NAME _____ CLASS _____ DATE _____

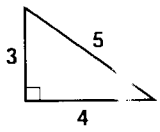
Basic Skills Practice

The "Pythagorean" Right-Triangle Theorem, Part 1

If a and b are the lengths of the legs or sides of a right triangle and c is the length of the hypotenuse (the longest side), then $a^2 + b^2 = c^2$.

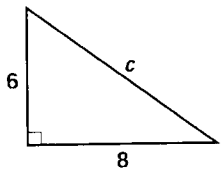
$a = 3$, $b = 4$, and $c = 5$

$3^2 + 4^2 = 5^2$
$9 + 16 = 25$
$25 = 25$



This is called the "Pythagorean" Right-Triangle Theorem. If the lengths of any two sides of a right triangle are known, the third side can be found by using this theorem.

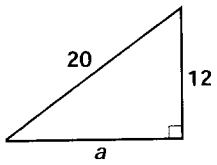
Example 1: If $a = 6$ and $b = 8$, find the value of c.



1. Replace and compute: $a^2 + b^2 = c^2$
   $6^2 + 8^2 = c^2$
   $36 + 64 = c^2$
   $100 = c^2$
2. Solve by taking the square root.
   $\sqrt{100} = c$
   $10 = c$

The length of side c is 10.

Example 2: If $b = 12$ and $c = 20$, find the value of a.



1. Replace and compute:
   $a^2 + b^2 = c^2$
   $a^2 + 12^2 = 20^2$
   $a^2 + 144 = 400$
   $a^2 + 144 - 144 = 400 - 144$
   $a^2 = 256$
   $a = 16$

The lengths of the sides of a triangle are given. Do the three sides form a right triangle? (Does $a^2 + b^2 = c^2$?) Answer *yes* or *no*.

1. $a = 9$ cm, $b = 11$ cm, and $c = 15$ cm _____

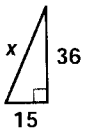
2. $a = 8$ cm, $b = 15$ cm, and $c = 17$ cm _____

Find the missing side of each right triangle. Use $a^2 + b^2 = c^2$.

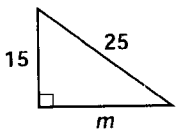
3. $a = 12$ cm, $b = 16$ cm, and $c =$ _____

4. $a =$ _____, $b = 15$ m, and $c = 17$ m

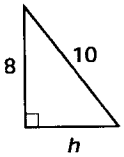
5. Find x. _____



6. Find m. _____



7. Find h. _____



8. Find d. _____