Important Rules for Solving Equations

- When you solve an equation, your goal is to get the _____ alone by itself on one side of the equation. In other words, you are trying to _____ the variable.
- When you are solving for a variable, you $\ensuremath{\mathsf{MUST}}$ use inverse
- Draw a line to separate both sides of the equation.

Important Rules for Solving Equations (Continued)

- Whatever you do to ______ of an equation, you must do to the _____ side of the equation. In other words, you must keep the equation

Think of solving an equation like lifting weights



- If you add or subtract weight from one side of the barbell, you must _____ or ____ weigh from the other side to keep it balanced!

Solve: r + 16 = -7

- To solve, you must isolate the variable.
- What number is on the same side as r?
- To get ${m r}$ by itself, we must undo the addition. What is the opposite of addition?
- 1. Draw a line to separate the equation into 2 sides.

$$r + 16 = -7$$

- 2. ____ from both sides.
- 3. Check your answer by substituting your answer back into the problem.

- x + 2 = -31. Draw a line to separate the equation into 2 sides.
- 2. _____ from both sides.
- 3. Check your answer by substituting your answer back into the problem.

Solve: y + (-3) = -8 **Solve**: x - (-2) = 1

Solve: 3.4 + x = -9.08 **Solve:**

Solve: x - (-2.98) = -11.5

Check Your Answer:

Check Your Answer:

Check Your Answer:

Check Your Answer:

Solve: -11 = † + (-2)

Solve: -22 = c - 12

Solve:
$$x + \left(-\frac{1}{4}\right) = \frac{5}{6}$$

Solve:
$$x - \left(-\frac{2}{3}\right) = -\frac{5}{6}$$

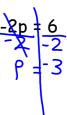
Solve: -2p = 6-2(-3) = 6

- To solve, you must isolate the variable
- What number is on the same side as p?
- To get \boldsymbol{p} by itself, we must undo the multiplication. What is the opposite of multiplication?

Check Your Answer:

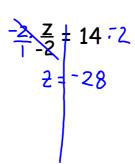
Check Your Answer:

- 1. Draw a line to separate the equation into 2 sides.
- 2. divide by $\frac{-2}{2}$ on both sides.
- 3. Check your answer by substituting your answer back into the problem.



1. Draw a line to separate the equation into 2 sides.

- 2. Multiply by -2 on both sides.
- 3. Check your answer by substituting your answer back into the problem.



Solve: $\frac{-16}{-4} = \frac{-16}{-4}$ + 4 = 6

Check Your Answer:

 $2: \frac{1}{\sqrt{x}} = \frac{-4}{-1}$ $X = \frac{1}{\sqrt{x}}$

Solve: $\frac{x}{1} = -29.6$

Check Your Answer:

Solve: \frac{10}{-10} = 16

Solve:
$$\frac{3}{3}x + \frac{5}{8} \cdot \frac{4}{3}$$

$$x + \frac{5}{8} \cdot \frac{4}{3}$$

$$x + \frac{5}{94}$$

$$x + \frac{5}{94}$$
Check Your Answer:

$$-\frac{3}{4}(\frac{-5}{6}) = \frac{5}{8}$$

Solve: $x = -\frac{2}{3} \cdot \frac{14}{9}$ $x = \frac{14}{12}$ $x = \frac{14}{12}$

Check Your Answer:

Check Your Answer:

Solve: -24.99 = 2.1m 2-1 2-1 Check Your Answer:

Hint: Dividing by a fraction is the same as multiplying by the

reciprical

EX: 3 4 1

Equations with Square and Cube Roots

-Isolate the variable by performing the inverse operation

$$\underline{x^2}$$
 and $\underline{\sqrt{x}}$ are inverse operations.

 x^3 and $\sqrt[3]{x}$ are inverse operations.

$$1^{2}=1$$
 $\sqrt{1}=1$ $1\cdot 1=1$ $\sqrt{1}=1$ $2^{2}=4$ $\sqrt{4}=2$ $2\cdot 2=4$ $\sqrt{4}=2$ $3^{2}=9$ $\sqrt{9}=3$ $3\cdot 3=9$ $\sqrt{9}=3$ $4^{2}=16$ $\sqrt[3]{16}=4$ $4\cdot 4=16$ $\sqrt[3]{16}=4$

Cube Roots

$$1^{3} = 1$$
 $\sqrt[3]{1} = 1$
 $2^{3} = 8$ $\sqrt[3]{8} = 2$
 $3^{3} = 27$ $\sqrt[3]{27} = 3$
 $4^{3} = 64$ $\sqrt[3]{64} = 4$
 $5^{3} = 125$ $\sqrt[3]{125} = 5$

Example 1

$$(\sqrt{x})^2 (15)^2 \quad \chi = 225$$

-Eliminate the square root by Squaring both sides



Example 2

$$(\sqrt[3]{x})^{\frac{3}{2}}(8)^{\frac{3}{2}}$$

-Eliminate the cube root by Chbing both sides

Example 3

$$-x^2 = 64$$
.

-Eliminate the exponent by taking the on both sides

Example 5 $\sqrt{x^3} = 64$

X = 4

Example 4
$$\sqrt{3}$$
 $\sqrt{3}$

$$\sqrt[3]{x^3} = \sqrt[8]{8}$$

X = 2 -Eliminate the exponent by taking the on both sides

Example 6 $\sqrt{\chi^2} \supseteq \sqrt{4}$.

X= 12

Can you find the square root or cube root of a negative number? Why or why not?

Warm up 10/25 Simplify: $2(5-3)^3+4$ $2(2)^3+4$ 2(8)+4