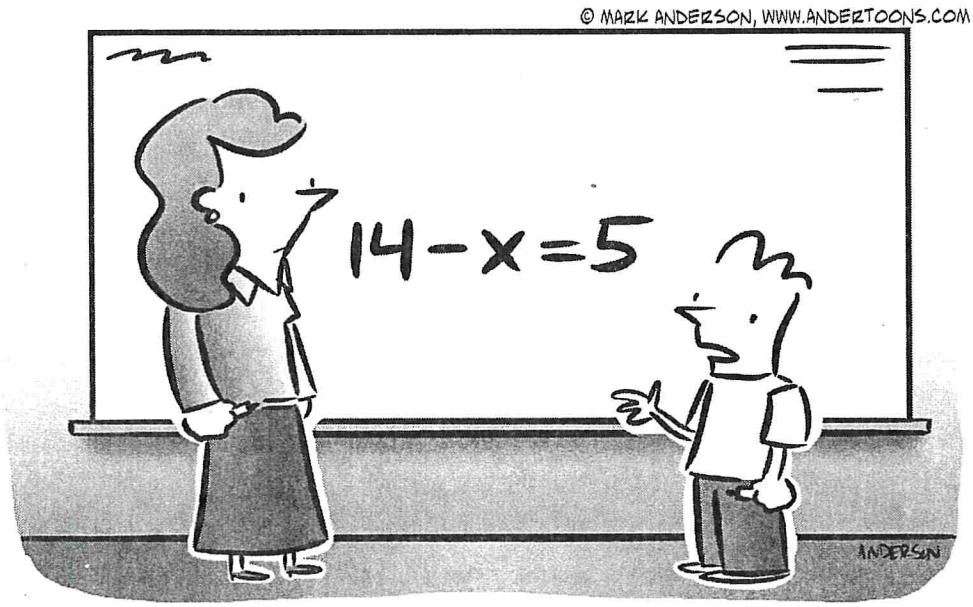
Pre-Algebra & Pre-Algebra Enriched

Unit 2

Expressions, Equations, & Inequalities



"I'm just saying - sooner or later X is going to have to solve these things for itself."

Name _____

Period _____

Objective:

Vocabulary:

Commutative Property

Addition Example:	Multiplication Example:

Associative Property

Addition Example:	Multiplication Example:

Identity Property

Additive Identity	Multiplicative Identity
Example:	Example:

Inverse Property

Additive Inverse	Multiplicative Inverse
Example:	Example:

Example 1: Match the following equations with the property being demonstrated:

____ 1. $9 + (4 + 11) = (9 + 4) + 11$

____ 2. $8 + 0 = 8$

____ 3. $9 + (4 + 11) = (4 + 11) + 9$

____ 4. $17 \cdot 30 = 30 \cdot 17$

____ 5. $19(1) = 19$

____ 6. $y + xz = xz + y$

____ 7. $2\ (3 \cdot 4) = (2 \cdot 3) \cdot 4$

____ 8. $st + v = ts + v$

____ 9. $-4 + 0 = -4$

____ 10. $80\ (9) = 9\ (80)$

A. Commutative Property of Addition
B. Commutative Property of Multiplication
C. Associative Property of Addition
D. Associative Property of Multiplication
E. Additive Identity
F. Multiplicative Identity

Example 2: Miss Collins is going shopping. She needs to buy a new bottle of shampoo for $4, a bag of dog food for $26, and a book for the beach for $14. Show two different methods to figure out her total using the Associative Method.

Way #1

Way #2

Example 3: Use mental math to simplify each expression. Use mental math to simplify. Think about how to best group the numbers to simplify.

a) $(98 + 3) + 2$

b) $(20 \cdot 16) \cdot 5$

Example 4: Suppose you buy snacks costing $0.45, $0.65, and $1.55. Use mental math to find the cost of these snacks. Think about how to best group the numbers to simplify.

Name_____ Date_____

Properties of Real Numbers – Practice A

Match each expression with one of the properties shown.

1. _____ $11 + 0 = 11$
2. _____ $x \times (y \times z) = (x \times y) \times z$
3. _____ $8 + (-8) = 0$
4. _____ $14 + 20 = 20 + 14$
5. _____ $2 \times \frac{1}{2} = 1$
6. _____ $22 \times 1 = 22$
7. _____ $(19 + 12) + 8 = 19 + (12 + 8)$
8. _____ $a \times 9 = 9 \times a$
9. _____ $7(4 + 11) = 7(4) + 7(11)$

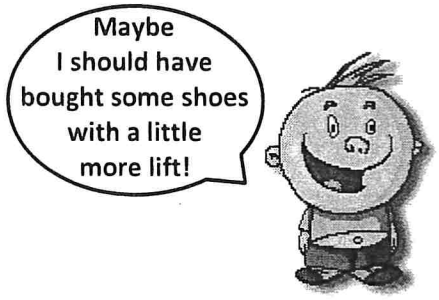
a. commutative property of addition
b. commutative property of multiplication
c. associative property of addition
d. associative property of multiplication
e. additive identity
f. multiplicative identity
g. distributive property
h. additive inverse
i. multiplicative inverse

Use the properties of real numbers to help simplify each expression mentally.

10. $(19 + 15) + 5 =$ _____
11. $-3 + (23 + 48) =$ _____
12. $\$9.50 + \$11.49 + \$0.50 =$ _____
13. $(9 \cdot 25) \cdot 4 =$ _____
14. $(-0.50 + 9.89) + 0.50 =$ _____
15. $6 \times 8 \times 5 =$ _____

16. Mental Math Sparky went shopping at *Wally World* and bought a pair of socks for \$2.50, a pair of jeans for \$14.95, and some shoes for \$12.50. How much did Sparky spend during his shopping spree?

_____



Properties of Real Numbers

Name _____
Period _____

Name the correct property by writing the LETTER on the line.

1) $7 + 3 = 3 + 7$ _____

2) $4(2 + 3) = 8 + 12$ _____

3) $10(1) = 10$ _____

4) $5 + (-5) = 0$ _____

5) $(6 + 7) + 3 = 6 + (7 + 3)$ _____

6) $(-5)(-3) = (-3)(-5)$ _____

7) $-3 + 0 = -3$ _____

8) $15(\frac{1}{15}) = 1$ _____

9) $25 + 59 + 75 = 59 + 75 + 25$ _____

10) $(73 \cdot 25) \cdot 4 = 73 \cdot (25 \cdot 4)$ _____

11) $50 + (50 + 48) = (50 + 50) + 48$ _____

12) $(1)(-275) = -275$ _____

13) $19(2 + 1) = 38 + 19$ _____

14) $-13 + 13 = 0$ _____

15) $5 \cdot 2 = 2 \cdot 5$ _____

16) $5 + 0 = 5$ _____

17) $-6 + 6 = 0$ _____

18) $(23 + 50) + 50 = 23 + (50 + 50)$ _____

19) $4(\frac{1}{4}) = 1$ _____

20) $7(1) = 7$ _____

A. Commutative Property of Addition

B. Commutative Property of Multiplication

C. Associative Property of Addition

D. Associative Property of Multiplication

E. Additive Identity

F. Multiplicative Identity

G. Additive Inverse

H. Multiplicative Inverse

I. Distributive Property

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Properties Extra Practice

Name _____
Period _____

Name the correct property by writing the LETTER on the line.

1) $94 + 7 = 7 + 94$ _____

2) $-2(4 + 9y) = -8 - 18y$ _____

3) $1 \cdot 5m = 5m$ _____

4) $4 \cdot (r \cdot s) = (4 \cdot r) \cdot s$ _____

5) $38 + 0 = 38$ _____

6) $xy + z = yx + z$ _____

7) $4a + 9b = 9b + 4a$ _____

8) $5(m + n) = 5(n + m)$ _____

9) $6x + (9y + 13z) = (6x + 9y) + 13z$ _____

10) $13r + 13s = 13(r + s)$ _____

A. Commutative Property of Addition

B. Commutative Property of Multiplication

C. Associative Property of Addition

D. Associative Property of Multiplication

E. Additive Identity

F. Multiplicative Identity

G. Additive Inverse

H. Multiplicative Inverse

I. Distributive Property

Objective:

Vocabulary:

	Definition	Example
Distributive Property		

Example 1: Use the distributive property to simplify.

a) $9(8y + 2)$

b) $-4(5m + 6)$

c) $-8(-3 + y)$

d) $(7y - 3)(2)$

e) $11(5a - 6b + 1)$

f) $\frac{1}{2}(4x + 12)$

g) $7(x - 3y + z - 4)$

h) $-(9 - 3x)$

i) $(6y - 12)(-3)$

Example 2: A ski resort makes snow using a snow fan that costs $250 per day to operate. It also has a lift that has a daily operation cost of $450. Write and simplify an expression that represents the cost to run both the fan and lift for a week.

Example 3: Charlie simplifies the expression as follows. Explain and correct his error:

$$-5(7x + 6y - 9) = -35x + 6y - 9$$

Distributive Property

Name _____
Period _____

Use the distributive property to simplify.

