

Simplifying Expressions

Warm-Up

Agenda
Warm-Up

Notes

HW (#1-14)

Reminders

Mathbook &
Calculator
form due TMR

Quiz TMR!

Objective

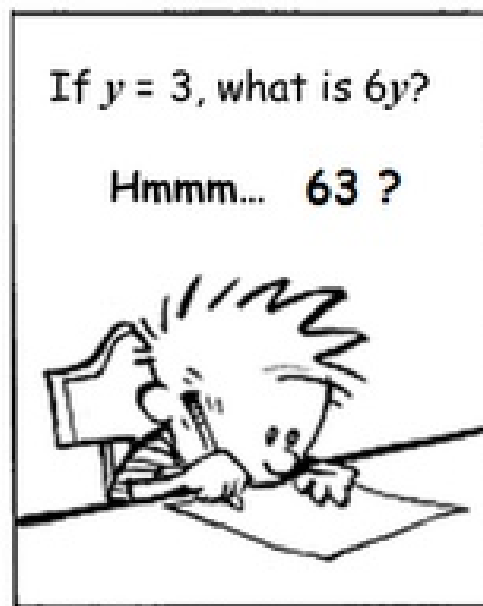
We will identify like
and unlike terms.

So we can combine
like terms and
simplify expressions

On a notecard, write your name.

Explain what process Calvin completed.

Is he correct? Why or why not?



$$6y$$
$$6 \cdot 3$$
$$(6)(3)$$

Practice: Writing Expressions

Homework questions??

Name _____

Date _____

Period _____

Why Did the Cow Keep Jumping Over the Barrel?

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
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Translate each phrase below into an algebraic expression and find your answer in the corresponding answer column. Write the letter of that exercise in the box that contains the number of the answer.

E	3 times a number	18	$x + 3$	S	5 times a number, increased by 8	22	$8(x + 5)$
O	3 more than a number	15	$3x - 8$	A	5 times the sum of a number and 8	4	$8(2x + 5)$
S	3 decreased by a number	19	$x - 3$	H	5 more than 8 times a number	2	$8x + 5$
R	3 less than a number	12	$3x + 8$	O	8 times the sum of a number and 5	13	$2(5x + 8)$
A	one third of a number	3	$3x$	C	Twice the sum of 5 times a number and 8	6	$5x + 8$
I	8 more than 3 times a number	25	$3 - x$	T	2 more than five eighths of a number	20	$5(x + 8)$
N	8 less than 3 times a number	5	$x/3$	W	8 times the sum of twice a number and 5	11	$5/8x + 2$
A	7 less than 4 times a number	1	$7 - 4x$	T	9 meters higher than altitude x	7	$x + 15$
S	7 decreased by 4 times a number	16	$2x - 9$	F	15 meters per second slower than speed x	28	$x + 9$
G	9 less than twice a number	14	$7x + 4$	P	15 degrees hotter than temperature x	26	$4x - 9$
N	9 decreased by twice a number	9	$4x - 7$	O	9 meters shorter than twice length x	23	$2x - 9$
O	9 less than half a number	8	$7x + 4x$	C	9 years older than twice age x	10	$2x + 9$
I	7 times a number, increased by 4	24	$9 - 2x$	H	\$9 cheaper than 4 times price x	17	$x - 15$
R	7 times a number, increased by 4 times the number	27	$x/2 - 9$	M	9 centimeters less than three fourths of length x	21	$3/4x - 9$

1. Which algebraic expression represents 15 less than x divided by 9?

A. $\frac{x}{9} - 15$

C. $15 - \frac{x}{9}$

B. $9x - 15$

D. $15 - 9x$

2. Translate into an algebraic equation: **Two less than the product of five and x is thirteen.**

A. $5(x - 2) = 13$

C. $2 - 5x = 13$

~~B. $5x + 2 = 13$~~

D. $5x - 2 = 13$

$5x - 2 = 13$

3. Raquel earns \$150 per week at Forever 21 plus 15% commission on her total sales. Which of the following could represent an expression for Raquel's total sales?

A. $150 + 0.15x$

C. $0.15 + 150x$

B. $150 + 15x$

D. $15 + 150x$

4. ~~The perimeter of a rectangular wooden deck is 90 feet.~~ The deck's length, l , is 5 feet less than 4 times its width, w . Which expression represents the length of the deck?

