

3-3 Solve Equations Using Multiplication and Division

Multiplication Prop. of Equality-

If an equation is true, multiplying both sides by the same number results in a true equation.

$$\text{If } a = b, \text{ then } ac = bc$$

Division Prop. of Equality -

If an equation is true, dividing both sides by the same number results in a true equation.

$$\text{If } a = b, \text{ then } \frac{a}{c} = \frac{b}{c}$$

When solving, your goal is to get the variable alone on one side of the equation.

The coefficient of the variable must be 1.

Ask: How is the variable "connected" to the number?
Use the opposite operation to "undo" the operation in the equation.

Ex. 1. Solve & check

x is connected to 12 by division. The opposite of division is multiplication, so multiply both sides by 12.

x

Check.

Ex. 2. Solve & check.

-3

First, write mixed numbers as improper fractions.

8

To isolate k, divide by $^{-27}$

(Remember to divide by a fraction, multiply by its reciprocal!)

Ex. 3. Solve and check. $-75 = -15b$

b is connected to -15 by mult., so divide to undo

Ex. 4. p. 136 in book

Ex. 5. $11w = 143$

Ex. 6. $-8x = 96$

Ex. 7. Write an equation, solve, & check.

Negative fourteen times a number equals 224.

Assign. pp. 138 - 139

13 - 37 odd, 39 - 41, 43 - 45