1) $3(x - 8) =$ _____

2) $4(y + 12) =$ _____

3) $10(z - 9) =$ _____

4) $5(3a + 4b) =$ _____

5) $-6(2r + 4t + 7u) =$ _____

6) $-(x + 7y - z) =$ _____

7) $-4(g - 3h - 5m) =$ _____

8) $-3(4a + 9b - 6c) =$ _____

9) $3(2f - 7g + 4h) =$ _____

10) $-4(5r + 3s - 6t) =$ _____

11) $-2(-5m + 2n - 6p) =$ _____

12) $-7(2a - 6b - 8c) =$ _____

13) $-8(-5t + 7u - 3v) =$ _____

14) $-(2f - 4g + 3h) =$ _____

15) $-7(9x + 5y + 4z) =$ _____

Distributive Property

Name _____
Period _____

Simplify by distributing.

1) $3(2x-4)$ _____

2) $5(5a+3b-8c)$ _____

3) $7(6g+4h-3j+5)$ _____

4) $10(2w-x-5y+3z+9)$ _____

5) $6(2x-3y+7)$ _____

6) $-5(4x-2y+z)$ _____

7) $-9(-4a+3b+7c-2)$ _____

8) $7(4p-2q-8r+1)$ _____

9) $-8(9r+2s-8t-7)$ _____

10) $-(-5a+2b-8c+9)$ _____

11) $12(4x-9y+12z-25)$ _____

12) $-15(8a-12b+15c-d+4)$ _____

13) $5(2a-4b+7c-1)$ _____

14) $-3(2r+5s-9t-u)$ _____

15) $-6(-4w+9x-4y-z+7)$ _____

Objective:

Vocabulary

	Definition	Examples
Term		
Constant		
Like Terms		
Coefficient		
Simplest Form (algebraic expression)		

Example 1: Identify the terms and like terms in each expression.

a) $9x - 2 + 7 - x$

b) $2r^2 + 7r - r^2 - 9$

Example 2: Name the coefficients, like terms, and constants in: $6 + s - 42 - 5s + 8s^2$

Coefficients: _____

Like Terms: _____

Constants: _____

Example 3: Write the expression from Example 2 in **descending order**.

$6 + s - 42 - 5s + 8s^2$

Example 4: Use the following expression: $2x^3 - 9 - 4x^2 + 18x^2 + 3x + 6x^3 - 7x + 11$

a) Name the coefficients, like terms, and constants in the following:

Coefficients: _____

Like Terms: _____

Constants: _____

b) Simplify by combining the like terms and writing in **descending order**.

Example 5: Simplify:

a) $7x + y - 2x - 7$

b) $9 + 4f + 3 + 2f$

c) $2b + b - 4$

d) $(7 - 3x)5 + 20x$

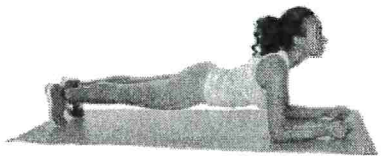
e) $3x^2 + x + 15 - 7x^2 + 9x^3 - 42 - 13x - 8x$

Example 6: Simplify. (Make sure your answer is in **descending order**.)

$20d - 5(4d + 11 - 3) + 18 - 34d + 16d^2$

Example 7: An exercise mat is 3 times as long as it is wide.

a. Write an expression in simplest form for the perimeter of the mat.



b. Find the perimeter when the width is 3ft.

Name _____ Date _____

Lesson 3.1

Enrichment and Extension

Matching

Simplify the expressions on the left by using the Distributive Property and combining like terms. Then, match it to an equal expression on the right by writing the letter of the correct answer on the line.

_____ **1.** $6x + 2x$	**a.** $8x$
_____ **2.** $14x - 12 - x - 3$	**b.** $\frac{1}{2}x + 1$
_____ **3.** $-5x + 14 - x - 2$	**c.** $13x - 15$
_____ **4.** $-3 - 5x - 3x + 11x + 3$	**d.** $2x + 11$
_____ **5.** $-2(-5 - x) + x - x + 1$	**e.** $2x$
_____ **6.** $\frac{1}{2}(12) + 4x - (x - 1)$	**f.** $6x^2 + x - 27$
_____ **7.** $6(x^2 - 2) + 1 - 16 + x$	**g.** $3x$
_____ **8.** $4(\frac{1}{2}x + 4) + 1 - 16 + x$	**h.** $3x + 1$
_____ **9.** $5(x^2 + x)$	**i.** $3x + 7$
_____ **10.** $x + (1 - \frac{1}{2}x)$	**j.** $-6x + 12$
_____ **11.** $x^3 + x^2 + x + x - x^2 - x^3$	**k.** $5x^2 + 5x$

12. Write an expression containing x-terms and constants. The x-terms should combine to $7x$ and the constants should sum to 13.

13. Write an expression containing x^2-terms, x-terms and constants. The x^2-terms should combine to $-2x^2$ the x-terms should subtract to $3x$, and the constants should sum to 3.

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Name _____ Date _____

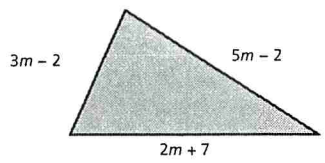
Lesson 3.2 Extra Practice

Find the sum.

1. $(p - 3) + (p - 7)$
2. $(3n - 1) + (4 - n)$
3. $(-3r + 8) + (5r - 1)$
4. $6(x - 3) + (2x - 9)$
5. $(3c + 2) + 4(1.3c - 5)$
6. $\frac{1}{2}(6x - 10) + \frac{1}{3}(6 + 9x)$
7. After a week of rain, tadpoles appeared in your pond. After t minutes, you have $(7t + 5)$ tadpoles and your friend has $(8t - 3)$ tadpoles.
   a. Write an expression that represents the number of tadpoles you and your friend caught together.
   b. Who has more tadpoles after 9 minutes?

Find the difference.

8. $(k + 3) - (3k - 5)$
9. $(-6d + 2) - (7 + 2d)$
10. $(3x + 8) - 6(2.5x - 3)$
11. $\frac{1}{2}(12w + 8) - \frac{1}{5}(10w - 5)$
12. The admission to a local fair is \$10.00 for each adult and \$6.00 for each child. Each ride costs \$1.50 for an adult and \$1.00 for a child.
   a. Write an expression that represents how much more an adult will spend at the fair.
   b. An adult and a child each go on 7 rides. How much more did the adult spend?
13. Write an expression that represents the perimeter of the triangle.



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Name _____ Date _____

3.2 Puzzle Time

Write the letter of each answer in the box containing the exercise number.

1. $(x + 10) + (x - 14)$

2. $(9 - 2x) + (6x + 4)$

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

4. $(2x - 7) + 5(x - 3)$

5. $6(-2.3x - 5) + (4x + 11)$

6. $(8 - 2x) + 3(4.5x + 9)$

7. $\frac{1}{2}(8 - 4x) + \frac{1}{3}(9x - 6)$

8. $-\frac{3}{4}(3x + 7) + \frac{1}{4}(12x + 20)$

Find the difference.

9. $(-3x + 8) - (x + 10)$

10. $(5x + 4) - (1 - 2x)$

11. $(3 - 4x) - 3(2.4x - 7)$

12. $(4x - 8) - 4(-6.5x + 5)$

13. $\frac{1}{9}(-9x + 18) - \frac{1}{5}(10 + 15x)$

14. $\frac{4}{7}(4x + 3) - \frac{1}{7}(9x + 5)$

15. $\frac{1}{2}(-4x + 8) - \frac{1}{4}(8x - 12)$

Answers

U. $-4x - 2$

P. $30x - 28$

T. $-9.8x - 19$

E. $x + 2$

I. $2x - 4$

L. $67x + 70$

H. $-11.2x + 24$

Y. $7x - 22$

I. $4x + 13$

U. $\frac{3}{4}x - \frac{1}{4}$

G. $x + 1$

L. $-4x + 7$

Y. $11.5x + 35$

F. $-4x$

M. $7x + 3$

O. $-x - 15$

16. Your class project involves recycling aluminum cans. After x weeks, your class has $(13x + 50)$ aluminum cans. The class goal is to collect $(80x + 120)$ aluminum cans. How many more aluminum cans does your class need to collect?

What Did The Candle Say To The Match?

6	3	9		16	2	14	11	5		8	12		10	4		15	1	13	7

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Like Terms Worksheet #1

Name _____
Period _____

Simplify by combining like terms.

1) $5x + 7x$

2) $3a + 12a$

3) $9d - 6d$

4) $t + 15t$

5) $5b + 3b + 4b$

6) $10x - 6x$

7) $6z + 10 + 3z$

8) $k + 23k$

9) $7 + 14n + 3n$

10) $6y + 9 - y$

11) $7m - 7 + 2m$

12) $8t - 8s + t$

13) $5m + 8m - 3t$

14) $11a + 7b + 3b$

15) $22x + 17x - 2x$

16) $25 + 6w + 8w$

17) $17x + 28x - 7x$

18) $28a + 37a + 2a$

19) $14x - 3 - 3x$

20) $6x + 9 - 6x$

21) $13a + 9a + 7a$

22) $9a - 5 - 5a$

23) $15k - k + 8$

24) $98m - 25m + 2m$

25) $6a + 12 + 3a$

26) $6(a + 2) + 3a$

27) $3(2x - 5) - 2x$

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Like Terms Worksheet #2

Name _____
Period _____

Simplify the following expressions by collecting like terms.

