Surface Area & Volume

Grade 8 Outcomes:

C2: Draw & construct nets for 3D objects

C3: Determine the surface area of right rectangular prisms, right triangular prisms, and cylinders

C4: Determine the volume of right prisms and cylinders

Area	The number of square units needed to cover a space
Surface Area	The number of square units needed to cover a 3D object or the sum of the areas of all the faces
Perimeter	The distance around a shape
Dimensions	This is the math word for the lengths of the sides or edges of a shape
Area formula for a rectangle	• **Length x Width = Area** • Area ÷ Width = Length • Area ÷ Length = Width
Area formula for a square	• **Side x Side = Area** • S^2 = Area • $\sqrt{}$Area = side length of square
Area formula for a parallelogram	• **Base x Height** • Height always comes out of the base at a right angle • (Every parallelogram can be made into a rectangle)
Area formula for a triangle	**Base x Height** *(height is not a slanted side)* 2 (Every triangle can be made into a parallelogram)
Diameter (d)	A line that passes through the center of the circle ⊘
Radius (r)	A line from the center of the circle to a point on the edge of the circle • Radius is half the distance of the diameter
Circumference (C)	• The distance around the outside edge of a circle • The formula for circumference is **(d) π or 2πr.** This means (diameter x 3.14) or (2 x radius x 3.14)
Area formula for a circle	Area = **πr^2** This means 3.14 x radius x radius
Area formula for a cylinder	**diameter x 3.14 x height of the cylinder**

Face	flat or curved surface
Edge	line segment where two faces meet
Vertex	point where three edges meet
Net	• a two dimensional shape that when folded makes a 3- D object • You can draw a net for any object by picturing what it would look like if you cut along the edges and flattened it out • A minimum of three views is needed to describe a 3 -D object. Use the top, front, and side views
Rectangular Prism	a prism is a 3 – D shape whose bases are parallel to each other the name of the base gives the name of the prism
Triangular Prism	• a prism with two triangular bases • all other faces are rectangular • each of the bases are the same size and shape
Cylinder	• A 3D object with two equal and parallel circular bases • A cylinder is made up of two circles and one rectangle. • To find the dimension of the rectangle that makes up the cylinder figure out the circumference of the circle and the height of the cylinder
Volume	How much space a shape takes or how much it can hold. (**Volume = area of the base of a prism x the height)** V of a right rectangular prism = h x l x w V of a cube = s x s x s or s^3
Base	The base of a 3- D shape is usually thought of as a face upon which it can "sit" Any face of a prism that shows the named face of a prism
Orientation	The different position of an object formed by sliding (translating), turning (rotating) or flipping (reflecting) the object. Changing the orientation of a 3-D object does not affect its volume