

## 7th Grade

## 3.3 Solving Multiplication and Division Equations

Inverse Property of Multiplication:  $5 \cdot \frac{1}{5} = 1$

Multiplication will "undo" division  
Division will "undo" multiplication

Multiplication Property of Equality:

if  $\frac{x}{a} = b$ ,  $a \neq 0$  then  $a \cdot \frac{x}{a} = b \cdot a \rightarrow x = ba$

ex)  $\frac{x}{-4} = -6 \cdot -4$

$x = 24$

$\frac{-4}{1} \cdot \frac{x}{-4} = \frac{x}{1} = x$

ex)  $-8 = \frac{z}{2}$

$-16 = z$

$\frac{-16}{2} = -8$

Division Property of Equality:

if  $ax = b$ ,  $a \neq 0$  then  $\frac{ax}{a} = \frac{b}{a} \rightarrow x = \frac{b}{a}$

ex)  $\frac{4x}{4} = \frac{-12}{4}$

$x = -3$

$4 \cdot -3 = -12$

ex)  $\frac{-18}{-6} = \frac{-6x}{-6}$

$3 = x$

Multiplying by a reciprocal.

Note: Remember that dividing by a fraction is the same thing as multiplying by a reciprocal.

$$\text{ex) } -4 \cdot \frac{-1}{4} \cdot x = 3 \cdot -4$$

$$x = -12$$

$$\frac{-4}{1} \cdot \frac{-1}{4} = \frac{4}{4} = 1$$

$$-\frac{1}{4} \cdot 12 = \frac{12}{4} = 3$$

$$\text{ex) } \frac{5}{3} \cdot -3 = \frac{5}{3} \cdot \frac{3}{5} \cdot x$$

$$-5 = x$$

Try this:

$$1. \quad \frac{-65}{-5} = \frac{-5y}{-5}$$

$$13 = y$$

$$2. \quad \frac{6w}{6} = \frac{-54}{6}$$

$$w = -9$$

$$3. \quad \frac{t}{-3} = 9 \cdot -3$$

$$t = -27$$

$$4. \quad \frac{a}{5} = -11 \cdot 5$$

$$a = -55$$

$$5. \quad \frac{6}{5} \cdot \frac{5}{6} w = 10 \cdot \frac{6}{5}$$

$$w = 12$$

$$6. \quad \frac{4}{3} \cdot 9 = \frac{-4}{3} \cdot \frac{3}{4} \cdot m$$

$$-12 = m$$

# Homework: 😊😊



## 3.3 Worksheet

Show Your Work!