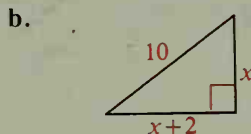
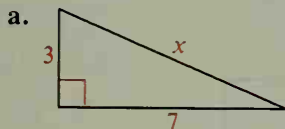


Example Find the value of x . Remember that the length of a segment must be a positive number.



Solution

$$\begin{aligned} \text{a. } x^2 &= 7^2 + 3^2 \\ x^2 &= 49 + 9 \\ x^2 &= 58 \\ x &= \sqrt{58} \end{aligned}$$

$$\begin{aligned} \text{b. } x^2 + (x + 2)^2 &= 10^2 \\ x^2 + x^2 + 4x + 4 &= 100 \\ 2x^2 + 4x - 96 &= 0 \\ x^2 + 2x - 48 &= 0 \\ (x + 8)(x - 6) &= 0 \\ \cancel{x + 8} = \cancel{-8}; x &= 6 \end{aligned}$$

Classroom Exercises

1. The early Greeks thought of the Pythagorean Theorem in this form: *The area of the square on the hypotenuse of a right triangle equals the sum of the areas of the squares on the legs.* Draw a diagram to illustrate that interpretation.

2. Which equations are correct for the right triangle shown?

a. $r^2 = s^2 + t^2$

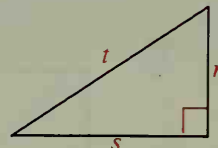
b. $s^2 = r^2 + t^2$

c. $s^2 + r^2 = t^2$

d. $s^2 = t^2 - r^2$

e. $t = r + s$

f. $t^2 = (r + s)^2$



Complete each simplification.

3. $(\sqrt{3})^2 = \sqrt{3} \cdot \underline{\quad} = \underline{\quad}$

4. $(3\sqrt{11})^2 = \underline{\quad} \cdot \underline{\quad} = 9 \cdot \underline{\quad} = \underline{\quad}$

Simplify each expression.

5. $(\sqrt{5})^2$

6. $(2\sqrt{7})^2$

7. $(7\sqrt{2})^2$

8. $(2n)^2$

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

10. $\left(\frac{\sqrt{2}}{2}\right)^2$

11. $\left(\frac{n}{\sqrt{3}}\right)^2$

12. $\left(\frac{2}{3}\sqrt{6}\right)^2$

State an equation you could use to find the value of x . Then find the value of x in simplest radical form.

