Problem of the Day: Simplify. a) -3(2x - 7)
b) $2(4x^2 + 6x - 8)$ c) 5x(3w + 9y - z)

$8x^2+12x-16$ $15xw+45xy-5xz$ $-3(2x-7)$ $-6x+21$

Plan for the Day:
Notes on solving equations with the distributive property
More practice with solving equations with the distributive property
Objective: We will be able to solve equations using the distributive property.
Today is National Dog Day and National Cherry Popsicle Day!!

Like terms - exact same variable with the same exponent but with a different coefficient

Examples:	Non-examples:
3x and -4x	3x and -4y
$2x^2$ and $-8x^2$	$2x^3$ and $-8x^2$
4xy and -7xy	$4x^2y$ and -7xy

$-8 \cdot x \cdot x$ variables exponent exponent

In order to add or subtract, you must have like terms.

When combining like terms, you use the operation that is listed.

You may need to use the distributive property to simplify first.

Example 1: Simplify.
4(3x - 2) + 5(2x + 6)
$12x-8+10x+30$
$22x+22$

Example 2: Simplify.
8(2x - 7) - 3(9x - 1)
$16x-56-27x+3$
$-11x-53$

Steps:

1. Use the distributive property to get rid of the parentheses
2. Combine any like terms
3. Move the number furthest away from the variable first
4. Solve for the given variable
5. Check your answer

Example: 3(2x - 4) - 4x= 48
$6x-12-4x=48$
$2x-12=48$
$+12 \quad +12$
$\frac{2x}{2}=\frac{60}{2}$
$x=30$
$3(2\cdot30-4)-4\cdot30=48$
$168-120=48$
$48=48$ ✓

Example 3: Solve for the given variable.
-1 + 3(-7 + 6n) = -112
$-1-21+18n=-112$
$18n-22=-112$
$+22 \quad +22$
$\frac{18n}{18}=\frac{-90}{18}$
$n=-5$

Example 4: Solve for the given variable.
-7(r + 8) = -84
$-7r-56=-84$
$+56 \quad +56$
$\frac{-7r}{-7}=\frac{-28}{-7}$
$r=4$

$\frac{-7(r+8)}{-7}=\frac{-84}{-7}$
$r+8=12$
$-8 \quad -8$
$r=4$

Example 5: Solve for x.

$-40 = 8(1 - 3x) + 8x$

$-40 = 8 - 24x + 8x$

$-40 = 8 - 16x$

$-8 \quad -8$

$-48 = -16x$

$\frac{-48}{-16} = \frac{-16x}{-16}$

$3 = x$

Example 6: Solve for x.

$22 = 8(x + 8) + 2(-x + 3)$

$22 = 8x + 64 - 2x + 6$

$22 = 6x + 70$

$-70 \quad -70$

$-48 = 6x$

$\frac{-48}{6} = \frac{6x}{6}$

$x = -8$ ✓

1. $6(x - 8) + 7x = -113$

$x = -5$

2. $-182 = -7(1 + 5x)$

$x = 5$

3. $101 = 7x - 8(3 + 4x)$

$x = -5$