Sec1H	Notes 5-3 Pythagorean Theorem	Unit 5

Warm-up:

1. $3\sqrt{2}+7\sqrt{3}-8\sqrt{2}$

2. $6\sqrt{40}\cdot 3\sqrt{30}$

3. $\left(5\sqrt{7}\right)^2$

4. $\left(2\sqrt{3}\right)^3$

5. $4\sqrt{2}+3\sqrt{60}$

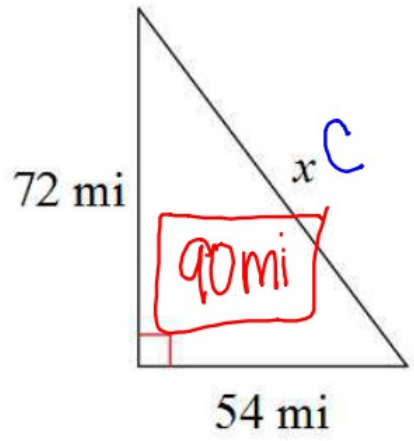
Sec1H	Notes 5-3 Pythagorean Theorem	Unit 5

Pythagorean Theorem: $a^2 + b^2 = c^2$

c = Hypotenuse
- doesn't touch 90° angle (opposite 90° angle)
- longest side

Example 1: Find the missing side of each shape using the Pythagorean Theorem.

1.



$72^2 + 54^2 = x^2$

$5184 + 2916 = x^2$

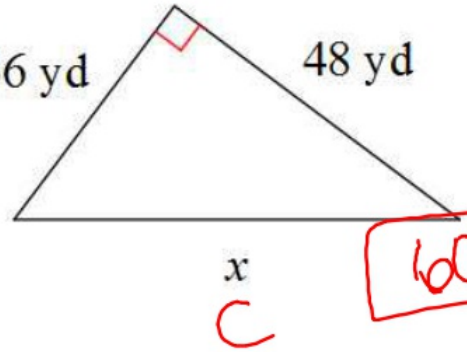
$\sqrt{8100} = \sqrt{x^2}$

$90 = x$

$\sqrt{x \cdot x}$

x

2.



$36^2 + 48^2 = x^2$

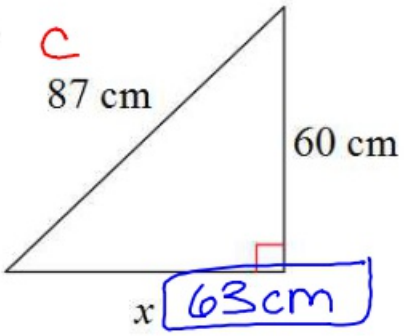
$1296 + 2304 = x^2$

$\sqrt{3600} = \sqrt{x^2}$

$60 = x$

60 yards

3. C



63cm

$60^2 + x^2 = 87^2$

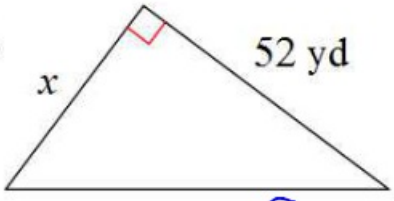
$3600 + x^2 = 7569$

$-3600 \quad -3600$

$\sqrt{x^2} = \sqrt{3969}$

$x = 63$

4.



C

$x^2 + 52^2 = 65^2$

$x^2 + 2704 = 4225$

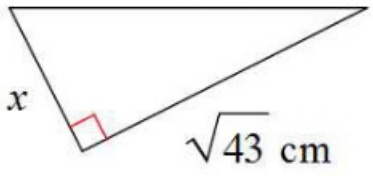
$-2704 \quad -2704$

$\sqrt{x^2} = \sqrt{1521}$

$x = 39$

C

5.



$x^2 + \sqrt{43}^2 = (3\sqrt{6})^2$

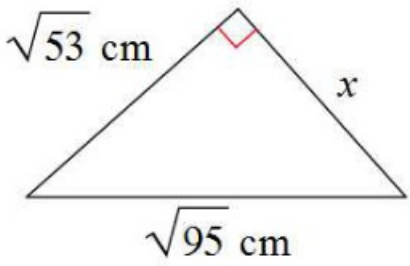
$x^2 + 43 = 54$

$-43 \quad -43$

$\sqrt{x^2} = \sqrt{11}$

$x = \sqrt{11}$

6.



C

$\sqrt{53}^2 + x^2 = \sqrt{95}^2$

$53 + x^2 = 95$

$-53 \quad -53$

$\sqrt{x^2} = \sqrt{42}$

$x = \sqrt{42}$

$42 = 6 \cdot 7$

$6 = 2 \cdot 3$

^

Sec1H	Notes 5-3 Pythagorean Theorem	Unit 5

Acute: All angles are less than 90° (all acute angles)

Obtuse: Has 1 angle greater than 90° (1 obtuse angle)

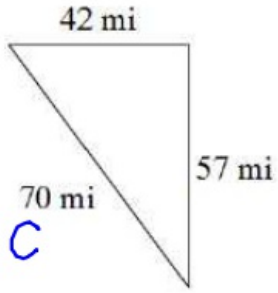
Right: Has 1 90° angle

How can you tell if a triangle is acute, obtuse, or right?

$a^2+b^2=c^2$	$a^2+b^2<c^2$	$a^2+b^2>c^2$
Right	Obtuse	acute

Example 2: Classify each triangle.

1.



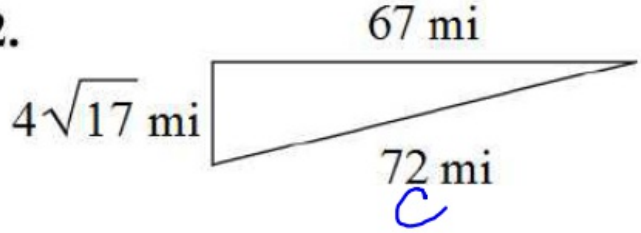
a^2+b^2 c^2

42^2+57^2 70^2

$5013 > 4900$

Acute

2.



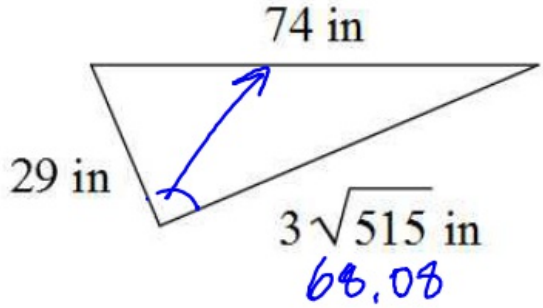
$4\sqrt{17}^2+67^2$ 72^2

$272+4489$ 5184

$4761 < 5184$

Obtuse

3.



68.08

$29^2+3\sqrt{515}^2$ 74^2

$841+4635$ 74^2

$5476 = 5476$

Right