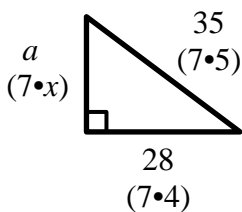




### Multiples of Right Triangles (optional)

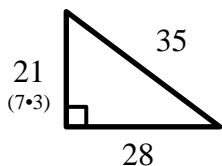
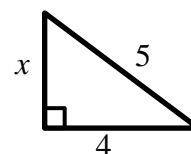
If you multiply the lengths of all three sides of any right triangle by the same number, the resulting triangle will be a right triangle. This fact—and the fact that if the lengths of two sides of a right triangle have a common factor, the third side will have the same factor—can make problem solving easier. First, memorize some common right triangle “primitives”: 3-4-5, 5-12-13, 8-15-17 and 7-24-25. Then use multiples:

*Example:* Find the length of a right triangle with a hypotenuse of 35m and a leg of 28m.



Since the lengths of two of the sides are multiples of 7, the length of the third side must be a multiple of 7.

When the three sides are written without the common factor 7, the other factors of  $x$ , 4 and 5 are revealed—our familiar 3-4-5 triangle. So  $x = 3$ .



Therefore, the length of the third side of the original triangle is  $3(7)$  or 21.

*Practice:* Each right triangle below has sides with lengths that involve one of the four most common Pythagorean primitives or multiples of the primitives. Find the missing values.