1) $3x+7y+8x+3y$

2) $5a-6b+7c-2a+10b+2c$

3) $-4a+3b-4c+9+7a-b-10$

4) $2y+32y-14y-5y$

5) $-3b+7b-2b-b$

6) $5a+6a-2a-7a-a$

7) $3x^2+6x^2-12x^2+x^2$

8) $2x^2+8x-7+5x^2-3x+12$

9) $6a-7b-3c+5a+5b+5c$

10) $4x+7x-8-9x+12+3+3x$

11) $2(x-1)-3$

12) $5(3x+4)+7$

13) $4+2(1-x)+3x$

14) $-2(2x+1)+2$

15) $-3(4-2x)-1-2x$

16) $2a-(3-a)$

17) $3(2a-4)+4(5a+3)$

18) $2(4c-2a)+5(2a-3c)$

19) $5(2w-5)-3(2w-7)$

20) $3(7t-4)-2(9t-5)$

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Combining Like Terms Worksheet

Name _____
Period _____

Simplify each expression below by combining like terms.

(1) $5x + 2 + 3x$

(2) $3 + 7x + 8$

(3) $9 + 6x + 2x$

(4) $4x + 7 + 4$

(5) $9x + 3 + 7x + 4$

(6) $x + 3x + 6$

(7) $4x^2 + 7 + x^2$

(8) $3z + 6u + 8x + 9 + u$

(9) $z + 6 + 4z + 9 + 8u$

(10) $2x + 8z + 3u + 6z + 4u$

(11) $4y + 3x + 2y + 9x + 4$

(12) $5x + 8 + 3y + 2x + 8y$

(13) $2t^2 + 8 + t^2 + 7$

(14) $3t + v + t + 7v$

(15) $1 + 8x + 3y + x + 9y$

(16) $4x + 5x^2 + 5x + 10x^2$

Simplifying Expressions

Name _____
Period _____

Simplify each expression.

1) $3a+5b-8c+6a-2c-9a+7b$ _____

2) $-7d+2e-9f+2d-3d-9e+2f$ _____

3) $4(3r-2t)+7(t-2r)$ _____

4) $2(2a-5b+3c)-3(2a-3b-6c)$ _____

5) $-5(5t-3u)-2(3t+5u)+3(t+u)$ _____

6) $5x+2y-7x+10y-x$ _____

7) $7a-2b-c-8a+4b+6c$ _____

8) $3(3a-2b)+5(3b+a)$ _____

9) $3(4x-3y)+2(y+4z)+7x-5y$ _____

10) $4(2a-3b)+3(-2a-2b)$ _____

11) $4a-2b+3c+2(3b-2c-a)$ _____

12) $-2(4a-2b+3c)+3(4a-b+2c)$ _____

13) $4t-2u+3v-w+6u-5w+4t-10v$ _____

14) $3(6a-2b)+2(4b-2c)-2(a-3c)$ _____

15) $x^2-3x+6+7x-12+2x^2-3x-9+x$ _____

16) $6a-5b+2a-3c+2b-10a+10c$ _____

17) $3(4x-2y)+2(4y-2z)$ _____

The Distributive Property
Additional Practice

Name _____
Period _____

Simplify by distributing and collecting like terms. Show your work!

1.) $3(4x + 6) + 7x$

2.) $7(2 + 3x) + 8$

3.) $9 + 5(4x + 4)$

4.) $12 + 3(x + 8)$

5.) $3(7x + 2) + 8x$

6.) $3(4x^2y^3 + 2x^2) + 4(2x^2 + 3x^2y^3)$

7.) $6m + 3(2m + 5) + 7$

8.) $5(m + 9) - 4 + 8m$

9.) $3m + 2(5 + m) + 5m$

10.) $6m + 14 + 3(3m + 7)$

11.) $4(2m + 6) + 3(3 + 5m)$

12.) $2(1x^3y + 5x^2 + 3xy) + 3(4xy + 2x^2 + 5x^3y)$

Sections 3.1- 3.3 Extra Practice Worksheet

Name _____
Period _____

Simplify each expression. Make sure your answers are in descending order!

1) $6m+5n+2-5m+3n+8-4(-3m)$

2) $2(-5a-3b+3)-(8a+9b+c-8)$

3) $-(2a-9b-3c-8)-(-2c-5b-4)-12$

4) $(2x+5y+4)-2(x-y-1)-2(-3x)$

5) $2(-6x+5y-2)-3(-4x+y-8)-2(4x)$

Variable Expressions Extra Practice Name _____

Given the expressions below, calculate $A + B$ and $A - B$.

	$A + B$	$A - B$
(1) A: $2x + 5$ B: $5x - 3$		
(2) A: $13x - 2$ B: $-3x + 3$		
(3) A: $-4x + 5$ B: $-2x + 6$		

Given the expressions below, calculate $A + 2B$ and $2A - B$.

	$A + 2B$	$2A - B$
(4) A: $-x + 3$ B: $x + 9$		
(5) A: $4x - 2$ B: $4x + 2$		
(6) A: $-2x - 3$ B: $x - 3$		

Variable Expressions Extra Practice 2 Name _____

Given the expressions below, calculate $A + B$ and $A - B$.

	$A + B$	$A - B$
(1) A: $4x - 9$ B: $2x + 10$		
(2) A: $-2x - 7$ B: $-x + 6$		
(3) A: $-5x + 9$ B: $4x + 13$		

Given the expressions below, calculate $2A + 3B$ and $3A - B$.

	$2A + 3B$	$3A - B$
(4) A: $-5x + 12$ B: $4x - 10$		
(5) A: $6x - 2$ B: $-3x + 5$		
(6) A: $-3x - 7$ B: $3x - 8$		

Objective:

Vocabulary

	Definition	Examples
Inverse Operations		

Subtraction Property of Equality	Addition Property of Equality

Our goal when solving equations is to _____ the variable!

Example 1: Solve each equation.

a) $y + 5 = 13$

b) $c - 23 = -40$

c) $15 + p = 62$

d) $-28 + k = -5$

e) $x - 9 = -13$

f) $y - 18 = 23$

Example 2: A skydiving company has a profit of $750 this week. This profit is $500 more than the profit *P* last week. Which equation can be used to find *P*?

A. $750 = 500 - P$

B. $750 = P + 500$

C. $500 = P - 750$

D. $500 = P + 750$

HINT: Translate word by word - The profit this week is $500 more than the profit last week.

Example 3: Francine is having a bake sale. She starts with 98 cookies. At the end of the sale, she has 13 cookies left unsold.

a. Write an equation to model this scenario.

b. How many cookies did Francine sell in all?

Example 4: Find the value of $3x + 2$ when $7 + x = 5$.

Example 5: Find the value of $7x - 4$ when $x - 8 = -11$

Name _____ Date _____

Lesson 4.1 Reteach

Solve the equation. Check your solution.

1. $x - 3 = 14$

2. $f + 6 = 9$

3. $t + 1 = -8$

4. $y + 10 = 45$

5. $g - 12 = -36$

6. $3.5 = m + 1.2$

7. $q - 11.4 = 6.2$

8. $b + \frac{2}{3} = 4\frac{1}{3}$

9. $w - 2\frac{4}{5} = 5\frac{1}{5}$

10. $27 = n + 7$

11. $15.8 = z - 4.1$

12. $6.7 + j = 19.9$

Write the word sentence as an equation. Then solve the equation.

13. 25 is 9 more than a number x.

14. The difference of a number p and 7 is 13.

15. 45 less than a number m is -78.

16. A number y minus 8 is 23.

17. The sum of a number r and 10 is -2.

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One-Step Equations Worksheet Name _____
Period _____

Solve each equation.

1. $x + 5 = 9$	2. $a + 12 = 16$	3. $c + 8 = 17$
4. $y - 4 = 3$	5. $x - 7 = 5$	6. $b - 1 = 21$
7. $f + 7 = 12$	8. $g + 2 = 19$	9. $t + 11 = 15$
10. $s - 12 = 10$	11. $c - 16 = 8$	12. $a + 15 = 16$
13. $x + 4 = -5$	14. $y + 3 = -12$	15. $m + 4 = -10$
16. $b + 7 = 3$	17. $a + 9 = 4$	18. $x + 5 = 2$
19. $c - 9 = -16$	20. $x - 7 = -11$	21. $s - 13 = -20$
22. $y - 13 = -5$	23. $x - 9 = -2$	24. $y - 7 = -8$
25. $5 + x = 12$	26. $-8 + s = 10$	27. $-4 + z = -14$
28. $7 = c - 8$	29. $9 = a - 4$	30. $-6 = b + 7$

31. $-5 = x - 4$	32. $-12 = y - 15$	33. $-20 = s - 10$
34. $6 = -7 + x$	35. $3 = -9 + z$	36. $8 = 12 + p$
37. $5 = -12 + b$	38. $-10 = 10 + f$	39. $7 = 9 + h$
40. $-8 = 4 + x$	41. $-3 = -6 + g$	42. $2 = -3 + b$
43. $-12 = -5 + c$	44. $-7 = -7 + a$	45. $-2 = 9 + s$
46. $6 = -7 + x$	47. $-4 = -3 + y$	48. $-12 = 5 + z$

Name _____ Period _____ Date _____

Solving One-Step Equations 1

You must show your work to get credit!! Check your answer.

