

Exponents and Roots

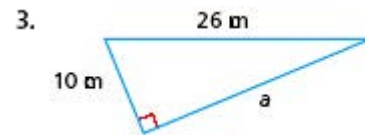
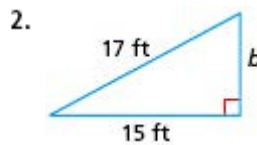
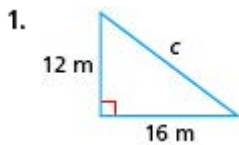
Square Roots and the Pythagorean Theorem

The Pythagorean Theorem and the Distance Formula

Page [1 of 1]

Example 1

Use the Pythagorean Theorem to find each missing measure.



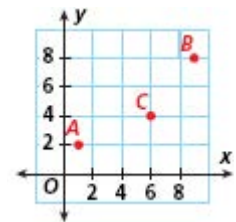
Example 2

Find the distances between the points to the nearest tenth.

4. A and B

5. B and C

6. A and C



Example 3

Tell whether the given side lengths form a right triangle.

7. 3, 4, 5

8. 8, 10, 14

9. 0.5, 1.2, 1.3

Exponents and Roots

Square Roots and the Pythagorean Theorem

The Pythagorean Theorem and the Distance Formula

Page [1 of 1]

$$\begin{aligned}
 1. \quad a^2 + b^2 &= c^2 \\
 12^2 + 16^2 &= c^2 \\
 144 + 256 &= c^2 \\
 400 &= c^2 \\
 \sqrt{400} &= \sqrt{c^2} \\
 20 &= c
 \end{aligned}$$

The length of the hypotenuse is 20 m.

$$\begin{aligned}
 2. \quad a^2 + b^2 &= c^2 \\
 15^2 + b^2 &= 17^2 \\
 225 + b^2 &= 289 \\
 \underline{-225} \quad \quad \underline{-225} & \\
 b^2 &= 64 \\
 \sqrt{b^2} &= \sqrt{64} \\
 b &= 8
 \end{aligned}$$

The length of the leg, b , is 8 ft.

$$\begin{aligned}
 3. \quad a^2 + b^2 &= c^2 \\
 a^2 + 10^2 &= 26^2 \\
 a^2 + 100 &= 676 \\
 \underline{-100} \quad \underline{-100} & \\
 a^2 &= 576 \\
 \sqrt{a^2} &= \sqrt{576} \\
 a &= 24
 \end{aligned}$$

The length of the leg, a , is 24 cm.

$$\begin{aligned}
 4. \quad AB^2 &= 8^2 + 6^2 \\
 AB^2 &= 100 \\
 AB &= \sqrt{100} = 10
 \end{aligned}$$

$$\begin{aligned}
 6. \quad AC^2 &= 5^2 + 2^2 \\
 AC^2 &= 29 \\
 AC &= \sqrt{29} \approx 5.4
 \end{aligned}$$

$$\begin{aligned}
 8. \quad 8^2 + 10^2 &= 14^2 \\
 64 + 100 &= 196 \\
 164 &\neq 196
 \end{aligned}$$

The lengths 8, 9, and 14 do not form a right triangle.

$$\begin{aligned}
 5. \quad BC^2 &= 3^2 + 4^2 \\
 BC^2 &= 25 \\
 BC &= \sqrt{25} = 5
 \end{aligned}$$

$$\begin{aligned}
 7. \quad 3^2 + 4^2 &= 5^2 \\
 9 + 16 &= 25 \\
 25 &= 25
 \end{aligned}$$

The lengths 3, 4, and 5 form a right triangle.

$$\begin{aligned}
 9. \quad 0.5^2 + 1.2^2 &= 1.3^2 \\
 0.25 + 1.44 &= 1.69 \\
 1.69 &= 1.69
 \end{aligned}$$

The lengths 0.5, 1.2, and 1.3 form a right triangle.