Inspiring Greatness
INDEPENDENCE SCHOOL DISTRICT

Math Virtual Learning

Grade 7
Surface Area and Volume

May 22, 2020

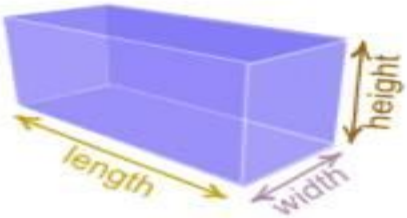
Grade 7/Surface Area and Volume
Lesson: May 22, 2020

Objective/Learning Target: Solve problems involving surface area and volume.

Let's Get Started:
Watch Video: Review

Prism

- Rectangular prism
  A solid with two parallel, congruent rectangular bases.
- Examples
  Tissue box
  Book



- Volume and Surface Area Formulas

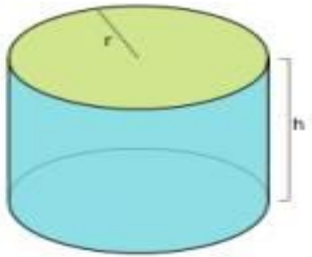
$V = lwh$

$SA = 2lw + 2lh + 2wh$

l = length
w = width
h = height

Cylinder

- Cylinder
  A solid with two parallel, congruent, circular bases.
- Examples
  Soda Can
  Pencil



- Volume and Surface Area Formula

$V = \pi r^2 h$

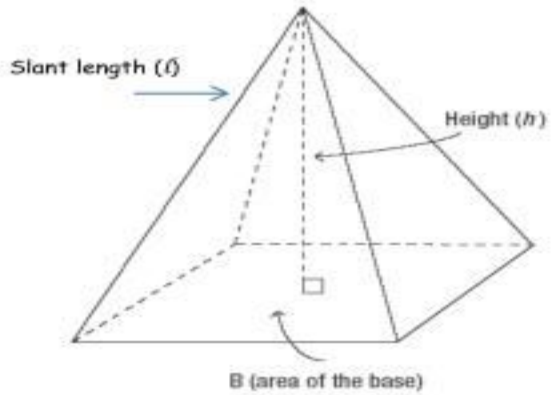
$SA = 2\pi rh + 2\pi r^2$

r = radius

h = height of cylinder

Pyramid

- Square Pyramid
  A solid pyramid that has a square base.
- Examples
  Top of Washington Monument
  Pyramids in Egypt



- Volume and Surface Area Formulas

$$V = \frac{\mathcal{B}h}{3}$$

$$SA = \frac{1}{2}\ell p + \mathcal{B}$$

$\mathcal{B}$ = area of the base
h = height of pyramid
ℓ = slant length
p = perimeter of base

Practice:

Find the surface area and volume.

Example:

7 cm

4 cm

8 cm

Front/back

Left/right

Top/bottom

Add them up!

SA =

V =

V =

V =

Answer Key:

Find the surface area and volume.

Example:

Front/back $2(8)(4) = 64$

Left/right $2(4)(7) = 56$

Top/bottom $2(8)(7) = 112$

Add them up!

SA = 232 cm²

$V = lwh$

$V = 8(4)(7)$

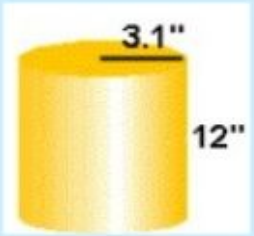
$V = 224\ cm^3$

Practice:
Find the surface area of a cylinder.

There is also a formula to find surface area of a cylinder.

$$SA = 2\pi rh + 2\pi r^2$$

Some people find this way easier:



$SA = 2\pi rh + 2\pi r^2$

$SA =$

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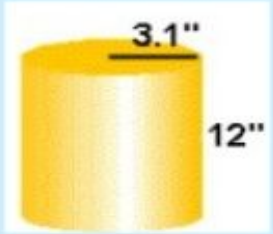


$SA = 2\pi rh + 2\pi r^2$

$SA = 2\pi(3.1)(12) + 2\pi(3.1)^2$

$SA = 2\pi\ (37.2) + 2\pi(9.61)$

$SA = \pi(74.4) + \pi(19.2)$

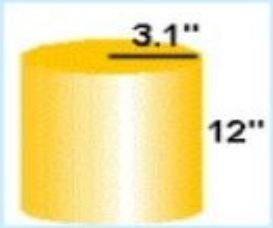
$SA = 233.7 + 60.4$

$SA = 294.1\ \text{in}^2$

Practice:
Find the volume of a cylinder.

Volume of a Cylinder

We used this drawing for our surface area example. Now we will find the volume.



$$V = (\pi r^2)(H)$$

$$V =$$

optional step! →

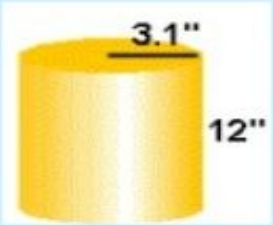
$$V =$$

$$V =$$

Practice:
Find the volume of a cylinder.

Volume of a Cylinder

We used this drawing for our surface area example. Now we will find the volume.



$$V = (\pi r^2)(H)$$

$$V = (\pi)(3.1^2)(12)$$

optional step! →

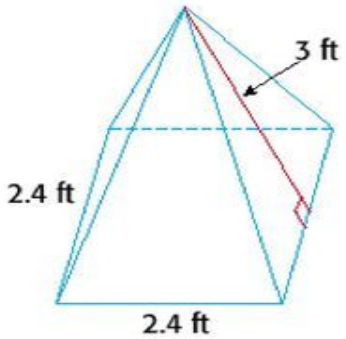
$$V = (\pi)(3.1)(3.1)(12)$$

$$V = 396.3 \text{ in}^3$$

Practice:

Find the surface area of the figure.

answer



Answer Key:

Find the surface area of the figure.

Surface Area

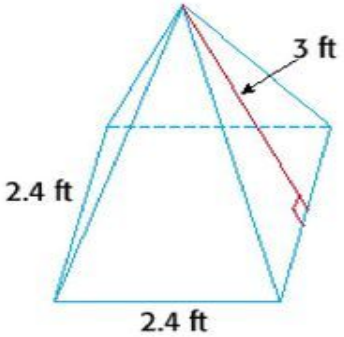
Area of the base + 4 x Area of lateral face = surface area

2.4 x 2.4 + 4(½ x 3 x 2.4) = surface area

5.76 + 4(3.6) = surface area

5.76 + 14.4 = surface area

20.16 ft^2 = surface area



Additional Practice:

Click on the links below to get additional practice and to check your understanding!

Khan Academy - Quiz 1

Khan Academy - Quiz 2

Quizizz - Practice

IXL - Practice

WE ARE ALMOST DONE!!!