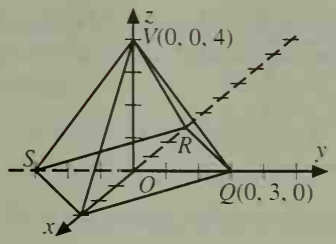
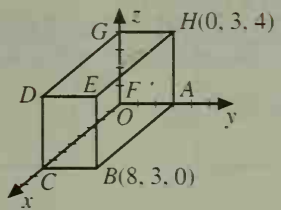
29. Find the volume of the regular square pyramid shown below.





30. The rectangular prism shown above has diagonals $\overline{BG}$ and $\overline{CH}$.

a. Prove that diagonals $\overline{BG}$ and $\overline{CH}$ are congruent.

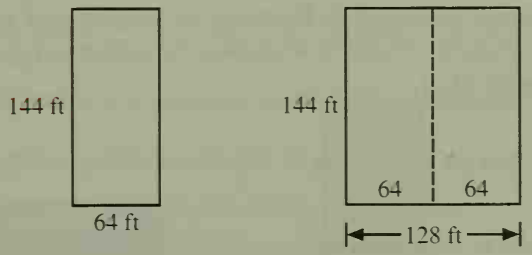
b. Prove that diagonals $\overline{BG}$ and $\overline{CH}$ bisect each other.

Changing the Dimensions of Geometric Figures (Chapters 11–12)

Objective: Determine how changes in dimensions affect the perimeter, area, and volume of geometric figures.

Example 1 A small video rental store is 144 ft long and 64 ft wide. The owners decide to double the floor space so that they can stock more videos to sell and rent. If the owners double the width of the store will the floor space double? Will the perimeter double?

Solution The diagram at the left below shows the original dimensions of the store. The diagram at the right shows the new dimensions.



$P = 2b + 2h$
$= 2(64) + 2(144)$
$= 416$
$A = bh$
$= 64 \cdot 144$
$= 9216$

$P = 2b + 2h$
$= 2(128) + 2(144)$
$= 544$
$A = bh$
$= 128 \cdot 144$
$= 18{,}432$

The perimeter will increase from 416 ft to 544 ft, but will not double. Doubling the width does double the area.