Bell Work

Solve each equation:

1) $\frac{x}{7} - 12 = -16$

2) $\frac{-15 - y}{5} = 7$

Chapter 2.4

(Equations with the Variable on Each Side)

Objectives:

-Solve equations with the variable on each side.

-Solve equations involving grouping symbols.

ConceptSummary Steps for Solving Equations

Step 1 Simplify the expressions on each side. Use the Distributive Property as needed.

Step 2 Use the Addition and/or Subtraction Properties of Equality to get the variables on one side and the numbers without variables on the other side. Simplify.

Step 3 Use the Multiplication or Division Property of Equality to solve.

Equations with Variables on Each Side

Ex. 1 Solve $8 + 5c = 7c - 2$.

$$
\begin{aligned}
8 + 5c &= 7c - 2 \\
-7c &= -7c \\
\hline
8 - 2c &= -2 \\
-8 \quad &= -8 \\
\hline
-2c &= -10 \\
\frac{-2c}{-2} &= \frac{-10}{-2} \\
c &= 5
\end{aligned}
$$

Equations with Grouping

Ex. 1 **Solve** $\frac{1}{3}(18+12q)=6(2q-7)$.

$$\frac{1}{3}(18+12q)=6(2q-7)$$

$$6+4q=12q-42$$

$$6+4q-12q=12q-42-12q$$

$$6-8q=-42$$

$$6-8q-6=-42-6$$

$$-8q=-48$$

$$\frac{-8q}{-8}=\frac{-48}{-8}$$

$$q=6$$

Special Cases

No Solution - no real value can be substituted for the variable to make a true statement

Solve $8(5c - 2) = 10(32 + 4c)$.

$$8(5c - 2) = 10(32 + 4c)$$
$$40c - 16 = 320 + 40c$$
$$40c - 16 - 40c = 320 + 40c - 40c$$
$$-16 = 320$$

Identity - equation that is true for any value of the variable (Solution = **All Real Numbers**)

Solve $(5 + 8 \div 4) + 3k = 3(k + 32) - 89$.

$(5 + 8 \div 4) + 3k = 3(k + 32) - 89$	Original equation
$(5 + 2) + 3k = 3(k + 32) - 89$	Divide 8 by 4.
$7 + 3k = 3(k + 32) - 89$	Add 5 and 2.
$7 + 3k = 3k + 96 - 89$	Distributive Property
$7 + 3k = 3k + 7$	Subtract 89 from 96.

Practice

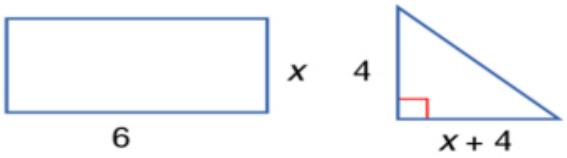
Solve $2(4a+8)=3\left(\frac{8a}{3}-10\right)$.

Solve $6(3r-4)=\frac{3}{8}(46r+8)$.

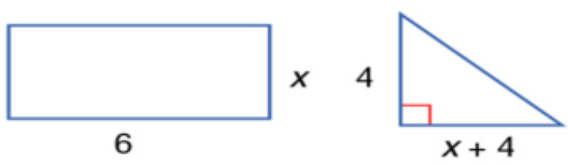
Solve $9f - 6 = 3f + 7$.

Solve $\frac{1}{7}(21c-56)=3\left(c-\frac{8}{3}\right)$.

Find the value of x so that the figures have the same area.



Find the value of *x* so that the figures have the same area.



1. Write an Equation: $6x = (1/2)(x + 4)(4)$
2. Solve the Equation: $x = 2$

Homework

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