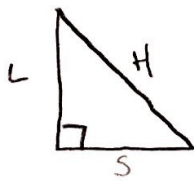


PYTHAGOREAN THEOREM HW

Key

25

1. The longer leg of a right triangle is ten less than three times the shorter leg. The hypotenuse is 4 more than the shorter leg. Find the length of the shorter leg.



$$L = 3S - 10$$

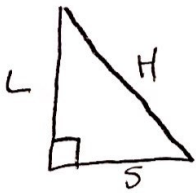
$$H = 4 + S$$

$$(4+S)^2 = S^2 + (3S-10)^2 \quad \boxed{6}$$

$$(4+S)(4+S) = S^2 + (3S-10)(3S-10)$$

$$16 + 8S + S^2 = S^2 + 9S^2 - 60S + 100$$

2. The hypotenuse of a right triangle is 3 less than twice the shorter leg. The length of the other leg is 3 more than the shorter leg. Find the length of the shorter leg.



$$H = 2S - 3$$

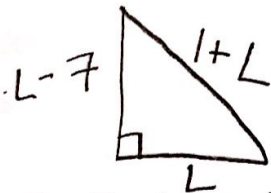
$$L = S + 3$$

$$(S+3)^2 + S^2 = (2S-3)^2 \quad \boxed{9}$$

$$(S+3)(S+3) + S^2 = (2S-3)(2S-3)$$

$$0 = 2S^2 - 18S$$

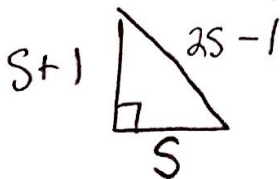
3. The hypotenuse of a right triangle is 1 centimeter longer than the longer leg. The shorter leg is 7 centimeters shorter than the longer leg. Find the length of the longer leg of the triangle.



$$L^2 + (L-7)^2 = (L+1)^2 \quad \boxed{12}$$

$$L^2 - 16L + 48$$

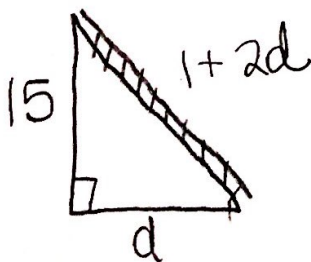
4. The longer leg of a right triangle is 1 meter longer than the shorter leg. The hypotenuse is 1 meter shorter than twice the shorter leg. Find the length of the shorter leg of the triangle.



$$2S^2 - 6S = 0$$

$$2S(S-3) = 0 \quad \boxed{3}$$

5. A ladder is resting against a wall. The top of the ladder touches the wall at a height of 15 feet. Find the distance from the wall to the bottom of the ladder if the length of the ladder is one foot more than twice its distance from the wall.



$$15^2 + d^2 = (1+2d)(1+2d) \quad \boxed{8}$$

$$3d^2 + 4d - 224$$

$$\frac{-4 \pm 52}{6}$$