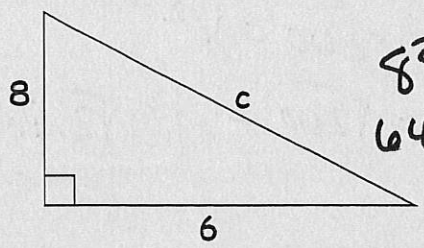
Name Key Date_____ Period_____

Pythagorean Theorem Worksheet

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

Solve for each variable. Leave answer in simplest radical form. Show all work.

1.



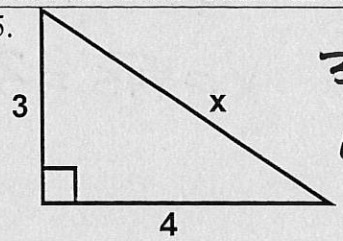
$8^2+6^2=c^2$

$64+36=c^2$

$100=c^2$

$c=10$

5.



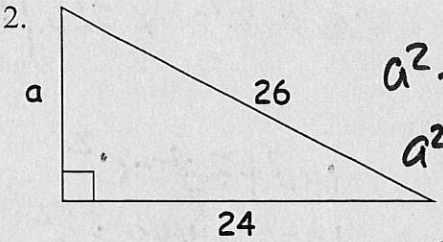
$3^2+4^2=x^2$

$9+16=x^2$

$25=x^2$

$x=5$

2.



$a^2+24^2=26^2$

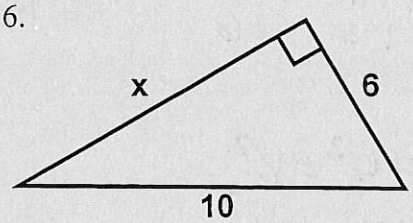
$a^2+576=676$

$-576 \quad -576$

$a^2=100$

$a=10$

6.



$6^2+x^2=10^2$

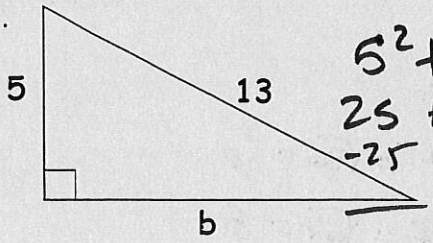
$36+x^2=100$

$-36 \quad -36$

$x^2=64$

$x=8$

3.



$5^2+b^2=13^2$

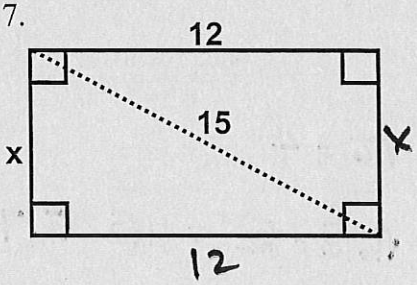
$25+b^2=169$

$-25 \quad -25$

$b^2=144$

$b=12$

7.



$x^2+12^2=15^2$

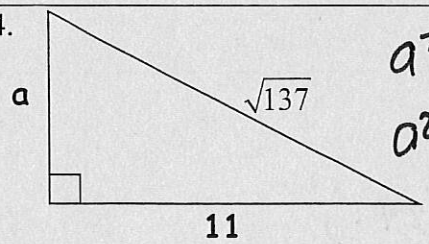
$x^2+144=225$

$-144 \quad -144$

$x^2=81$

$x=9$

4.



$a^2+11^2=\sqrt{137}^2$

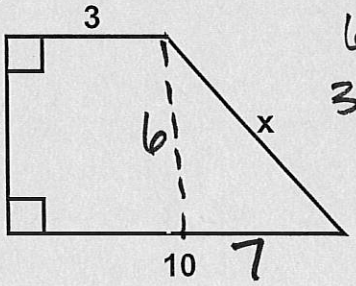
$a^2+121=137$

$-121 \quad -121$

$a^2=16$

$a=4$

8.



