

Objectives: I can solve one-step equations using multiplication and division.

SOLVING EQUATIONS BY MULTIPLYING OR DIVIDING

DIVISION PROPERTY OF EQUALITY:

You can divide the same non-zero number from each side of an equation.

Arithmetic

$$6 = 3(2)$$

$$\frac{6}{3} = \frac{3(2)}{3}$$

Algebra

If $a = b$ and $c \neq 0$, then

$$\frac{a}{c} = \frac{b}{c}$$

MULTIPLICATION PROPERTY OF EQUALITY:

You can multiply the same number to each side of an equation.

Arithmetic

$$12 = 3(4)$$

$$12 \cdot 2 = 3(4) \cdot 2$$

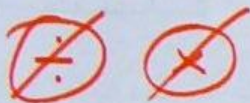
Algebra

If $a = b$, then

$$a \cdot c = b \cdot c$$

EXAMPLES:

a) Dividing to solve an equation:



$$\begin{array}{r} -2v = -24 \\ \hline -2 \quad -2 \\ \hline v = 12 \end{array}$$

Check your solution.

$$-2 \cdot 12 = -24 \checkmark$$

b) Multiplying to solve an equation:

$$\begin{array}{r} -8x = -5 \cdot 8 \\ \hline -8 \quad -8 \\ \hline x = -40 \end{array}$$

Check your solution.

$$\frac{-40}{8} = -5 \checkmark$$

c) 288 is the product of 12 and a number.

Write an equation.

$$\frac{288}{12} = \frac{12 \cdot x}{12}$$

Solve.

$$\frac{288}{12} = \frac{144 \div 2}{6 \div 2} = \frac{72}{3} = 24$$

$$24 = x$$

$$\boxed{x = 24}$$

Check your answer.

$$\begin{array}{r} 13 \\ 7 \overline{) 91} \\ \underline{7} \\ 21 \end{array}$$

PRACTICE:

Solve each equation. Check each solution for reasonableness.

<p>a. $4x = 84$</p> $\frac{4x}{4} = \frac{84}{4}$ <p>$x = 21$</p>	<p>b. $91 = 7y$</p> $\frac{91}{7} = \frac{7y}{7}$ <p>$13 = y$</p> <p>$y = 13$</p>	<p>c. $5r = 10$</p> $\frac{5r}{5} = \frac{10}{5}$ <p>$r = 2$</p>
<p>d. $3d = 24$</p> $\frac{3d}{3} = \frac{24}{3}$ <p>$d = 8$</p>	<p>e. $6x = -30$</p> $\frac{6x}{6} = \frac{-30}{6}$ <p>$x = -5$</p>	<p>f. $4d = -56$</p> $\frac{4d}{4} = \frac{-56}{4}$ <p>$d = -14$</p>
<p>g. $20f = 1200$</p> $\frac{20f}{20} = \frac{1200}{20}$ <p>$f = 60$</p>	<p>h. $10u = 5000$</p> $\frac{10u}{10} = \frac{5000}{10}$ <p>$u = 500$</p>	<p>i. $8n = 96$</p> $\frac{8n}{8} = \frac{96}{8}$ <p>$n = 12$</p>

Write an equation, then solve. $x \cdot -4 = 240$

j. The product of a number and -4 is 240. What is the number?

$$\frac{-4x}{-4} = \frac{240}{-4}$$

$x = -60$

k. The quotient of a number and 20 is 40. What is the number?

$$\frac{20x}{20} = 40 \cdot 20$$

$x = 800$

Homework:

Solve each equation. Check each solution for reasonableness.

1. $2p = -68$	2. $-48 = 4y$	3. $\frac{g}{-9} = 30$
4. $-160 = 20t$	5. $\frac{x}{-5} = -5$	6. $-6y = -24$
7. $-6 = \frac{m}{-2}$	8. $\frac{u}{-4} = -12$	9. $-8z = -80$
10. $-4m = -32$	11. $56 = -7j$	12. $\frac{r}{30} = 6$
13. $-3r = -48$	14. $\frac{x}{6.1} = -3$	15. $-8u = 50$

Write an equation, then solve.

16. Twice a number is -346 . What is the number?

17. The quotient of a number and -7 is 210 . What is the number?