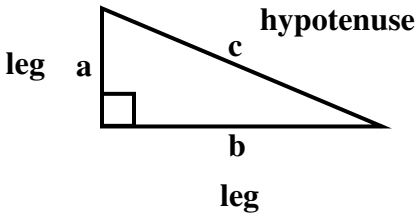
Geometry Note-Taking Guide **Name:**_____

Period:____

Section 7.1 - The Pythagorean Theorem

Pythagorean Theorem

In a right triangle, the sum of the squares of the lengths of the legs is equal to the square of the length of the hypotenuse.



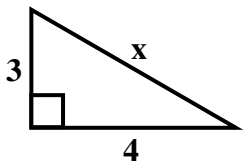
$$(\text{leg})^2 + (\text{leg})^2 = (\text{hypotenuse})^2$$

$$a^2 + b^2 = c^2$$

Important: 1) The hypotenuse is always opposite of the right angle,
2) it is the largest length, and
3) it is always associated with the variable c, in the equation $a^2 + b^2 = c^2$.

Ex 1:
Find the missing side length of the right triangle.

a)



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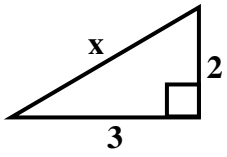
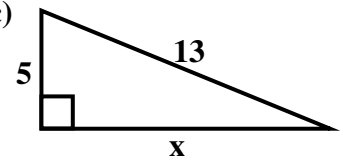


c)



A _____ is a set of three whole numbers a, b, and c that satisfy the equation $a^2 + b^2 = c^2$. For example, the whole numbers 3, 4, and 5 form a Pythagorean triple because $3^2 + 4^2 = 5^2$.

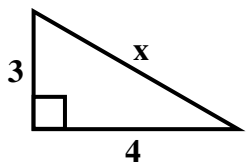
Most Common Pythagorean Triples: _____ _____

Important: Watch for Pythagorean Triples in disguise or multiples of Pythagorean Triples

Ex: 6, 8, 10 → 2(**3**), 2(**4**), 2(**5**)
9, 12, 15 → 3(**3**), 3(**4**), 3(**5**)
10, 24, 26 → 2(**5**), 2(**12**), 2(**13**)

Ex 2:
Find the unknown side length of the right triangle by using Pythagorean Triples.

a)



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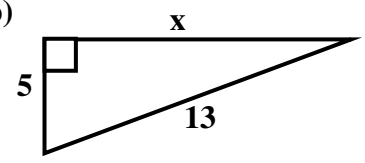

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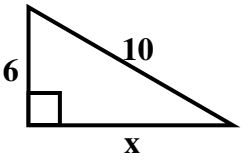
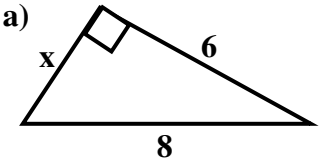


Ex 3:
Find the unknown side length of the right triangle.

a)



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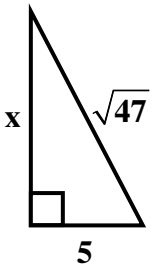

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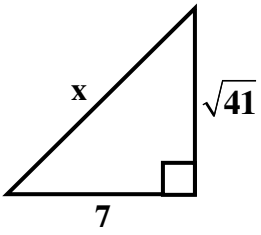
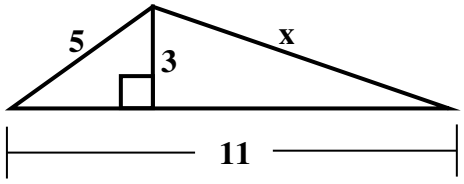
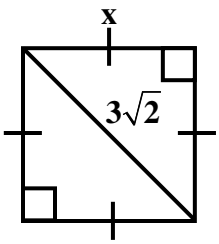


Ex 4:
Find the value of x.

a)

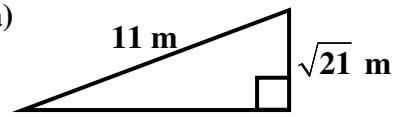


b)



Ex 5:
Find the area of the figure.

a)



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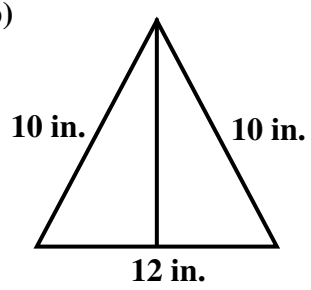

Ex 6:
The figure below is a cube with side lengths 5 units. Find FC and FD.