

<name>

Class: Honors Geometry

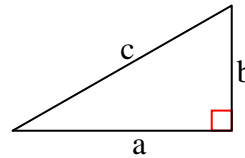
Date: <date>

Topic: Lesson 7-2 (Pythagorean Theorem & Its Converse)

Theorem 7-4

Pythagorean Theorem

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



Definition

Pythagorean Triple

Whole #'s a, b, c such that $a^2 + b^2 = c^2$

Ex: 6, 8, 10 or 5, 12, 13 or 8, 15, 17

Examples

1. Is 4, 6, 7 a Pythagorean triple?

$$4^2 + 6^2 = 52, 7^2 = 49 \dots \text{no}$$

2. Is 16, 30, 34 a Pythagorean triple?

$$16^2 + 30^2 = 1156, 34^2 = 1156 \dots \text{yes}$$

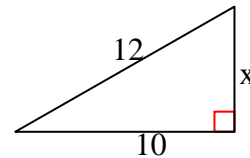
3. Find the value of x :

$$x^2 + 10^2 = 12^2$$

$$x^2 + 100 = 144$$

$$x^2 = 44$$

$$x = \sqrt{44} = \sqrt{4 \cdot 11} = 2\sqrt{11}$$



4. The hypotenuse of an isosceles right triangle has length 20cm. Find the area.

$$x^2 + x^2 = 20^2$$

$$2x^2 = 400$$

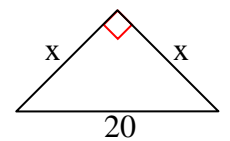
$$x^2 = 200$$

$$x = \sqrt{200}$$

$$A = \frac{1}{2} b \cdot h = \frac{1}{2} x \cdot x = \frac{1}{2} x^2$$

$$= \frac{1}{2} \sqrt{200}^2 = \frac{1}{2} \cdot 200$$

$$= 100$$



Theorem 7-5

Converse of Pythagorean Theorem

If sum of sq of len 2 sides of Δ = sq of len 3rd side, then rt. Δ

Theorem 7-6

If $c^2 > a^2 + b^2$ the Δ is obtuse.

Theorem 7-7

If $c^2 < a^2 + b^2$ the Δ is acute.