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

$a^2 + b^2 > c^2$ Acute

$a^2 + b^2 < c^2$ Obtuse

Worked Examples - Pythagorean Inequality Theorems (IXL Geometry P.4)

1. The sides of a triangle have lengths 3, 4, and 5. What kind of triangle is it?

a. Acute
b. Obtuse
(c.) Right

$3^2 + 4^2 \stackrel{?}{=} 5^2$

$9 + 16 \stackrel{?}{=} 25$

$25 = 25$

2. The sides of a triangle have lengths 3, 6, and 6. What kind of triangle is it?

(a.) Acute
b. Obtuse
c. Right

$3^2 + 6^2 \stackrel{?}{=} 6^2$

$3^2 + 6^2 > 6^2$ Acute

3. The sides of a triangle have lengths 10, 13, and 19. What kind of triangle is it?

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a. Acute
(b.) Obtuse
c. Right

$10^2 + 13^2 \stackrel{?}{=} 19^2$

$100 + 169 \stackrel{?}{=} 361$

$269 < 361$ Obtuse

4. Can the sides of a triangle have lengths of 33, 10, and 26? If so, what kind of triangle is it?

a. Yes, acute
b. Yes, right
(c.) Yes, obtuse
d. No

If $a+b > c$, then Δ

If $a+b \leq c$, then no Δ

$10+26 \quad 33$

$36 > 33$

Yes, Δ

$10^2 + 26^2 \stackrel{?}{=} 33^2$

$100 + 676 \stackrel{?}{=} 1089$

$776 < 1089$

Obtuse

5. Can the sides of a triangle have lengths of 19, 27, and 46? If so, what kind of triangle is it?

a. Yes, acute
b. Yes, right
c. Yes, obtuse
(d.) No

$19+27 \quad 46$

$46 = 46$

No, Δ