A. $L = 5w - 4$

C. $L = 4w - 5$

~~B. $L = 5w + 4$~~

~~D. $L = 4w + 5$~~

$l = 4w - 5$

5. Which verbal expression can be represented by $2(x - 5)$?

A. 5 less than 2 times x

C. 2 multiplied by x less than 5

B. twice the difference of x and 5

D. the product of 2 and x , decreased by 5



2nd selected

3rd FREE

4th selected

5th completion

Writing Expressions p. 8

plug it in (we parentheses)

Evaluate the following expressions for $a=1$, $b=2$ and $c=3$.

PEMDAS

6. $ac - (b + c)$

$$(1)(3) - (2 + 3)$$

$$(1)(3) - 5$$

$$3 - 5$$

$$\boxed{-2}$$

7. $(-\frac{c}{3} + b) - a$

$$(-\frac{3}{3} + 2) - 1$$

$$(-1 + 2) - 1$$

$$1 - 1$$

$$\boxed{0}$$

Simplifying Expressions p. 9

What is the difference between a variable and a term?

Definition

terms of an expression are the parts to be added or subtracted

Characteristics

• **pieces**
• **letters**
• **and/or #s**

Term

• **presidency**

$2x^3$ + x - 5
term term term

Examples

• **school year**

Memory Tool

Definition

number multiplied by a variable

Characteristics

• **BIG #**
• **in front**

Coefficient

2 x^3

Examples

• **"co"efficient**
• **together**

Memory Tool

What would be the coefficient of the term "x" and "-x"?

$2x$ x^3

Simplifying Expressions

Like Terms	Not Like Terms
$2a, 5a, \underline{6a}$	$2a, 5b, \underline{3c}$
$4xy, 0.05xy, \underline{.006xy}$	$4xy, y, \underline{x}$
$z^4, -2z^4, \underline{-5z^4}$	$\underline{3}z^4, \underline{3}z^3, \underline{3z^2}$

State whether the pair of terms are like terms or not like terms.

1. $4xy$ and $-3xy$

like

2. $2s^2$ and $5s$

not
like

3. $-10a$ and $-10b$

not
like

quick write



What makes terms "like"?

EXACT same variables & exponents

Simplifying Expressions

If possible, simplify each expression by combining like terms.

4. $4x + x - 3$

$$5x - 3$$

5. $13x^2 + 4 - 10x^2$

$$3x^2 + 4$$

6. $12x^2 + 6x^4$

simplified

Simplifying Expressions

If I told you that I was going to distribute papers to the class, what do you think that I am going to do?

To simplify the expression $2(x + 4)$ you must distribute the 2 to every term inside the parentheses.

$$\begin{array}{c}
 2(x + 4) \\
 \downarrow \quad \downarrow \\
 2(x) + 2(4) \\
 2x + 8
 \end{array}$$

The Distributive Property Distribute (multiply) the factor outside of the parentheses to each term inside the parentheses. Use arrows.

Simplify

7. $4(a + 7)$ Then evaluate if $a = 5$

$$\begin{array}{c}
 \boxed{4a + 28} \quad 4(5) + 28 \\
 \boxed{48}
 \end{array}$$

8. $-3x(4 + y)$ Then evaluate if $x = 3$ and $y = -6$

$$-12x - 3xy$$

9. $\frac{1}{4}(20ac - 28)$ Then evaluate if $a = 1$ and $c = -2$

Die tomorrow! (wheel spin)

Algebra I - Unit 1: Topic 1 - Simplifying Expressions and Equations

Practice - Simplifying Expressions and Equations

pp. 46-51

Name _____

Date _____

Period _____

Simplify each expression. If it cannot be simplified, write "simplified".

1. $4ab + ab$

2. $-3h^2 - 2h^2$

3. $a^2 + b^2$

4. $a + b + a + c$

5. $6(x + y)$

6. $16m^3 - 10m^2$

7. $-5(2d - 8)$

8. $-(9a + 4)$

9. $5(r + 2) + 7r$

10. $5(c + 4) + 3(d - 8)$

Simplify first, then evaluate if $w = 3$, $v = -2$ and $b = 5$. Circle BOTH answers.

11. $8w - 4(w - 6)$

12. $-3(b + 4) + 6b$

13. The dimensions of a rectangle are $(5x - 5)$ and $(x + 4)$. Write an expression to represent the perimeter of the rectangle in simplest form.

Now, find the Perimeter if $x = 2$. _____

challenge

14. Find the perimeter, in simplest form, of the rectangle in terms of r .