Adding and Subtracting

1) $y+6=20$

2) $x-10=12$

3) $12+z=15$

4) $2+n=16$

5) $a+4=14$

6) $m-5=-10$

7) $4+b=30$

8) $10+c=25$

9) $x-60=20$

10) $g-16=4$

11) $x-15=-20$

12) $w+14=10$

13) $r-18=27$

14) $13+k=25$

15) $f-16=34$

16) $j+17=19$

17) $r-16=5$

18) $9+t=56$

Objective:

Division Property of Equality	Multiplication Property of Equality

Our goal when solving equations is to _____ the variable!

Example 1: Solve each equation.

a) $-2v = -24$ b) $\frac{p}{8} = -5$ c) $\frac{d}{7} = 5$ d) $-1045 = 5c$

e) $-a = -24$ f) $3 = 1.5x$ g) $7x = 49$ h) $\frac{x}{2} = -8$

i) $\frac{2}{3}y = 12$ j) $-\frac{4}{5}x = -8$ k) $-14 = \frac{2}{3}z$ l) $\frac{1}{7}k = 11$

Example 2: Describe the inverse operation that will undo the given operation.

a) subtracting 12 b) dividing by 8 c) multiplying by -5

Example 3: You make a profit of $0.75 for every bracelet you sell. Write and solve an equation to determine how many bracelets you must sell to earn enough money to buy a pair of soccer cleats that cost $36.

Let b = _____

Example 4: Tyler has $11.25. How many carnival rides can he go on if each ride costs $1.25? Write and solve an equation to find your answer.

Let r = _____

Example 5: The perimeter of a square is 56 cm. What is the length of each side of the square? Write and solve an equation to find your answer.

Let s = _____

Name _____ Date _____

Lesson 4.2

Extra Practice

Solve the equation. Check your solution.

1. $4b = 24$
2. $-7n = 35$
3. $\frac{y}{-3} = 33$
4. $\frac{p}{5} = -32$
5. $-3t = -4.2$
6. $1.5q = -8.4$
7. $\frac{1}{5}d = -3$
8. $14 = 3y$
9. $\frac{g}{2.1} = -6.8$
10. $-\frac{3}{5}a = 2$
11. $\frac{k}{-9} = -\frac{1}{3}$
12. $\frac{5}{8}j = -10$

In Exercises 13 and 14, write the word sentence as an equation. Then solve the equation.

13. A number multiplied by $\frac{1}{2}$ is $-\frac{5}{12}$.

14. The quotient of a number and 0.2 is -2.6.

15. You earn \$7.50 per hour at a fast food restaurant. You earned \$123.75 last week. How many hours did you work last week?

16. You are in a room with other students and are asked to get in groups of 3. When finished, there are 21 groups of 3. How many students are in the room?

Infinite Algebra 1

Name_____

One-Step Equations

Date_____ Period____

Solve each equation.

1) $26 = 8 + v$

2) $3 + p = 8$

3) $15 + b = 23$

4) $-15 + n = -9$

5) $m + 4 = -12$

6) $x - 7 = 13$

7) $m - 9 = -13$

8) $p - 6 = -5$

9) $v - 15 = -27$

10) $n + 16 = 9$

11) $-104 = 8x$

12) $14b = -56$

13) $-6 = \frac{b}{18}$

14) $10n = 40$

15) $\frac{v}{8} = 2$

16) $16 = \frac{k}{11}$

17) $-15x = 0$

18) $-17x = -204$

19) $21 = -7n$

20) $\frac{m}{4} = -13$

21) $-126 = 14k$

22) $-143 = -11x$

23) $-16 + x = -15$

24) $-5 = \frac{a}{18}$

25) $-17 = x - 15$

26) $n - 8 = -10$

27) $\frac{v}{7} = 8$

28) $a + 11 = 20$

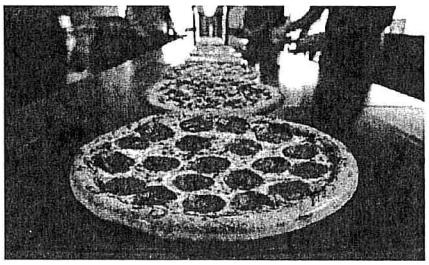
29) $-7 + m = 8$

30) $18 + m = 8$

Objective:

Introductory Problem (See if you can solve this on your own!)

Four friends each purchase a large beverage and share a $9 pizza. The total bill before tax is $16. What is the cost of each beverage?



Now, think about what you did to find the price of each drink.
In general, to solve a two-step equation...

1.

2.

Our goal when solving equations is to _____ the variable!

Example 1: Solve each equation.

a) $2x + 12 = 4$

b) $9 = 3x - 12$

c) $-3x + 5 = 2$

d) $\frac{x}{8} - \frac{1}{2} = -\frac{7}{2}$

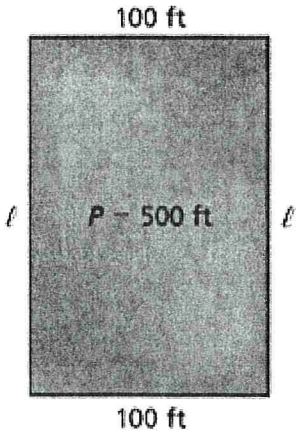
e) $\frac{m}{2} + 6 = 10$

f) $-5c + 9 = -16$

Example 2: Write and solve a two-step equation.
You have $9.25. How many games can you bowl if you rent shoes?

Example 3: Write and solve a two-step equation.
You install 500 feet of invisible fencing along the perimeter of a rectangular yard. The width of the yard is 100 feet. What is the length of the yard?

HINT: $P = 2l + 2w$



Example 4: Solve each equation by combining like terms before solving.

a) $3y - 8y = 25$

b) $4 - 2y + 3 = -9$

c) $7x - 10x + 3 = 15$

d) $-8d - 5d + 7d = 72$

Solving Equations #1

Name _____
Period _____

Solve each one-step or two-step equation.

1) $x+3=5$

2) $6+x=9$

3) $a-4=6$

4) $9=r-1$

5) $3x=15$

6) $8=-2d$

7) $\frac{x}{5}=10$

8) $-2=\frac{c}{-4}$

9) $\frac{3}{8}a=-15$

10) $4x-5=7$

11) $6y-14=10$

12) $3t-3=24$

13) $2d-8=22$

14) $7n-12=16$

15) $2x=5+3$

16) $2x+4=10$

17) $5b+3=8$

18) $6d+5=17$

19) $\frac{x}{3}+4=2$

20) $25=8c+1$

21) $16=7y+9$

22) $\frac{w}{5}-2=-3$

23) $\frac{2}{3}z-3=5$

24) $\frac{1}{2}y-5=-8$

25) $26=3w+5$

26) $33=8+5b$

27) $18=6+3y$

28) $9=7x-5$

29) $7=9y-2$

30) $3p-5=4$

31) $7-2x=11$

32) $-5=4-\frac{3}{5}z$

Solving Equations #2

Name _____
Period _____

Solve each two-step equation.

1) $3x+7=10$

2) $4a-20=20$

3) $2x-9=-13$

4) $14w+6=-8$

5) $6y-13=20$

6) $\frac{b}{2}+10=12$

7) $\frac{a}{3}-4=5$

8) $15-4b=7$

9) $\frac{r}{3}-9=-12$

10) $5d+12=-3$

11) $6=9x+9$

12) $4x-\frac{1}{2}=\frac{3}{2}$

13) $10=3x+15$

14) $3x+1=17$

A1

15) $3d-8+2d=22$

16) $3x+5=35$

17) $5a+17=47$

18) $4x-1=15$

19) $3y-5=16$

20) $55=6a+7$

21) $17=8c-4$

22) $15x+14=19$

23) $75=11+2x$

24) $14=12b+8$

25) $8=18c-1$

26) $11=15t+1$

27) $11=16d-1$

28) $\frac{3}{8}a+2=14$

29) $\frac{4}{9}c-1=-19$

30) $45=\frac{7}{8}d+3$

Solving Equations #3

Name _____
Period _____

Solve each two-step equation.

1) $6x+4=28$

2) $3a+1=-8$

3) $7w-5=-19$

4) $8b-5=35$

5) $37=-5c+2$

6) $-21=-9b+6$

7) $35=9m-10$

8) $\frac{r}{5}-1=7$

9) $\frac{n}{-6}-4=6$

10) $\frac{x}{6}-6=-32$

11) $4c-2=-10$

12) $-28=12+2a$

13) $4x+3=7$

14) $3n-8=10$

15) $2n+15=5$

16) $\frac{n}{4}+14=20$

17) $56=-9x+2$

18) $8b-15=-3$

19) $42=-6x-12$

20) $15w+15=4$

21) $-12x-21=15$

22) $8+\frac{n}{3}=28$

23) $8=-\frac{2}{3}a-2$

24) $\frac{3}{4}b+5=-1$

25) $6-3w=3$

Solving Equations Worksheet

Name _____
Period _____

Solve each equation. Show your work!

