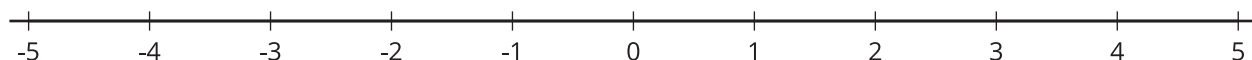# Irrational Numbers

Let's explore irrational numbers.

15.1 Finding a Home for Irrational Numbers

Use the number line to place these values in their approximate location.
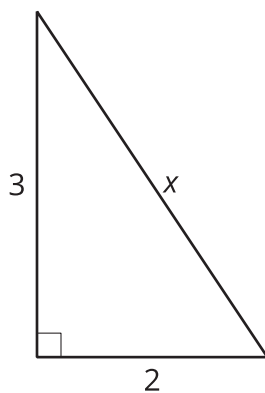

1. $\sqrt{5}$
2. $-\sqrt{13}$
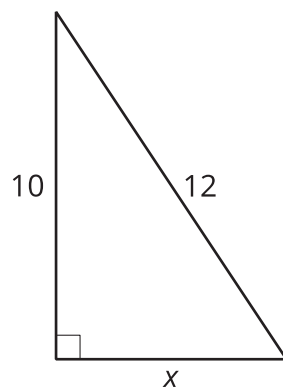3. $3 + \sqrt{2}$
4. $3 - \sqrt{2}$

15.2 Solving for Missing Sides

For each triangle, use the Pythagorean Theorem to find the length of the missing side.
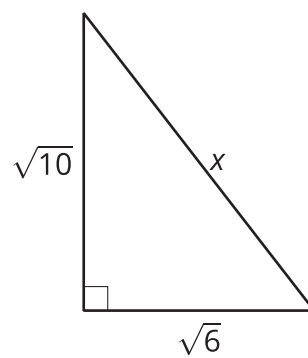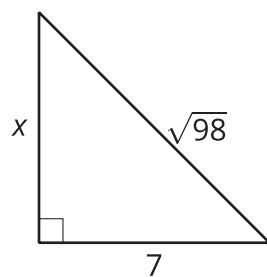
1.

2.

A right triangle with vertical leg labeled 10, hypotenuse labeled 12, and horizontal leg (bottom) labeled x. The right angle is at the bottom left.

3.

A right triangle with vertical leg labeled $\sqrt{10}$, hypotenuse labeled x, and horizontal leg (bottom) labeled $\sqrt{6}$. The right angle is at the bottom left.

4.

A right triangle with vertical leg labeled x, hypotenuse labeled $\sqrt{98}$, and horizontal leg (bottom) labeled 7. The right angle is at the bottom left.

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Solve each of these equations. Represent the solutions exactly. If the solution is not a whole number, what 2 whole numbers does each solution lie between? Be prepared to explain your reasoning.

1. $(x + 1)^2 = 64$

2. $(x - 3)^2 - 4 = 0$

3. $x^2 = 10$

4. $(x - 2)^2 = 12$

5. $(x + 3)^2 = 24 + 4$

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