LESSON 11.1 The Geometry of Solids   Day 2

Learning Targets:

   a. I can identify parts of geometric solids
   b. I can classify geometric solids

Discovering Geometry
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Lesson 11.1 The Geometry Solids
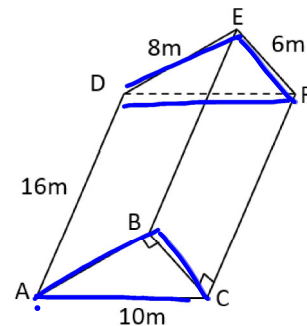
Warm-up

Use Figure A to answer the questions below

1) Name the Solid Triangular prism

2) Name the Bases $\triangle ABC$ & $\triangle DEF$

3) Name the Lateral Faces Rectangles DEBA, ACFD, EFCB

4) How many Vertices are there? 6

5) How many Edges are there? 9

6) Find the area of each of the bases

$$A = \frac{1}{2}(b)(h) = \frac{1}{2}(6)(8) = 24$$

Base 1 Area = 24 m²   Base 2 Area = 24 m²

Figure A

*We call the solid shown in Figure A a **right prism**.*

A right prism is a prism whose lateral faces are rectangles. Its lateral edges are perpendicular to its bases.

*Similarly, a cylinder is a **right cylinder** if the axis - the segment connecting the centers of the bases- is perpendicular to its bases.*

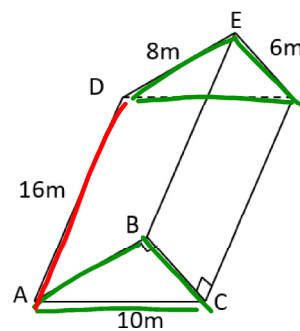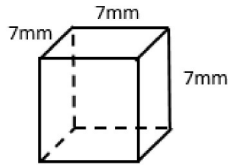The **Height** of a **Right Prism or Right Cylinder** is the perpendicular distance between the Bases.
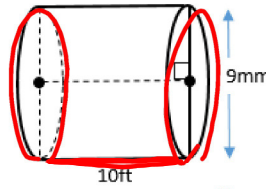
Figure A

What is the height of the prism in Figure A above?

16m

Determine the heights of each of the following solids.

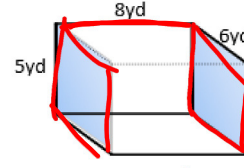Use the shaded sides of the prism below as your Bases

7mm
7mm
7mm

Height = **7mm**

9mm
10ft

Height = **10 ft**

8yd
6yd
5yd

Height = **8yd**

The pyramid in Figure B and the cone in Figure C have two types of heights that can be identified: A **_height_** and a **_slant height._**

The **_Height_** of each of these solids is the perpendicular distance from its vertex (or apex) to the center of its Base.

The **_Slant Height of the Pyramid_** is the height of each triangular lateral face. The **_Slant Height of the Cone_** is the distance along cone's lateral surface from the edge of the circular base to its vertex (or apex)

Height

Slant height

Height

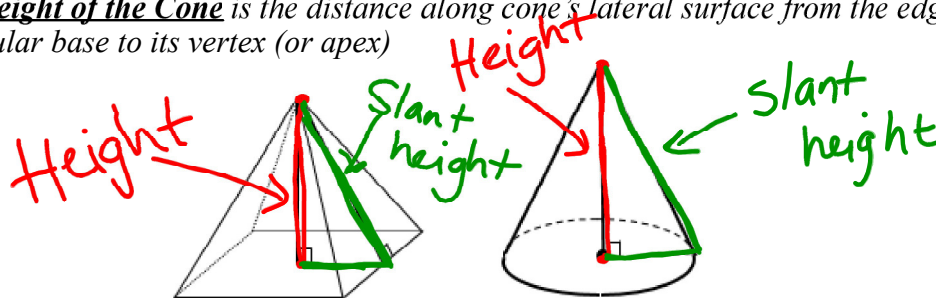**slant height**

Height

Slant height

Figure B

Figure C

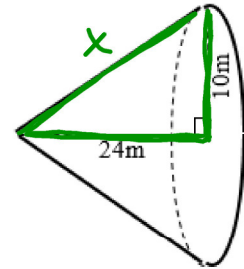Label the "height" and "slant height" of each of the Figures above.

1) Determine the slant height of the cone.

$$24^2 + 10^2 = X^2$$
$$576 + 100 = X^2$$
$$\sqrt{676} = \sqrt{X^2}$$
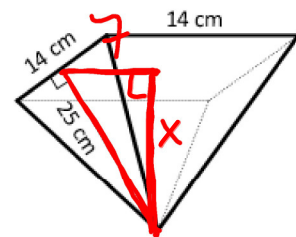
$$26\,m$$

Slant Height = _____

2) Determine the height of the square pyramid using the given information.

$$7^2 + X^2 = 25^2$$
$$49 + X^2 = 625$$
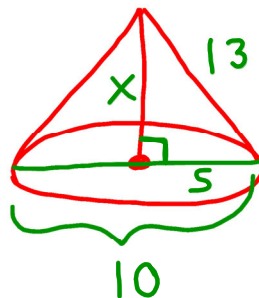$$-49 \qquad -49$$
$$\sqrt{X^2} = \sqrt{576}$$

Height = __24 cm__

3) The base of a cone has a diameter of 10 ft. Determine the height of the cone if the slant height is 13 ft.
Draw and label a picture first.

$$x^2 + 5^2 = 13^2$$
$$x^2 + 25 = 169$$
$$-25 \quad -25$$
$$\sqrt{x^2} = \sqrt{144}$$

Height = __12 ft__

Assignment:

11.1 and 1.8 Geometry of Solids Homework Day 2