1) $8x = 16$

2) $-2 = \frac{x}{9}$

3) $\frac{x}{-5} = 1$

4) $9 + x = 6$

5) $48 = -8y$

6) $-2 = \frac{k}{6}$

7) $\frac{y}{-8} - 4 = -7$

8) $-10x + 8 = 28$

9) $-4x + 26 = 30$

10) $-5x - 26 = 9$

11) $\frac{y}{4} + 8 = 5$

12) $6 = \frac{k}{-6} - 1$

13) $-9 = 3 + 2x$

14) $8x + 43 = 3$

15) $\frac{x}{-3} - 19 = -11$

16) $-20 = -11 + \frac{k}{2}$

17) $27 = -13 - 12k$

18) $12 - \frac{k}{11} = 16$

19) $22 = 12 - \frac{y}{6}$

20) $-2 - \frac{x}{8} = 0$

Objective:

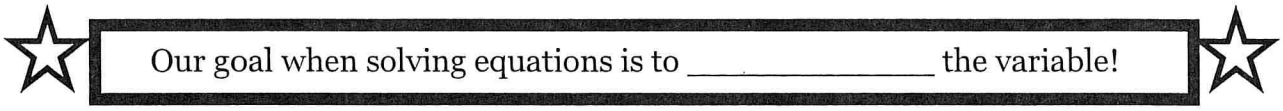
To solve a multi-step equation...

1.

2.

3.

4.



Example 1: Solve each equation.

a) $4(2q - 7) = -4$

b) $44 = -5(r - 4) + r$

c) $38 = -3(4y + 2) + y$

d) $8x - 6x - 25 = -35$

e) $-8(x + 1) + 2x = -32$

f) $19 = 9 + 2(4x - 11)$

Example 2: The sum of three consecutive integers is 42. Write and solve an equation to find the integers.
*You MUST write an equation!

Example 3: Write the sentence as an equation, then solve:
2 more than 3 times a number x is 17.

Example 4: Find each angle measure in the figure. Use an equation to find your answer. (HINT: the sum of all the angles in a triangle is 180°)

Example 5: Find the number x of action figures that a small business needs to produce on Friday so that the mean number of action figures produced per day is 50.

Day	Action Figures
Monday	55
Tuesday	45
Wednesday	53
Thursday	44
Friday	x

Name _____ Date _____

Topic 1 Extra Practice

Solve the equation. Check your solution.

1. $8y - 7 = 9$

2. $14 - 3m = -1$

3. $30 + 2k + 5k = 100$

4. $z + (z - 6) - 2 = -10$

5. $3.2x - 1.7x + 5.5 = 10$

6. $\frac{3}{4}x - \frac{1}{4}x + 14 = 3$

7. $3(a - 2) = 36$

8. $2(8 + p) = 22$

9. $3(2x + 1) + x = -39$

10. $m + 4(2m - 3) = -3$

11. A rope 25 feet long is cut into 3 pieces. The first piece is $2x$ feet long, the second piece is $5x$ feet long, and the third piece is 4 feet long.

a. Write and solve an equation to find x.

b. Find the lengths of the first and second pieces.

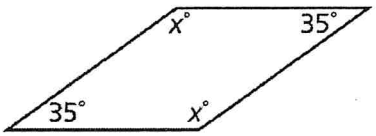
12. The average of your 3 quiz grades is 17 points. Two of your quiz grades are 14 points and 19 points. Write and solve an equation to find the score of your third quiz.

13. The cost C (in dollars) of making n feet of cabinet is represented by $C = 18n + 45$. How many feet of cabinet are made when the cost is \$441?

14. At the movies, you order 3 boxes of popcorn and a bottle of water. The cost of a bottle of water is \$1.75. Your total cost is \$9.25. Write and solve an equation to find the cost of one box of popcorn.

15. You and your friend each purchase an equal number n of magazines. Your magazines cost \$1.50 each and your friend's magazines cost \$2 each. The total cost for you and your friend is \$10.50. Write and solve an equation to find the number of magazines you purchased.

16. The sum of the measures of the interior angles of the parallelogram is 360°. Write and solve an equation to find the value of each of the unknown angles.



17. You had \$26 in your pocket. You purchased x pens at \$3.50 each. You now have \$8.50 in your pocket. Write and solve an equation to find the number of pens purchased.

49

Name _____ Date _____

Topic 1 Reteach

Solve the equation. Check your solution.

1. $4k - 20 = 60$

2. $\frac{3}{7}p + 12 = 6$

3. $\frac{2}{3}y + y - 4 = 31$

4. $36 = x - 5x - 12$

5. $4d + 2d - 3d = 27$

6. $-6 = g + g + 4$

7. $-3(2y + 7) = -18$

8. $28 = 2(4f + 2)$

9. $16 = 2(t - 1) - t$

10. $10 - 3(x - 4) = 4$

11. $3(n + 12) - n = 8$

12. $-3(w - 6) = 3$

50

Extra Practice Worksheet
Multi-Step Equations

Name _____
Period _____

Solve. You must show your steps!

1. $4(3x+5)=44$

2. $7(6x-8)=70$

3. $72=-8(4x-5)$

4. $6d+11+3d=47$

5. $6c-9c+14=20$

6. $4a+7+3a=-14$

7. $z+2z+3z=36$

8. $3w-2w+w=24$

9. $0=a+25+4a$

10. $7(m-1)=-63$

11. $8(q+7)=-72$

12. $12(a+7)=96$

13. $3(a-5)+19=-2$

14. $2(b+8)-9=5$

15. $4(k+7)-15=-3$

16. $7(h-2)+17=3$

17. $4c+3(c-2)=-34$

18. $d+4(d+6)=-1$

19. $4(x+8)-3x=-2$

20. $3(y-5)-y=-7$

21. $(x-13)-(x-5)+2x=0$

22. $-9-3(2q-1)=-18$

23. $-10+4(3p+10)=18$

24. $c+3-2c-(1-3c)=2$

Challenge.

25. $5m-3\left[7-(1-2m)\right]=0$

26. $7n+2\left[3(1-n)-2(1+n)\right]=14$

Objective:

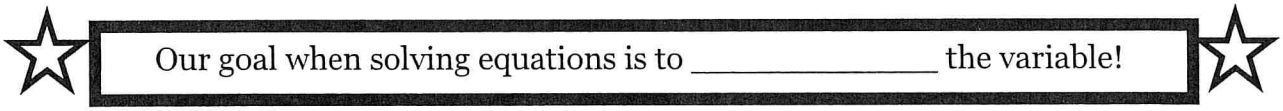
To solve an equation with variables on both sides...

1.

2.

3.

4.



Example 1: Solve each equation.

a) $4x + 4 = 2x + 36$

b) $-15 + 6b = -8b + 13$

c) $4c + 3 = 15 - 2c$

d) $8x - 36 = 4(7 - x)$

Special Cases:

e) $6(5 - 2v) = -4(3v + 1)$

f) $6x + 18 = 3(2x + 6)$

Example 2: Solve the equation.

a) $-3[2y-(y-2)]=2(y+3)$

b) $2[3-2(2x+3)]=2(x-1)$

Example 3: A pizza parlor makes 52 pizza crusts the first week of summer and 180 pizza crusts each subsequent week. A diner makes 26 pizza crusts the first week of summer and 90 pizza crusts each subsequent week. In how many weeks will the total number of pizza crusts made by the pizza parlor be twice the total number of pizza crusts made by the diner? Write and solve an equation to model this scenario.

Organize the information:

Pizza Parlor	**Diner**
Starting amount: _____	Starting amount: _____
Amount per week: _____	Amount per week: _____

Name _____ Date _____

Topic 2 Reteach

Solve the equation. Check your solution.

1. $9a + 2 = 4a - 18$

2. $4x + 4 = 2x + 36$

3. $-15 + 6z = -8z + 13$

4. $2(j - 4) = 3j$

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

6. $6(w + 3) = -2(w + 31)$

7. $2p + 10 = 2p + 3$

8. $3(2x - 1) = 6x - 3$

9. $5h + 4 = 10h + 8$

10. $4m + 5 = 2(2m + 1)$

11. $\frac{1}{2}(8b + 14) = 4b + 7$

12. $10k + 5 - 3 = 6k + 4k + 2$

55

Name _____ Date _____

Topic 2

Enrichment and Extension

Where can you buy a ruler that is three feet long?

Solve the equations. Order the solutions from least to greatest. Once ordered, the variables will spell the answer to the riddle.

1. $5d - 4 = 4 - d$

2. $-10e + 15 = 95 - 30e$

3. $15t + 17 = 13t + 14$

4. $-12 - a = 4a - 7$

5. $4a - 16 = a - 15$

6. $4y + 12 = 6y + 12$

7. $0.25r - 0.25 + 0.25r = 0.5 - 0.25r$

8. $-4a + 7 = a + 32$

9. $13s - 31 = 2s - 9$

10. $a + 1.25 = 2a - 1$

11. $3\ell + 4 + \ell = 13 + \ell$

Solution														
Variable														

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Equations Worksheet
Variables on Both Sides

Name _____
Period _____

Solve the equation.

