More Interesting SA and V

Colbert at the 2010 Olympics

POS Checklist:

☐ 3.1 Sketch a diagram to represent a problem that involves surface area or volume.
☐ 3.2 Determine the surface area of a right cone, right cylinder, right prism, right pyramid or sphere, using an object or its labeled diagram.
☐ 3.3 Determine the volume of a right cone, right cylinder, right prism, right pyramid or sphere, using an object or its labeled diagram.
☐ 3.4 Determine an unknown dimension of a right cone, right cylinder, right prism, right pyramid or sphere, given the object's surface area or volume and the remaining dimensions.
☐ 3.5 Solve a problem that involves surface area or volume, given a diagram of a composite 3-D object.
☐ 3.6 Describe the relationship between the volumes of:

☐ right cones and right cylinders with the same base and height

☐ right pyramids and right prisms with the same base and height.

And now for something completely different...

http://www.youtube.com/watch?v=Dj26N10Ymlg&NR=1&safety_mode=true&persist_safety_mode=1

Review: Homework from last day

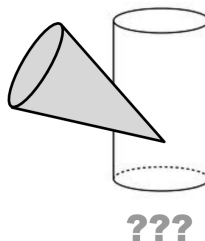## Practice: Page 61 #1-7, 9, 11, 12 ab,

SA and V for other Shapes

Today, we will learn how to calculate the SA and V of some other 3D shapes:
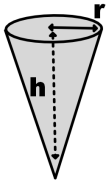
- Cone
- Right Pyramid
- Sphere

Question: What is the relationship between the volume of a cone and the volume of a cylinder of the same dimensions?
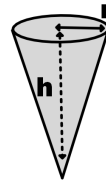
Demo!

???

Cone

$$V = 1/3\pi r^2 h$$

r

h

Radius = r = 7 cm
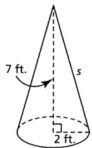Height = vertical distance from top to bottom = h = 10 cm

Cone

$$SA = \underbrace{\pi r^2}_{\substack{\text{area of the}\\ \text{circle}}} + \underbrace{\pi rs}_{\substack{\text{area of}\\ \text{the side}}}$$

r

h

Radius = r = 7 cm
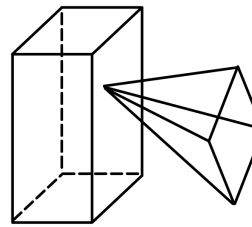Height = vertical distance from top to bottom = h = 10 cm

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Determine the lateral* SA of the right cone below.

7 ft.   s

2 ft

*Lateral SA means all surfaces EXCEPT the base.

Question: What is the relationship between the volume of a right pyramid and the volume of right prism of the same dimensions?
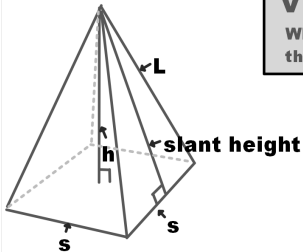
Demo!

???

Right Pyramid

$$V = 1/3 \ BH$$

Where B = area of the base.

L

h   slant height

s

s

Q: What is a "right" pyramid?
A: A pyramid with a "right" shape for a base: i.e. a square, equalateral triangle, pentagon, etc)

s = side = 6 cm
h = height = 7 cm
L = length of triangle side = 5 cm
slant height = 4 cm

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ex) Determine the SA and volume of a right pyramid with side length of 5 cm and slant height of 10 cm.

Sphere

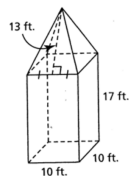$$SA = 4\pi r^2 \qquad V = 4/3\pi r^3$$

1.48 in

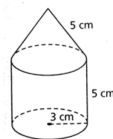ex) A baseball has a volume of 12.5 in^3. What is the diametre of the baseball?

Composite Shapes

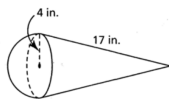-contain more than one of the shapes we have already studied

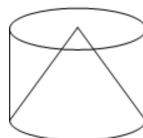ex) Determine the SA and V of the shape below.

13 ft.

17 ft.

10 ft.   10 ft.

ex) Determine the SA and V of the shape below.

5 cm

5 cm

3 cm

ex) Determine the SA and V of the shape below.

4 in.

17 in.

ex) If the volume of the right cylinder below is 240 cm^3, what is the volume of the right cone that is inscribed in the cylinder?

Homework: page 74 – 78 # 5, 14, 17

page 86 – 90 # 3, 4, 14