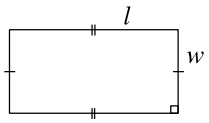
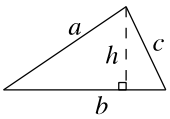
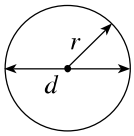
APPRENTICESHIP MATH 12
DATA SHEET

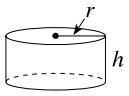
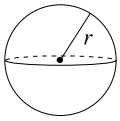
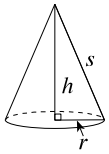
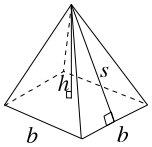
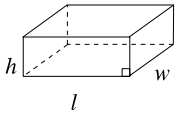
Common Length Conversions

Imperial	Imperial and SI	SI
1 foot = 12 inches	1 inch = 2.54 cm	1 cm = 10 mm
1 yard = 3 feet	1 foot = 30.48 cm	1 m = 100 cm
1 yard = 36 inches	1 yard = 0.9144 m	1 m = 1000 mm
1 mile = 1760 yards	1 mile ≈ 1.609 km	1 km = 1000 m
1 mile = 5280 feet		

Area and Perimeter

Geometric Figure	Perimeter	Area
Rectangle 	$P = 2l + 2w$ **or** $P = 2(l + w)$	$A = lw$
Triangle 	$P = a + b + c$	$A = \frac{bh}{2}$
Circle 	$C = \pi d$ **or** $C = 2\pi r$	$A = \pi r^2$

Surface Area

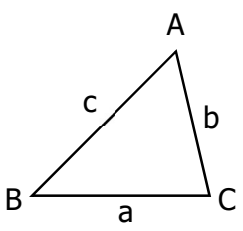
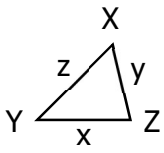
Geometric Figure	Surface Area
Cylinder 	$A_{top} = \pi r^2$ $A_{base} = \pi r^2$ $A_{side} = 2\pi rh$ $SA = 2\pi r^2 + 2\pi rh$
Sphere 	$SA = 4\pi r^2$ **or** $SA = \pi d^2$
Cone 	$A_{side} = \pi rs$ $A_{base} = \pi r^2$ $SA = \pi r^2 + \pi rs$
Square-Based Pyramid 	$A_{triangle} = \frac{1}{2}bs$ (for each triangle) $A_{base} = b^2$ $SA = 2bs + b^2$
Rectangular Prism 	$SA = wh + wh + lw + lw + lh + lh$ **or** $SA = 2(wh + lw + lh)$

Volume

Prisms and Cylinders: ..... $V = A_{base} \times h$

Sphere: ..... $V = \frac{4}{3}\pi r^3$ or $V = \frac{4\pi r^3}{3}$
Pyramid (Rectangular Base): ..... $V = \frac{1}{3}lwh$ or $V = \frac{lwh}{3}$
Cone: ..... $V = \frac{1}{3}\pi r^2 h$ or $V = \frac{\pi r^2 h}{3}$

Triangles

Pythagorean Theorem	$a^2 + b^2 = c^2$
Sum of Angles	$\angle A + \angle B + \angle C = 180°$
Trigonometric Ratios SOH CAH TOA	$sin\ \theta = \frac{opp}{hyp}$ $cos\ \theta = \frac{adj}{hyp}$ $tan\ \theta = \frac{opp}{adj}$ $\theta = sin^{-1}\left(\frac{opp}{hyp}\right)$ $\theta = cos^{-1}\left(\frac{adj}{hyp}\right)$ $\theta = tan^{-1}\left(\frac{opp}{adj}\right)$
Similar Triangles	  $\angle A = \angle X$ $\angle B = \angle Y$ $\angle C = \angle Z$ $\frac{a}{x} = \frac{b}{y} = \frac{c}{z}$

Financial Literacy

Simple Interest	$I = Prt$
Compound Interest	$A = P\left(1 + \frac{r}{n}\right)^{nt}$
Rule of 72	$Years\ \ to\ \ double\ \ investment$ $= 72 \div interest\ \ rate\ \ (as\ \ \%)$