1. $2c-5=c+49$

2. $8r+4=10+2r$

3. $2x-1=x+11$

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

5. $3c-4c+1=5c+2+3$

6. $5+3(q-4)=2(q+1)$

7. $5-(t+3)=-1+2(t+3)$

8. $7x-4=-2x+1+9x-5$

9. $5-x-2=3+4x+5$

10. $8(x+1)=4x-8$

Equations Worksheet 2
Variables on Both Sides

Name _____
Period _____

Solve the equation.

1. $2(x+5)=x+15$

2. $5(x+4)=7(x+2)$

3. $4(a-1)=5(a-2)$

4. $8-4(x-1)=2+3(4-x)$

5. $5m-(m+3)=7+(m+2)$

6. $x+x+1+x+2=12$

7. $3x+2(2x+2)=13-(2x-5)$

8. $12+4-z=20+z$

9. $x+(2x+3)=(x+3)+(x+4)$

10. $4x+5-3(2x-5)=9-(8x-1)+x$

Objective:

Step 1 in solving equations with fractions or decimals: _____ _____!

To clear fractions:	**To clear decimals**:
Identify the _____ and multiply through by it! Example: $\frac{3}{2}x - \frac{3}{4} = 3$	Choose the appropriate _____ ____ _____ and multiply through by it! Example: $0.2x - .02 = 0.98$

Our goal when solving equations is to _____ the variable!

Example 1: Solve each equation.

a) $\frac{1}{2}y + 3 = \frac{2}{3}$

b) $\frac{2}{5}x + 2 = \frac{3}{4}$

c) $1.06r - 3 = 0.71$

d) $1.5c - 3.6 = 2.4$

Example 2: Solve the equation.

a) $\frac{1}{3}(x-6) - \frac{1}{2}(x+1) = -4$

b) $2(3x-1) - \frac{1}{3}(x+2) = \frac{5}{2}$

Solving Equations with Fractions

Name _____
Period _____

Solve the following equations with decimals. Show all work!

1. $2y-\frac{3}{5}=\frac{1}{2}$

2. $y-\frac{2}{5}=-\frac{1}{3}$

3. $\frac{1}{4}+\frac{1}{2}t=4$

4. $\frac{1}{4}x+x=-3+\frac{1}{2}x$

5. $\frac{1}{3}+2m=m-\frac{3}{2}$

6. $m+\frac{2}{3}=\frac{1}{4}m-1$

7. $\frac{2}{5}(x-2)=-3$

8. $\frac{3}{4}(2x+1)=2$

9. $\frac{2}{3}(3x+1)=5$

10. $\frac{1}{2}+\frac{2}{5}t-1=\frac{1}{5}t+t$

11. $\frac{1}{5}m+\frac{2}{3}-2=m-\frac{2}{5}$

12. $-\frac{1}{4}w-3=w+\frac{1}{3}$

Solving Equations with Decimals

Name _____
Period _____

Solve the following equations with decimals. Show all work!

1. $2w - 0.4 = 1 + 1.8w$

2. $0.17k - 0.43 = 0.25k + 0.05$

3. $0.27v - 1.6 = 0.32v - 2$

4. $0.1x - 0.006 = 0.08x + 0.134$

5. $-1.6 - 0.9w = 11.6 + 2.4w$

6. $0.25r - 1.25 = 0.55 - 0.35r$

7. $0.48x - 1.9 = 0.54x - 4$

8. $0.1m + 0.008 = 0.06m - 0.172$

9. $-0.51x - 3.2 = 0.8x + 7.28$

10. $-0.32v + 0.18v = 0.25v - 1.95$

Solving Equations with Decimals & Fractions Name _____
Period _____

Solve the equation.

1. $\frac{1}{4}x+3=2$

2. $\frac{3}{4}(b+8)=15$

3. $0.7c-10=.5$

4. $-0.8k-3.1=-8.3$

5. $\frac{1}{2}h-1=\frac{3}{8}$

6. $\frac{1}{5}y+3=\frac{2}{3}$

7. $\frac{7}{10}c-10=\frac{2}{5}$

8. $\frac{2}{3}(a-3)=\frac{1}{3}$

9. $0.07x+9.95=12.47$

10. $\frac{2}{7}k-\frac{1}{14}k=-3$

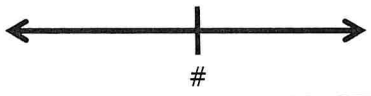
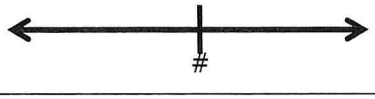
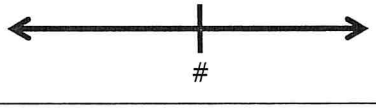
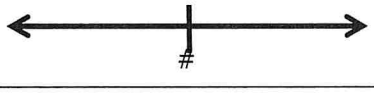
Objective:

Vocabulary

	Definition	Examples
Inequality		
Solution of an Inequality		

Inequality Symbols				
Symbol	<	>	≤	≥
Name				
Common Key Phrases				

Summarize (Complete the table):

Symbol	Circle	Direction	What does this look like?
>			
<			
≥			
≤			

Example 1: Graph the solutions of each inequality on a number line.

a) $x > -2$

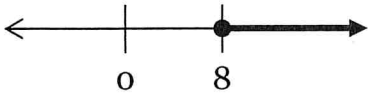
b) $w \leq -5$

c) $k \geq 4$

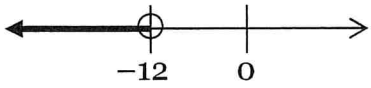
d) $y < 6$

Example 2: Write the inequality shown in each graph.

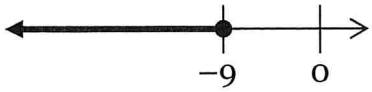
a)



b)



c)



Example 3: Graph the solutions of the inequality on the number line.

a) $15 < x$

b) $-8 \geq b$

Example 4: Tell whether -2 is a solution of $y - 5 \geq -6$.

Example 5: Tell whether -5 is a solution of $1 - 2p \leq -9$.

Name _____ Date _____

Lesson 4.4 Extra Practice

Write the word sentence as an inequality.

1. A number x is at most 3.
2. A number y added to 2 is greater than 7.
3. A number c multiplied by 3 is less than -12.
4. A number m minus 1.5 is no less than 2.
5. Your friend writes the word sentence as an inequality. Is your friend correct? Explain your reasoning.

> Three times a number z is more than 18.
> $3z < 18$

Tell whether the given value is a solution of the inequality.

6. $t - 3 \geq 2; t = 10$
7. $6w < -2; w = 1$
8. $p + 1.6 \leq 4; p = 5$
9. $\frac{1}{2}d > -3; d = 0$

Graph the inequality on a number line.

10. $k > 1$
11. $n \leq -2.5$
12. In order to try out for one of the parts in a play at the local theater, you must be at most 12 years old. Write an inequality that represents this situation.

Tell whether the given value is a solution of the inequality.

13. $3h - 7 < h; h = 2$
14. $q + 8 \geq \frac{q}{4}; q = -12$
15. Consider the inequalities $-2x < 10$ and $-6 < -2x$.
    a. Is $x = 0$ a solution of both inequalities?
    b. Is $x = 4$ a solution of both inequalities?
    c. Find another value of x that is a solution of both inequalities.
16. The maximum area that is available for a rectangular garden is 80 square feet.
    a. Write an inequality that represents the possible dimensions for the garden.
    b. Find three different sets of allowable dimensions for the garden. Find the area of each garden.

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Name _____ Date _____

4.4 Puzzle Time

What Do You Call A Bull That's Sleeping?

Write the letter of each answer in the box containing the exercise number.

Write the word sentence as an inequality.

1. A number x is greater than 25.8.
2. Twice a number x is at most $-\frac{3}{5}$.
3. A number x minus 9.3 is more than 4.6.
4. A number x added to 11.7 is less than 14.

Tell whether the given value is a solution of the inequality.

5. $x - 3.6 \leq 2.8; x = 6.7$
6. $\frac{5}{6}x > -10; x = -6$

Match each inequality with its graph.

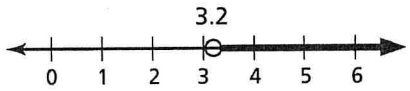
7. $x \leq -7$
8. $x > 3.2$
9. $x < 3\frac{1}{4}$
10. $x \geq -11$

Answers

U. $11.7 + x < 14$

L. $x > 25.8$

A.



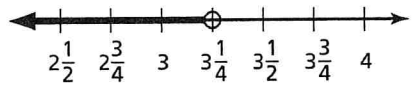
D. yes

E. $2x \leq -\frac{3}{5}$

R.

L. $x - 9.3 > 4.6$

Z.



B. no

O.

8		5	4	1	3	6	10	9	2	7

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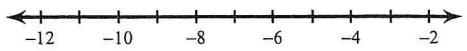
Infinite Algebra 1 Name_____

One-Step Inequalities

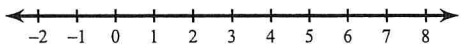
Date_____ Period____

Solve each inequality and graph its solution.

