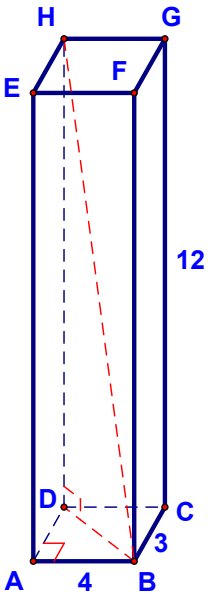
Lesson 9-8 - The Pythagorean Theorem and Space Figures

Here's today's warmup!

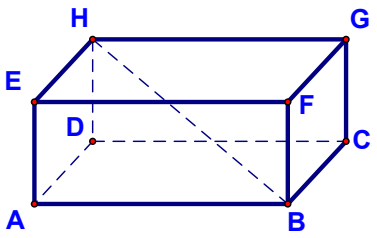


This box is a rectangular solid.
Each of the six sides (faces) is a rectangle.

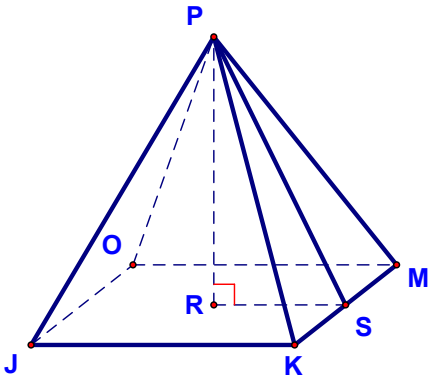
1. **$\overline{BD}$ is a diagonal that forms right $\triangle BAD$.**
   If BC = 3, what is AD?
   If AB = 4, what is DB?

2. **$\overline{BH}$ is a diagonal that forms right $\triangle BDH$.**
   If CG = 12, what is DH?
   What is BH?
   What is AG?

Today, we're going to apply the Pythagorean Theorem to figures in space. Let's start with some basic definitions:



Rectangular Prism



Regular Square Pyramid

ABFE is one of 6 rectangular *faces*.

$\overline{AB}$ is one of 12 *edges*.

$\overline{HB}$ is one of the 4 *diagonals* of the solid.

JKMO is a square and is called the *base*.

P is the *vertex*.

$\overline{PR}$ is the *altitude* and is $\perp$ to the base at its center.

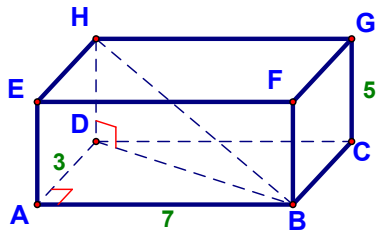
$\overline{PS}$ is called the *slant height* and is $\perp$ to a side of the base.

A *cube* is a rectangular prism in which all edges are congruent.

Given these definitions, you should be all set with this section...it's really not that hard if you can see the right triangles that are components of the polyhedra.

Here's an example – see if you can do it (you've got to solve 2 right triangles!)…

Find HB



Not bad, right? Here's another example...I bet you can do this too…just be careful and draw in those triangles!

P of square JKMO = 40
PK = 13

Find JK, PS, PR