Warm Up

9/13

Solve for x:

$$5x - 4 + 2x = 10x + 15 + 2$$

$7x - 4 = 10x + 17$

$-7x \quad -7x$

$-4 = 3x + 17$

$-17 \quad -17$

$\frac{-21}{3} = \frac{3x}{3}$

$-7 = x$

$7x - 4 = 10x + 17$

$+4 \quad +4$

$7x = 10x + 21$

$-7x \quad -7x$

$0 = 3x + 21$

$-21 \quad -21$

$\frac{-21}{3} = \frac{3x}{3}$

$-7 = x$

Solving Equations with Variables on Both Sides. Date_____

Homework Questions?

Solve each eq

1) $7 + 5r + 3 + 5 = 1 + 7r$

$15+5r = 1+7r$
$-1 \quad -1$
$14+5r = 7r$
$-5r \quad -5r$
$\frac{14}{2} = \frac{2r}{2}$
$7 = r$

2) $-4 + 6k + 8k = -4 - 7k$

$-4+14k = -4-7k$
$+4 \quad +4$
$14k = -7k$
$-7k \quad -7k$
$\frac{7k}{7} = \frac{0}{7}$
$k = 0$

3) $8n - 7 = 7n - 14$

$-7n \quad -7n$
$n-7 = -14$
$+7 \quad +7$
$n = -7$

4) $-7b - 14 = -5b - 4b$

$-7b-14 = -9b$
$+7b \quad +7b$
$\frac{-14}{-2} = \frac{-2b}{-2}$
$7 = b$

5) $8 + 7n = 6n + 2n$

$8+7n = 8n$
$-7n \quad -7n$
$8 = n$

6) $2 - 2n - 2n = -5 - 3n$

$2-4n = -5-3n$
$+4n \quad +4n$
$2 = -5+n$
$+5 \quad +5$
$7 = n$

7) $7x = 3x + 4x$

$\frac{7x}{7} = \frac{7x}{7}$ OR $7x = 7x$
$-7x \quad -7x$
$x = x$ $0 = 0$

Infinite Solutions

8) $4 + 7x = 8x - 2x$

$4+7x = 6x$
$-7x \quad -7x$
$\frac{4}{-1} = \frac{-x}{-1}$
$-4 = x$

9) $2 + 7n = -4 + 5n$

$-2 \quad -2$
$7n = -6+5n$
$-5n \quad -5n$
$\frac{2n}{2} = \frac{-6}{2}$
$n = -3$

10) $-7 - 3a = 1 - 4a$

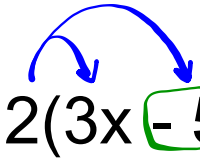
$+7 \quad +7$
$-3a = 8-4a$
$+4a \quad +4a$
$a = 8$

What about this? What's different?

parenthesis!!

$$2(3x - 5) = 8$$

Make sure all numbers and variables are **free** before applying any properties of equality.



$2(3x - 5) = 8$

$6x - 10 = 8$

$+10 \quad +10$

$\frac{6x}{6} = \frac{18}{6}$

$x = 3$

How to check your work:

$x = 3$

$2(3x - 5) = 8$

substitute

$2(3(3) - 5) \stackrel{?}{=} 8$

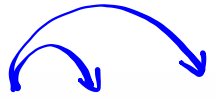
$2(9 - 5) \stackrel{?}{=} 8$

$2(4) \stackrel{?}{=} 8$

$8 = 8$ ✓

If x actually = 3 the equation will be balanced

Practice



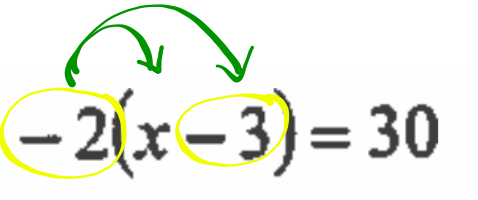
$$2(3a+2)=-8$$

$$6a+4=-8$$
$$-4 \quad -4$$

$$\frac{6a}{6}=\frac{-12}{6}$$

$$a=-2$$

Practice



$-2x+6=30$

$-6 \quad -6$

$\frac{-2x}{-2} = \frac{24}{-2}$

$x = -12$

Practice

$$-|(3k-12)=48$$

$-3k+12=48$

$-12 \quad -12$

$\frac{-3k}{-3} = \frac{36}{-3}$

$k=-12$

Classwork:

1. $18 = 3(3x - 6)$

Classwork:

3. $37 = -3 + 5(x + 6)$

Order of Operations

$37 = -3 + 5(x+6)$

we don't add $-3+5$ first!

Finish up the practice worksheet.

Procedure for solving for x:

- "Free up" all numbers and variables.
  (Remove parenthesis by using the distributive property.)
- Combine like terms (if any) on each side.
- Use properties of equality to isolate x.

Don't forget to:

- Show all work
- Use transformation lines.