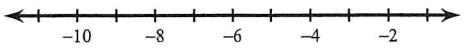
1) $-12 > x - 7$



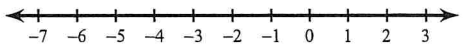
2) $-1 + r \geq 4$



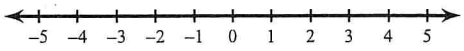
3) $n - 6 \leq -14$



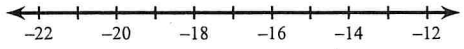
4) $b - 7 < -12$



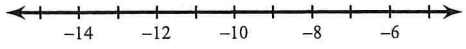
5) $a - 17 > -16$



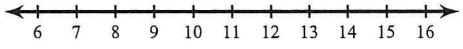
6) $15 + x \leq 0$



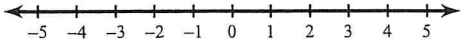
7) $3 + v \leq -9$



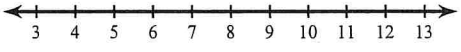
8) $8 \geq n - 6$



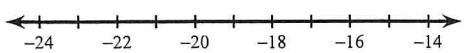
9) $-3x > 3$



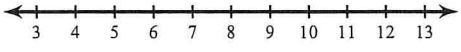
10) $\frac{n}{3} > 3$



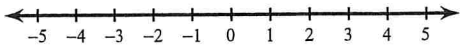
11) $\frac{k}{4} < -4$



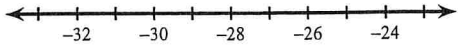
12) $-9x \geq -90$



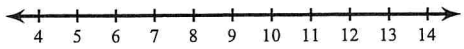
13) $0 \geq 7n$



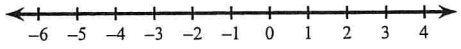
14) $\frac{m}{5} \geq -5$



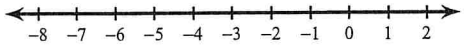
15) $-13x < -156$



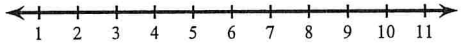
16) $32 \geq -16p$



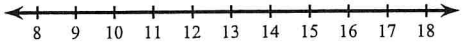
17) $-8 > v - 3$



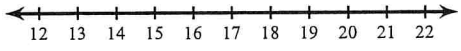
18) $11 \leq 5 + x$



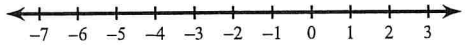
19) $25 \geq n + 13$



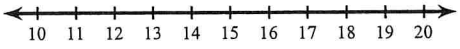
20) $-168 > -12a$



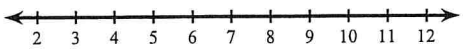
21) $-3 \leq x - 4$



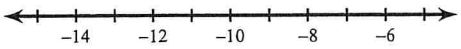
22) $\frac{r}{3} > 6$



23) $12n \geq 84$



24) $-22 > -10 + b$



Objective:

Remember to _____ the direction of the inequality symbol when you multiply or divide by a _____ number.

Our goal when solving inequalities is to _____ the variable!

Example 1: Solve and graph each inequality.

a) $-2m+4 \le 34$

b) $-10 \ge \frac{1}{2}x - 6$

c) $17 + \frac{2}{3}m < 14$

d) $-4(2x+7) \le -12$

e) $5x+10 > 3x-12$

f) $4\left[x-3(x+2)-4\right] \ge 3$

Infinite Algebra 1

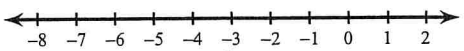
Name_____

Multi-Step Inequalities

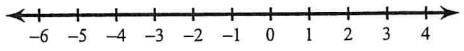
Date_____ Period____

Solve each inequality and graph its solution.

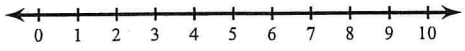
1) $3 < -5n + 2n$



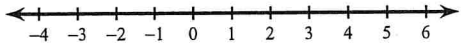
2) $6x + 2 + 6x < 14$



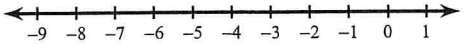
3) $-p - 4p > -10$



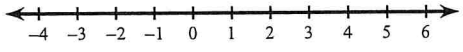
4) $18 \geq 5k + 4k$



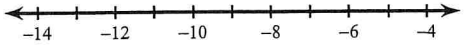
5) $9 \geq -2m + 2 - 3$



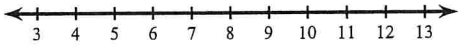
6) $-3 - 6(4x + 6) > -111$



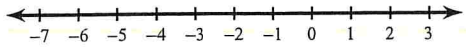
7) $6 - 4(6n + 7) \geq 122$



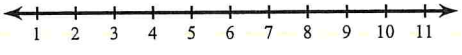
8) $-138 \geq -6(6b - 7)$



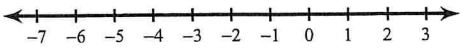
9) $167 < 6 + 7(2 - 7r)$



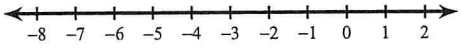
10) $5(6 + 3r) + 7 \geq 127$



11) $-8x + 2x - 16 < -5x + 7x$

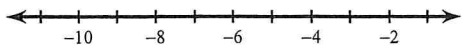


12) $-1 - 6x - 6 > -11 - 7x$

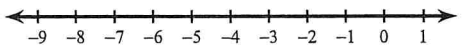


70

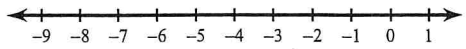
13) $a - 6 \leq 15 + 8a$



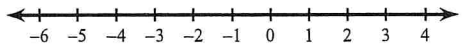
14) $13 + 2v - 8 + 6 > -7 - v$



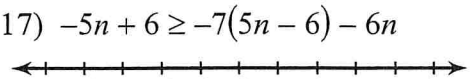
15) $-5n - 6n \leq 8 - 8n - n$



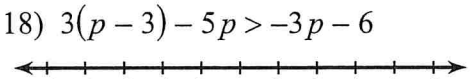
16) $-x < -x + 7(x - 2)$



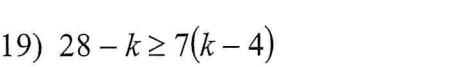
17) $-5n + 6 \geq -7(5n - 6) - 6n$



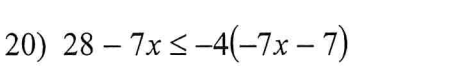
18) $3(p - 3) - 5p > -3p - 6$



19) $28 - k \geq 7(k - 4)$



20) $28 - 7x \leq -4(-7x - 7)$



21) $-6(1 + 7k) + 7(1 + 6k) \leq -2$

22) $-2(2 - 2x) - 4(x + 5) \leq -24$

23) $3(1 - 2x) > 3 - 6x$

24) $-2(5 + 6n) < 6(8 - 2n)$

Infinite Algebra 1

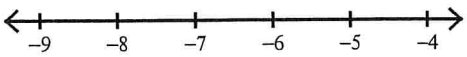
Name_____

Multi-Step Inequalities

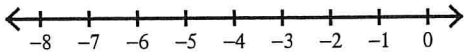
Date_____ Period____

Solve each inequality and graph its solution.

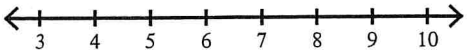
1) $-3x + 2x \leq 6$



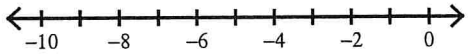
2) $3 - 6n - 4 < 17$



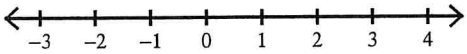
3) $n - 3 + 4 > 7$



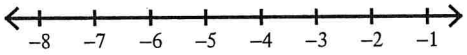
4) $0 < n - 1 + 6$



5) $-3x - 2x < 5$

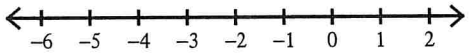


6) $-(2 + 2m) - 2 > 6$



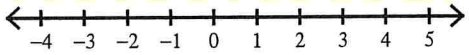
7) $-9 \geq -8(1 + 6v) - 1$

8) $8(1 - 4x) > 40$

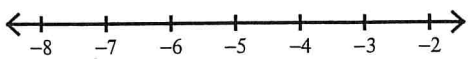


9) $4(8 - 2b) - 2b \leq 32$

10) $5x - 7(x + 1) > -9$

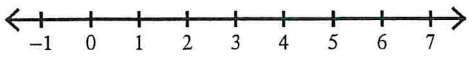


11) $-p + 6p \leq 4 + 6p$

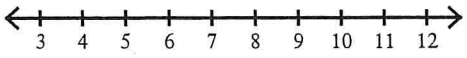


12) $5 + 4x \geq x + 8$

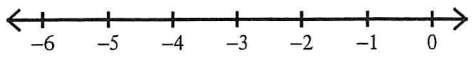
13) $4k - 4 - 3k > 13 - 7k - 1 + 8$



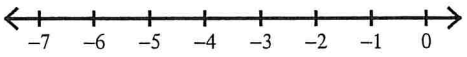
14) $r - 7 > 9 - r$



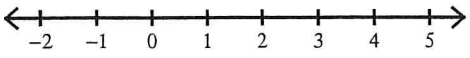
15) $6 + 2x \leq 12 + 8x - 3x$



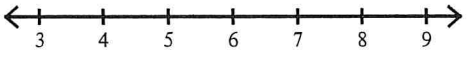
16) $-30 + 5x > 4(6 + 8x)$



17) $-7v - 8 \leq 6(1 - 2v) + 1$

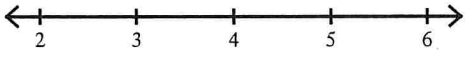


18) $38 + 5x > 7(x + 4)$

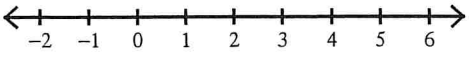


19) $7 - 7(x - 7) > -4 + 5x$

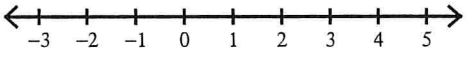
20) $-3(2v - 5) < -13 + v$



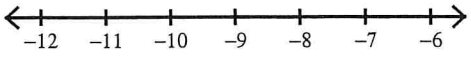
21) $-24 \leq 6(5b - 2) - 8(8b - 7)$



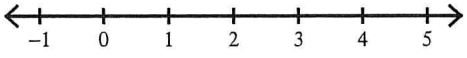
22) $7(1 - 5n) - (n + 3) \geq 4$



23) $5n + 7(-6 - n) > 4(n + 3)$



24) $x - 8 + 3x + 2 < -6(8x - 7) + 4(8x - 2)$



Inequalities – Extra Practice

Name _____
Date _____ **Period** _____

Solve each inequality. Show all work. Circle the answer.

