20-3

Charts and Formulas

Metric Units

Length	Area	Volume	Capacity	Mass
kilometre (km) 1 km = 1000 m	square kilometre (km^2) 1 km^2 = 1 000 000 m^2 1 km^2 = 100 ha	cubic kilometre (km^3) 1 km^3 = 1 000 000 000 m^3	kilolitre (kL) 1 kL = 1000 L	kilogram (kg) 1 kg = 1000 g 1000 kg = 1 t
hectometre (hm) 1 hm = 100 m	square hectometre (hm^2) 1 hectare (ha) = 1 hm^2 1 ha = 10 000 m^2	cubic hectometre (hm^3) 1 hm^3 = 1 000 000 m^3	hectolitre (hL) 1 hL = 100 L	hectogram (hg) 1 hg = 100 g
decametre (dam) 1 dam = 10 m	square decametre (dam^2) 1 dam^2 = 100 m^2	cubic decametre (dam^3) 1 dam^3 = 1000 m^3	decalitre (daL) 1 daL = 10 L	decagram (dag) 1 dag = 10 g
metre (m) 1 m = 100 cm	square metre (m^2) 1 m^2 = 10 000 cm^2	cubic metre (m^3) 1 m^3 = 1 0000 000 cm^3	litre (L) 1 L = 1000 mL	gram (g) 1 g = 1000 mg
decimetre (dm) 1 dm = 0.1 m	square decimetre (dm^2) 1 dm^2 = 0.01 m^2	cubic decimetre (dm^3) 1 dm^3 = 0.001 m^3	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	square centimetre (cm^2) 1 cm^2 = 0.0001 m^2	cubic centimetre (cm^3) 1 cm^3 = 0.000 001 m^3 Note: 1 cm^3 holds 1 mL	centilitre (cL) 1 cL = 0.01 L	centigram (cg) 1 cg = 0.01 g
millimetre (mm) 1 mm = 0.001 m	square millimetre (mm^2) 1 mm^2 = 0.000 001 m^2	cubic millimetre (mm^3) 1 mm^3 = 0.000 000 001 m^3	millilitre (mL) 1 mL = 0.001 L	milligram (mg) 1 mg = 0.001 g

American and British 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	

Surface Area

$SA_{prism} = 2 \times$ base area + lateral area

$SA_{rectangular\ prism} = 2(l \times w) + 2(l \times h) + 2(w \times h)$

$SA_{cube} = 6(l \times w)$

$SA_{cylinder} = \pi d(r + h)$, or $2\pi r^2 + 2\pi rh$

$SA_{pyramid} =$ base area $+ \frac{1}{2}$(perimeter)(slant height)

$SA_{cone} = \pi r^2 + \pi rs$, where s is the slant height

$SA_{sphere} = 4\pi r^2$, or πd^2

Volume

$V_{prism} = (A_{base})(h)$

$V_{rectangular\ prism} = lwh$

$V_{cube} = s^3$

$V_{cylinder} = (A_{base})(h)$, or $\pi r^2 h$

$V_{pyramid} = \frac{(A_{base})(h)}{3}$

$V_{cone} = \frac{(A_{base})(h)}{3}$, or $\frac{\pi r^2 h}{3}$

$V_{sphere} = \frac{4}{3}\pi r^3$

Slope

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

$m = \frac{\text{difference between } y\text{-coordinates}}{\text{difference between } x\text{-coordinates}}$

$m = \frac{\text{change in } y}{\text{change in } x}$

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

Slope = $\tan x°$, where x is the angle of elevation

Grade = slope × 100%

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

Simple Interest

Interest: $I = Prt$, or
Principal (P) × interest rate (r) × time (t)

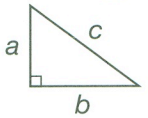
Amount: $A = P + I$, or
Principal (P) + Interest (I)

Compound Interest

$A = P(1 + i)^n$, where i is interest per compounding period and n is the number of compounding periods

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

$\sin A = \frac{\text{opposite side of } A}{\text{hypotenuse}}$

$\cos A = \frac{\text{adjacent side of } A}{\text{hypotenuse}}$

$\tan A = \frac{\text{opposite side of } A}{\text{adjacent side of } A}$