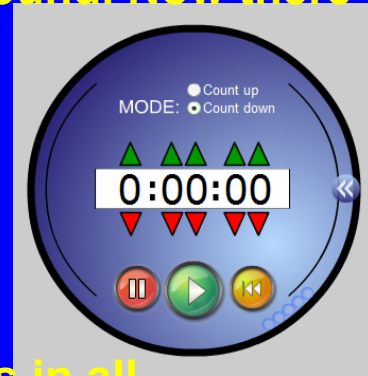


1. 6×3
 2. How many ears do eight dogs have in all?
 3. If $n + 2 = 7$, then $n =$
 4. There were eight bugs on the ground. Now there are six. How many flew away?
 5. $2 \times 3 \times 2 =$
 6. $4 \times 6 + \underline{\quad} = 31$
 7. 3, 6, 9, 12, , ,
 8. Seven bicycles have wheels in all.
- Use $<$, $>$, or $=$ to complete questions 9 and 10.
9. 3 weeks 20 days
 10. 1 cm 1 in



Solving Multi-Step Equations

Some equations contain expressions with grouping symbols. To solve these equations, first expand the expression using the Distributive Property. Then collect like terms, if needed, and solve the equation.

Example 1: Solve $15(20 + d) = 420$.

Step 1: Use the distributive property to rewrite the equation.

$$\begin{array}{r} 300 + 15d = 420 \\ -300 \quad -300 \end{array}$$

Step 2: Combine like terms and get the variable on one side, constants on the other.

$$\frac{15d = 120}{15 \quad 15}$$

Step 3: Solve by using inverse operations.

$$d = 8$$

a. $-3(9 + x) = 33$

$$\begin{array}{r} -27 + (-3x) = 33 \\ +27 \quad +27 \end{array}$$

$$\frac{-3x = 60}{-3 \quad -3}$$

$$x = -20$$

b. $5(a - 7) = 25$

$$\begin{array}{r} 5a - 35 = 25 \\ +35 \quad +35 \end{array}$$

$$\frac{5a = 60}{5 \quad 5}$$

$$a = 12$$

Solving Multi-Step Equations

Some equations have no solution. When this occurs, the solution is the null set or empty set and is shown by the symbol \emptyset or $\{ \}$.

Other equations may have every number as their solution. An equation that is true for every value of the variable is called an identity.

Number of Solutions		
Null Set	One Solution	Identity
<p>no solution</p> <p>$\emptyset, \{ \}$, null, empty set</p>	<p><u>one</u> solution</p>	<p>infinitely many solutions, <u>all real numbers</u></p>
<p>$3x + 4 = 3x$</p> <p><u>$4 = 0$</u></p> <p>Since $4 \neq 0$, there is no solution.</p>	<p>$2x = 20$</p> <p><u>$x = 10$</u></p>	<p>$4x + 2 = 4x + 2$</p> <p><u>$2 = 2$</u></p> <p>Since $2 = 2$, the solution is all numbers.</p>

Solving Multi-Step Equations

Example 2: Solve $6(x - 3) + 10 = 2(3x - 4)$.

Step 1: Use the distributive property to rewrite
 $6x - 18 + 10 = 6x - 8$

Step 2: Combine like terms and get the variable
 $6x - 8 = 6x - 8$
 $-6x \quad -6x$

Step 3: Solve by using inverse operations.
 $-8 = -8$ identity or all R

Example 3: Solve $8(4 - 2x) = 4(3 - 5x) + 4x$.

$$32 - 16x = 12 - 20x + 4x$$

$$32 - 16x = 12 - 16x$$

$$+16x \quad +16x$$

$$32 = 12 \quad \emptyset$$

a. $3(6 - 4x) = -2(6x - 9)$

$$18 - 12x = -12x + 18$$

$$+12x \quad +12x$$

$$18 = 18 \quad \text{identity or all R} \neq 5$$

b. $2(3x + 5) = 5(2x - 4) - 4x$

$$6x + 10 = 10x - 20 - 4x$$

$$6x + 10 = 6x - 20$$

$$-6x \quad -6x$$

$$10 = -20$$

$$\emptyset$$

Solving Multi-Step Equations

At the fair, Hunter bought 3 snacks and 10 ride tickets. Each ride ticket costs \$1.50 less than a snack. If he spent a total of \$24.00, what was the cost of each snack?

$$2000 = 150 + 225(x + 3.50)$$

$$x - 3.50 = 8$$
$$(x + 1.50) = 24$$

Homework:

WS page 157 1-10