1. $22 > \frac{x}{-12} + 4$

2. $-3(2-x) \leq 2x-9$

3. $\frac{25x-41}{13} \leq 18$

4. $3(4x-1) \leq 10x+25$

5. $4x+22 > -2(14+3x)$

6. $\frac{x}{6} + 9 < -11$

7. $-8.6x+13+4.6x \leq 53$

8. $\frac{2x+5}{3} \geq -7$

9. $-4(x+10) \geq -7x+65$

10. $4+6(2x-3) \leq (1-3x)2+x$

11. $\frac{4}{3}-\frac{3c+1}{2}>12$

12. $4(b-1)+b<5b+1$

13. $7(c-2)+2>2(5c+9)$

14. $7(a+4)-13<13(3+a)+12$

15. $7-2(m-4)<5(1-2m)$

16. $\frac{3}{11}(2x-7)-\frac{1}{3}(2-3x)>\frac{17}{33}$

17. $\frac{3w-1}{7}+\frac{5-2w}{2}<-\frac{15}{14}$

18. $6\left(5-\frac{1}{3}x\right)\leq 3-x$

19. $3(y+4)+3y>-20$

20. $-\frac{3x-1}{8}\geq\frac{x}{3}+\frac{71}{24}$

Objective:

Our goal when solving formulas is to _____ the indicated variable!

Example 1: Solve each equation for y ($y = mx + b$).

a) $3x-2y=-16$

b) $13x-11y=-12$

c) $9x-7y=-7$

d) $x-3y=6$

e) $11x-4y=32$

f) $11x-8y=-48$

g) $\frac{2}{3}x+4y=12$

h) $\frac{3}{4}x+6y=18$

Literal Equations Worksheet #1 Name _____

Solve each equation for y.

(1) $4x+2y=8$ (2) $5x-10y=20$ (3) $3x-6y=12$

(4) $3x-y=2$ (5) $x+4y=-12$ (6) $4x-7y=-49$

(7) $7x-y=9$ (8) $9x+y=27$ (9) $7x+y=8$

(10) $3x+10y=90$ (11) $2x-5y=-15$ (12) $12x-4y=40$

(13) $x+y=25$ (14) $x-y=11$ (15) $5x-y=15$

(16) $\frac{3}{4}x+y=4$ (17) $2x-y=6$ (18) $6x+5y=50$

Literal Equations Worksheet #2 Name _____

Solve each equation for y.

(1) $6x-2y=12$ (2) $5x+15y=30$ (3) $3x+6y=24$

(4) $2x+y=7$ (5) $3x-4y=12$ (6) $5x+6y=-48$

(7) $9x-y=-18$ (8) $9x-3y=-27$ (9) $2x+2y=18$

(10) $3x+12y=-60$ (11) $6x-7y=-14$ (12) $11x+2y=30$

(13) $x-y=27$ (14) $x+y=19$ (15) $8x-5y=25$

(16) $\frac{2}{3}x-y=5$ (17) $7x-y=10$ (18) $4x+6y=36$

Unit 2 Test Review

Name _____
Period _____

Solve each equation.

1. $-4d+2(3+d)=-14$

2. $2x+\frac{3}{4}(4x+16)=7$

3. $\frac{2}{5}(5k+35)-8=12$

4. $2x-5x+6.3=-14.4$

5. $2z+9.75-7z=-5.15$

6. $0.4(2m+4)=4.8$

7. $2x+\frac{3}{4}(4x+16)=7$

8. $\frac{3}{4}p-\frac{5}{6}=\frac{2}{3}p$

9. $\frac{2}{3}(6x+3)=4x+2$

10. $6(6g-2)+8(1-5g)=2g$

11. $\frac{5n}{8}+\frac{1}{8}=\frac{1}{2}$

12. $\frac{9}{2}x+3-2x=8$

13. $2(3+3g) \geq 2g+14$

14. $\frac{1}{2}(2t+8) \geq 4+6t$

15. $3.4+1.6b < 5.9-0.9b$

16. $\frac{3}{4}d - \frac{1}{2} \leq \frac{5}{2}$

17. $3(4h-6) \geq 6(h+2)$

18. $4(1.25y+4.2) < 16.8$

Write an equation or inequality to model the situation. Then, solve.

19. Suppose it costs \$5 to enter a carnival. Each ride costs \$1.25. You have \$15 to spend at the carnival. What is the greatest number of rides that you can go on?

20. Hans needs to rent a moving truck. Suppose Company A charges a rate of \$40 per day and Company B charges a \$60 fee plus \$20 per day. For what number of days is the cost the same?

Unit 2 Review Worksheet

Name _____
Period_____

Solve each equation. Show your steps!

1. $1.2x = 36 + 0.4x$

2. $94 = 0.15x + 0.08(1000 - x)$

3. $0.3x = 1.2 + 2.3x$

4. $3.6x - 1.2 = 0.7(10 - x)$

5. $\frac{3}{5}a - \frac{1}{2}a = \frac{1}{20}$

6. $\frac{5}{18}n - \frac{4}{9}n = \frac{1}{12}$

7. $\frac{3}{2}(x+1) - \frac{5}{4}(x+1) = \frac{1}{2}$

8. $\frac{1}{10}(n+1) - \frac{1}{3}n = \frac{19}{15}$

9. $\frac{1}{4}(n+2) - \frac{1}{6}(n-2) = \frac{3}{2}$

10. $4x + 2(4+x) > 3(2+5x)$

11. $1 + 3x = 2(x+5) - 3(5-x)$

12. $3 - (7-x) - (x-4) \le 2(x+3)$

13. $12 + (4-x) = 20 - 2x$

14. $3b + 2(b+2) = 13 - (2b+2)$

15. $\frac{1}{2}(4x-8) + \frac{1}{4}(8x+4) = 17$

16. $3y+2\geq 3-y+11$

17. $12+2(x-1)<10-x$

18. $\frac{1}{3}(18-9c)=6-3c$

19. $\frac{4}{5}(25x-15)=50x+38$

20. $-\left[x-(3x-2)-2\right]=16$

21. $2x-(x+3)=2(x+1)$

22. $3\left[x-4(2x-1)\right]<4+x$

23. $2\left[3-2(2x+3)\right]\leq 2(x-1)$

24. $2(x-1)+3(x-2)-4(x+3)\geq 27$

Equations and Inequalities
Word Problems Worksheet

Name _____
Period _____

Write and solve an equation for each problem. YOU MUST WRITE AN EQUATION! Make sure to answer the question being asked.

(1) Emma has a $10 gift card to download music. She bought 6 songs that each cost the same amount. If Emma has $4.12 left, how much did she pay for each song?

(2) Melissa is having soil delivered for her backyard. The soil costs $20 per cubic yard and there is a $40 delivery fee. If the total cost for the soil is $200, how many cubic yards of soil did Melissa purchase?

(3) Brooke has a $90 gift card. She purchases a sweatshirt for $20 and several shirts for $16 each. What is the greatest number of shirts that Brooke can purchase?

Explain <u>why</u> the equation $5x + 8 = 30.50$ would <u>not</u> represent each situation below.

(4) Julie buys 8 pounds of cashews and 5 pounds of almonds. She spent $30.50 in all. What is the price per pound of almonds?

(5) Michael bowls 8 games and rents shoes for $5. If he spent $30.50 in all, how much does each game cost?

Write and solve an inequality for each problem. YOU MUST WRITE AN INEQUALITY! Make sure to answer the question being asked.

(6) When Linda babysits, she charges a fee of $1.50 for each babysitting job plus $9.50 for each hour of babysitting. Linda only accepts babysitting jobs where she will earn at least $30. How many hours does Linda need to be guaranteed in order to accept a babysitting job?

(7) Jeannine took the subway to the city to go shopping on Friday. She paid $2.50 each time that she got on the subway and she spent $7.50 for lunch. She knows that she did not spend all $20 that she had with her. How many times could she have ridden the subway? List all possible options.

(8) Christian needs school supplies, but he only has $20. He needs two binders that cost $5.35 each. If he spends the rest on pens that cost $1.20 each, how many pens can he buy?