

Day 2 - 5.7 Notes: The Pythagorean Theorem

- Identify and use Pythagorean triples to find a side of a triangle



Pythagorean Triples: Any three nonzero whole numbers a, b, and c, which satisfy $a^2 + b^2 = c^2$.

THE TRIPLES

3-4-5	5-12-13	7-24-25	8-15-17

Directions: Solve for x. If it is a triple, state which one you used! (No Calc)

1) $3 \cdot 3 = 9$, $4 \cdot 3 = 12$, $5 \cdot 3 = 15$. Triple: 3-4-5 $\times 3$. $x = 9$.

2) NOT a Triple!

3) $12 = \frac{24}{2}$, $10 = \frac{20}{2}$, $13 \times 2 = 26$. Triple: 5-12-13 $\times 2$. $x = 12$.

4) $30 \div 6 = 5$, $18 \div 6 = 3$, $24 \div 6 = 4$. Triple: 3-4-5 $\times 6$. $x = 24$.

5) $24 \times 2 = 48$, $7 \times 2 = 14$, $25 \times 2 = 50$. Triple: 7-24-25 $\times 2$. $x = 48$.

6) $36 \div 3 = 12$, $39 \div 3 = 13$, $15 \div 3 = 5$. Triple: 5-12-13 $\times 3$. $x = 12$.

7) Triple: 7-24-25 $\div 1000$. $x = .024$.

8) $5/4 \times 4 = 5$, $3/4 \times 4 = 3$. Triple: 3-4-5 $\div 4$. $x = \frac{3}{4}$ or .75.

9) $(5 \times 2)\sqrt{2} = 10\sqrt{2}$, $(12 \times 2)\sqrt{2} = 24\sqrt{2}$, $(13 \times 2)\sqrt{2} = 26\sqrt{2}$. Triple: 5-12-13 $\times 2\sqrt{2}$. $x = 24\sqrt{2}$.

Let's Take it Up a Notch!!

10. Find the area and the perimeter of the triangle.

$A = \frac{b \cdot h}{2} = \frac{30 \cdot 8}{2} = 120u^2$
 $A = 120u^2$
 $P = 16 + 34 + 30$
 $P = 80u$

11. Find the value of x.

$3^2 + b^2 = (\sqrt{34})^2$
 $9 + b^2 = 34$
 $b^2 = 25$
 $b = 5$
 $5^2 + x^2 = 11^2$
 $25 + x^2 = 121$
 $x^2 = 96$
 $x = 4\sqrt{6}$