1 cL = 0.01 L	centigram (cg) 1 cg = 0.01 g
millimetre (mm) 1 mm = 0.001 m	millilitre (mL) 1 mL = 0.001 L	milligram (mg) 1 mg = 0.001 g

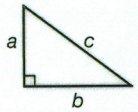
Imperial Units

Length	Area	Volume	Capacity	Mass
inch (in. or ″)	square inches (sq in.)	cubic inches (cu in.)	tablespoon (T)	ounces (oz)
foot (ft or ′) 1 foot = 12 inches	square feet (sq ft) 1 sq ft = 144 sq in.	cubic feet (cu ft) 1 cu ft = 1728 cu in.	fluid ounce (fl oz) 1 fl oz = 2 T	pound (lb) 1 lb = 16 oz
yard (yd) 1 yard = 3 feet	square yard (sq yd) 1 sq yd = 9 sq ft	cubic yard (cu yd) 1 cu yd = 27 cu ft	cup (c) 1 c = 8 fl oz (US) 1 c = 10 fl oz (UK)	ton (T) 1 T = 2000 lb (US) 1 T = 2240 lb (UK)
mile (mi) 1 mile = 1760 yd	square mile (sq mi) 1 sq mi = 3 097 600 sq yd	cubic mile (cu mi)	pint (pt) 1 pt = 2 c	
	1 acre = 4840 sq yd		quart (qt) 1 qt = 2 pt	
			gallon (gal) 1 gal = 4 qt	

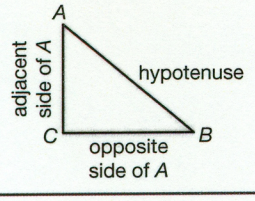
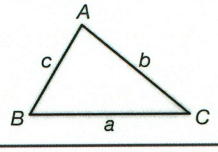
Linear Relations
$y = mx$, where m represents the slope of the line
$y = mx + b$, where m represents the slope of the line and b represents the y-intercept

Slope
$m = \dfrac{\text{rise}}{\text{run}}$
$m = \dfrac{\text{difference between } y\text{-coordinates}}{\text{difference between } x\text{-coordinates}}$
$m = \dfrac{\text{change in } y}{\text{change in } x}$
$m = \dfrac{y_2 - y_1}{x_2 - x_1}$
Slope = $\tan x°$, where x is the angle of elevation
Grade = slope × 100%

Pythagorean Theorem
$a^2 + b^2 = c^2$, where a and b are sides adjacent to the right angle in a right triangle and c is the hypotenuse



Primary Trigonometric Relationships
$\sin A = \dfrac{\text{opposite side of } A}{\text{hypotenuse}}$
$\cos A = \dfrac{\text{adjacent side of } A}{\text{hypotenuse}}$
$\tan A = \dfrac{\text{opposite side of } A}{\text{adjacent side of } A}$



Primary Trigonometric Relationships	
Sine Law	**Cosine Law**
$\dfrac{a}{\sin A} = \dfrac{b}{\sin B} = \dfrac{c}{\sin C}$ $\dfrac{\sin A}{a} = \dfrac{\sin B}{b} = \dfrac{\sin C}{c}$	$a^2 = b^2 + c^2 - 2bc \cos A$ $b^2 = a^2 + c^2 - 2ac \cos B$ $c^2 = a^2 + b^2 - 2ab \cos C$ $\cos A = \dfrac{b^2 + c^2 - a^2}{2bc}$ $\cos B = \dfrac{a^2 + c^2 - b^2}{2ac}$ $\cos C = \dfrac{a^2 + b^2 - c^2}{2ab}$