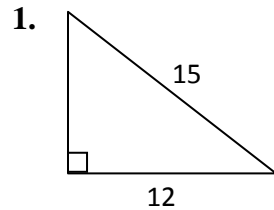
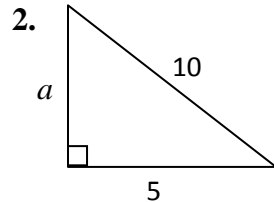


Lesson 2: The Pythagorean Theorem—Worksheet

Questions 1—4: Find the missing sides. Use Pythagorean triples if possible.



Dividing 15 and 12 by 3 we get 5 and 4, which reminds us of the Pythagorean triple 3-4-5. Multiplying it by 3 gives 9-12-15. So, the missing side is 9.



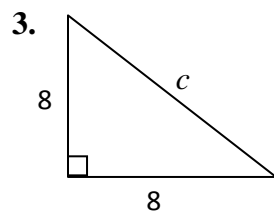
We do not have a Pythagorean triple here. Call the missing side a . Then

$$a^2 + 5^2 = 10^2$$

$$a^2 + 25 = 100$$

$$a^2 = 75$$

$$a = \sqrt{75} = \sqrt{25 \cdot 3} = \sqrt{25} \sqrt{3} = 5\sqrt{3}$$



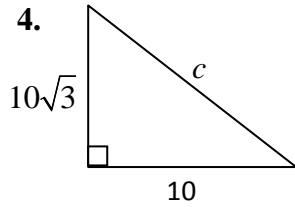
We do not have a Pythagorean triple here. Call the missing side c . Then

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

$$c^2 = 64 + 64$$

$$c^2 = 128$$

$$c = \sqrt{128} = \sqrt{64 \cdot 2} = \sqrt{64} \sqrt{2} = 8\sqrt{2}$$



There is no Pythagorean triple here. Call the missing side c . Then

$$c^2 = 10^2 + (10\sqrt{3})^2$$

$$c^2 = 100 + 10^2 \cdot 3$$

$$c^2 = 100 + 100 \cdot 3$$

$$c^2 = 400$$

$$c = \sqrt{400} = 20$$

5. The legs of a right triangle are equal (such a triangle is called an isosceles right triangle). If the hypotenuse is 10, what is each leg?

We call each leg x . Then

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

$$2x^2 = 100$$

$$x^2 = 50$$

$$x = \sqrt{50} = \sqrt{25 \cdot 2} = \sqrt{25} \sqrt{2} = 5\sqrt{2}$$

So, each leg is $5\sqrt{2}$.

