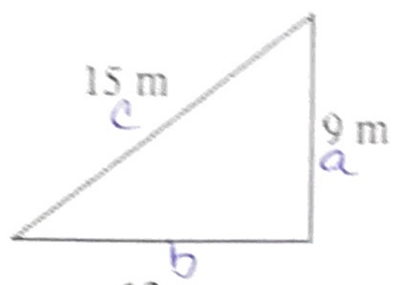
Name: _____ Date_____ #45 Converse of the Pythagorean Theorem

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

Decide if the lengths below make a triangle. If they do, decide if it is a right triangle. Explain how you know your answer is correct.

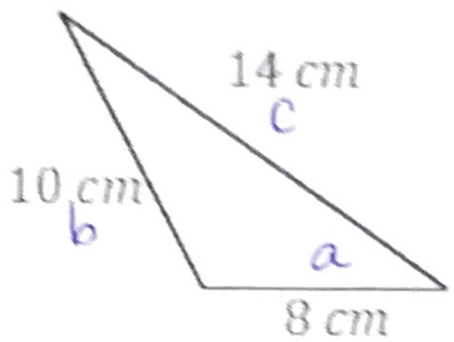
1)



$9+13>15$
$22>15$
Yes Δ

$9^2+13^2=15^2$
$81+169=225$
$250=225$
Not a right Δ

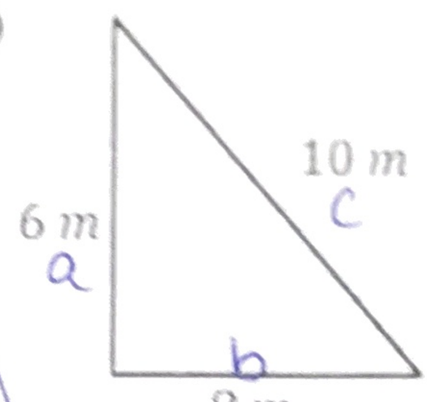
2)



$8+10>14$
$18>14$
Yes Δ

$8^2+10^2=14^2$
$64+100=196$
$164=196$
Not a right Δ

3)



$6+8>10$
$14>10$
Yes Δ

$6^2+8^2=10^2$
$36+64=100$
$100=100$
Yes a right Δ

4) a = 10 cm
b = 12 cm
c = 15 cm

$10+12>15$
$22>15$
Yes Δ

$10^2+12^2=15^2$
$100+144=225$
$244=225$
Not a right Δ

5) $a=\sqrt{7}$ m ≈ 2.6
$b=3\sqrt{2}$ m ≈ 2.8
c = 5 m

$\sqrt{7}+3\sqrt{2}>5$
$5.4>5$
Yes Δ

$(\sqrt{7})^2+(3\sqrt{2})^2=5^2$
$7+9\cdot 2=25$
$7+18=25$
$25=25$
Yes a right Δ

6) a = 6 m
b = 6 cm
c = 14 cm

$6+6>14$
$12>14$
Not a Δ so not a right Δ

7) a = 4 cm
b = 7 cm
c = 10 cm

$4+7>10$
$11>10$
Yes Δ

$4^2+7^2=10^2$
$16+49=100$
$65=100$
Not a right Δ

8) a = 1 yd
b = $\sqrt{23}$ yd ≈ 4.9
c = 10 yd

$1+4.9>10$
$5.9>10$
Not a Δ so not a right Δ

9) Find x so that a, b, and c make a right triangle

a = 2x ft
b = 10 ft
c = 12 ft

$a^2+b^2=c^2$
$(2x)^2+10^2=12^2$
$4x^2+100=144$
$-100\ \ -100$
$\frac{4x^2}{4}=\frac{44}{4}$
$\sqrt{x^2}=\sqrt{11}$
$x=\sqrt{11}$