

Geometric relationships useful in related rates problems

Volume of a sphere	$V = 4\pi r^3/3$
Surface area of a sphere	$S = 4\pi r^2$
Area of a circle	$A = \pi r^2$
Perimeter of a circle	$P = 2\pi r$
Volume of a cylinder	$V = \pi r^2 h$
Surface area of a cylinder	$S = 2\pi r^2 + 2\pi r h$
Volume of a cone	$V = \pi r^2 h/3$
Surface area of a cone	$S = \pi r^2 + \pi r \sqrt{r^2 + h^2}$
Area of a rectangle	$A = xy$
Perimeter of a rectangle	$P = 2x + 2y$
Volume of a box	$V = xyz$
Sides of a right-angled triangle with hypotenuse c (Pythagorean identity)	$a^2 + b^2 = c^2$