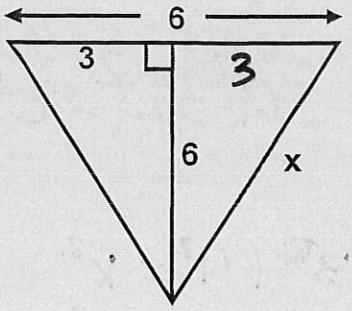
$6^2+7^2=x^2$

$36+49=x^2$

$85=x^2$

$x=\sqrt{85}$

9.



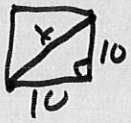
$3^2+6^2=x^2$

$9+36=x^2$

$45=x^2$

$x=\sqrt{45}=3\sqrt{5}$

12. Find the length of the diagonal of a square whose side length is 10 inches



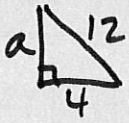
$10^2+10^2=x^2$

$100+100=x^2$

$200=x^2$

$x=\sqrt{200}=10\sqrt{2}$ in

10. The length of one of the legs in a right triangle is 4 inches. If the hypotenuse is 12 inches long, what is the length of the other leg?



$a^2+4^2=12^2$

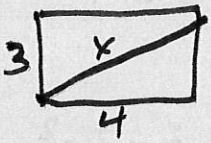
$a^2+16=144$

$-16 \quad -16$

$a^2=\sqrt{128}$

$8\sqrt{2}$ in

13. The diagonal crossbar of an old wooden gate has rusted. The gate is rectangular, 3 feet by 4 feet. How long is the crossbar (diagonal)?

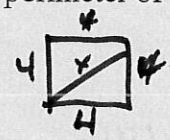


$3^2+4^2=x^2$

$9+16=x^2$

$25=x^2$ $x=5$ ft

11. Find the length of a diagonal of a square enclosure with a perimeter of 16 feet.



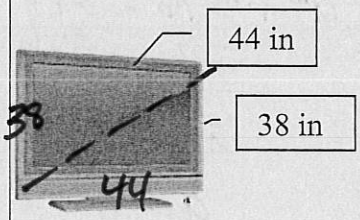
$4^2+4^2=x^2$

$16+16=x^2$

$32=x^2$

$x=\sqrt{32}=4\sqrt{2}$ ft

14. What is the diagonal measurement of the TV screen shown in the figure below?



$44^2+38^2=c^2$

$1936+1444=c^2$

$3380=c^2$

$c=26\sqrt{5}$ or 58.1 in

Given the following vertices, find the lengths of each side of the right triangle.

15. A(4, -3) B(8, -3) C(4, -7)

AB $\sqrt{4^2+0^2}=\sqrt{16}=4$

BC $\sqrt{4^2+4^2}=\sqrt{16+16}=\sqrt{32}=4\sqrt{2}$ 5.7

AC $\sqrt{0^2+4^2}=\sqrt{16}=4$

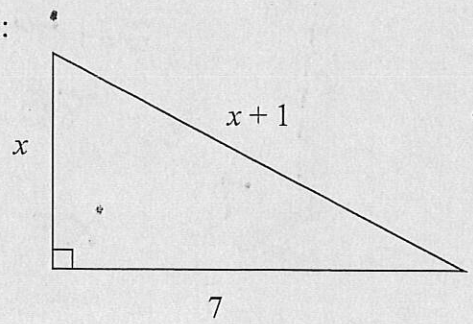
16. A(0, 0) B(6, 0) C(6, 8)

$AB=\sqrt{6^2+0^2}=\sqrt{36}=6$

$BC=\sqrt{0^2+8^2}=\sqrt{64}=8$

$AC=\sqrt{6^2+8^2}=\sqrt{36+64}=\sqrt{100}=10$

17. Solve for x:



$x^2+7^2=(x+1)^2$

$x^2+49=(x+1)(x+1)$

$x^2+49=x^2+x+x+1$

$\cancel{x^2}+49=\cancel{x^2}+2x+1$

$\cancel{-x^2} \quad \cancel{-x^2}$

$49=2x+1$

$-1 \quad -1$

$2x=48$

$x=24$