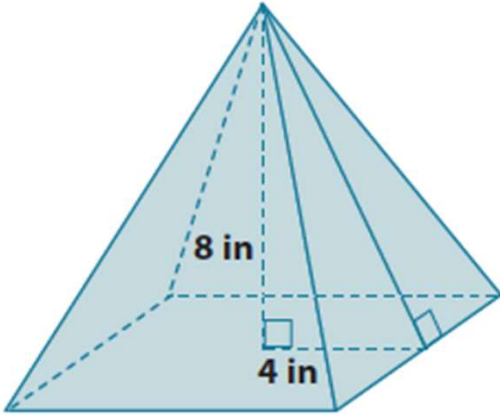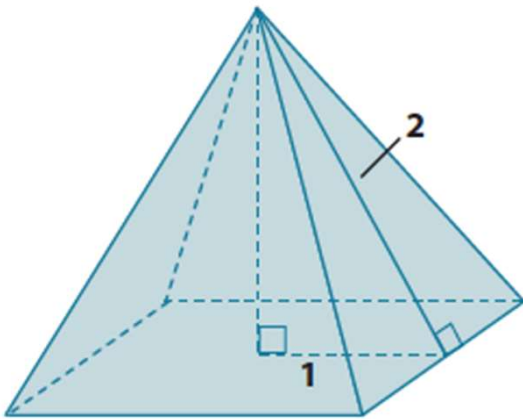# Pythagorean Theorem in 3D Solids

1. What is the lateral length (slant height) of the pyramid shown below? Give an exact square root answer.

2. Determine the volume of the square pyramid shown below. Give an exact answer using a square root.

Pythagorean Theorem in 3D Solids

1. What is the lateral length (slant height) of the pyramid shown below? Give an exact square root answer.
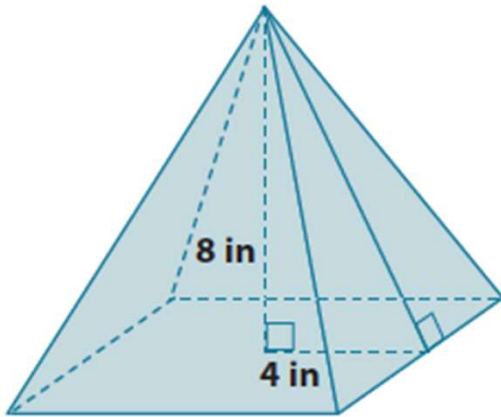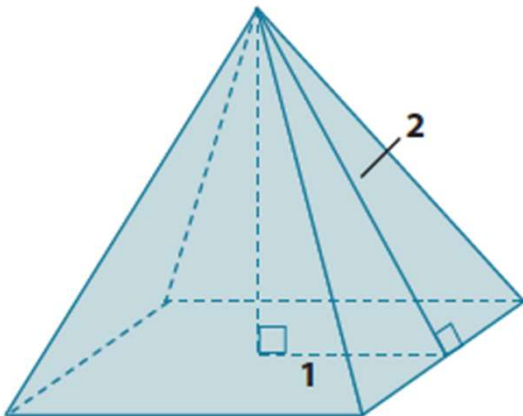
Let c in. represent the lateral length of the pyramid.

$$4^2 + 8^2 = c^2$$
$$16 + 64 = c^2$$
$$80 = c^2$$
$$\sqrt{80} = \sqrt{c^2}$$
$$\sqrt{80} = c$$

The slant height is $\sqrt{80}$ inches.

8 in

4 in

2. Determine the volume of the square pyramid shown below. Give an exact answer using a square root.

Let h be the height of the pyramid.

$$1^2 + h^2 = 2^2$$
$$1 + h^2 = 4$$
$$h^2 = 3$$
$$\sqrt{h^2} = \sqrt{3}$$
$$h = \sqrt{3}$$

The area of the base is 4 units².

$$V = \frac{1}{3}(4)(\sqrt{3})$$
$$= \frac{4\sqrt{3}}{3}$$

2

1

The volume of the pyramid is $\frac{4\sqrt{3}}{3}$ units³.