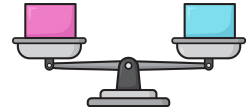


TOPIC: THE MULTIPLICATION AND DIVISION PROPERTIES OF EQUALITY

Multiplication and Division Properties of Equality

◆ Recall: Solve a linear equation by using operations done to **both** sides to isolate the variable.



► **Multiplication** and **division** can also be used to create *equivalent equations*.

Multiplication Property of Equality	Division Property of Equality
If $a = b$, then $a \underline{\hspace{1cm}} = b \underline{\hspace{1cm}}$ Use when eqn has [MULTIPLICATION DIVISION] $\frac{x}{2} = 9$ $\frac{x}{2} \underline{\hspace{1cm}} = 9 \underline{\hspace{1cm}}$ $\underline{\hspace{1cm}} = \underline{\hspace{1cm}}$	If $a = b$, then $a = b$ Use when eqn has [MULTIPLICATION DIVISION] $20 = 5x$ $20 = 5x$ $\underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

◆ Isolate the variable *term* using _____ BEFORE using $\times/\div$ to fully isolate *variable*.

EXAMPLE

Solve the linear equation, then check your solution.

$$3a - 4 = 11$$

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EXAMPLE

Solve the linear equation, then check your solution.

$$1.2a + 2.3 = 5.9$$

PRACTICE

Solve the given linear equation using multiplication and division properties of equality.

(A)

$$-8x = 64$$

(B)

$$\frac{y}{4} = -\frac{21}{6}$$

(C)

$$\frac{126}{14} = 3y$$

PRACTICE

Solve the given linear equation, then check your answer.

(A)

$$-(h + 3) = 11$$

(B)

$$0.5t + 1.5t = 7 + 3 - 4$$

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EXAMPLE

Translate the following statement into a linear equation and solve.

Three times L equals 54. What is the value of L ?

TOPIC: THE MULTIPLICATION AND DIVISION PROPERTIES OF EQUALITY

Multiplication Property for Fraction Coefficients

◆ If the variable in a linear equation has a fraction **coefficient**, cancel by multiplying both sides by its _____.

► Recall: The product of a **number** and its **reciprocal** is 1. For example, $\frac{2}{3} \cdot \frac{3}{2} = 1$

EXAMPLE

Solve the following equations.

(A)

$$\frac{3}{4}x = 9$$

(B)

$$10 = \frac{5}{3}y$$

Recall

If $a = b$,
then $ac = bc$

PRACTICE

Solve the given linear equation.

(A)

$$\frac{2}{3}x = 10$$

(B)

$$-6 = \frac{3}{5}t$$

PRACTICE

Solve the given linear equation, then check your answer.

$$\frac{1}{2} = \frac{3}{4}x$$

TOPIC: THE MULTIPLICATION AND DIVISION PROPERTIES OF EQUALITY**TOPIC RESOURCE: PROPERTIES OF EQUALITY**

Name	Use when equation has...	Property of Equality	Example	
		If $a = b$, then...		
Addition	-	$a + c = b + c$	$x - 6 = 0$ $x - 6 + 6 = 0 + 6$ $x = 6$	
Subtraction	+	$a - c = b - c$	$0 = x + 2$ $0 - 2 = x + 2 - 2$ $-2 = x$	
Multiplication	$\div$	$a c = b c$	$\frac{x}{2} = 24$ $2 \cdot \frac{x}{2} = 24 \cdot 2$ $x = 48$	$\frac{3}{4}x = 9$ $\frac{4}{3} \cdot \frac{3}{4}x = 9 \cdot \frac{4}{3}$ $x = 12$
Division	$\times$	$\frac{a}{c} = \frac{b}{c}$	$20 = 5x$ $\frac{20}{5} = \frac{5x}{5}$ $4 = x$	