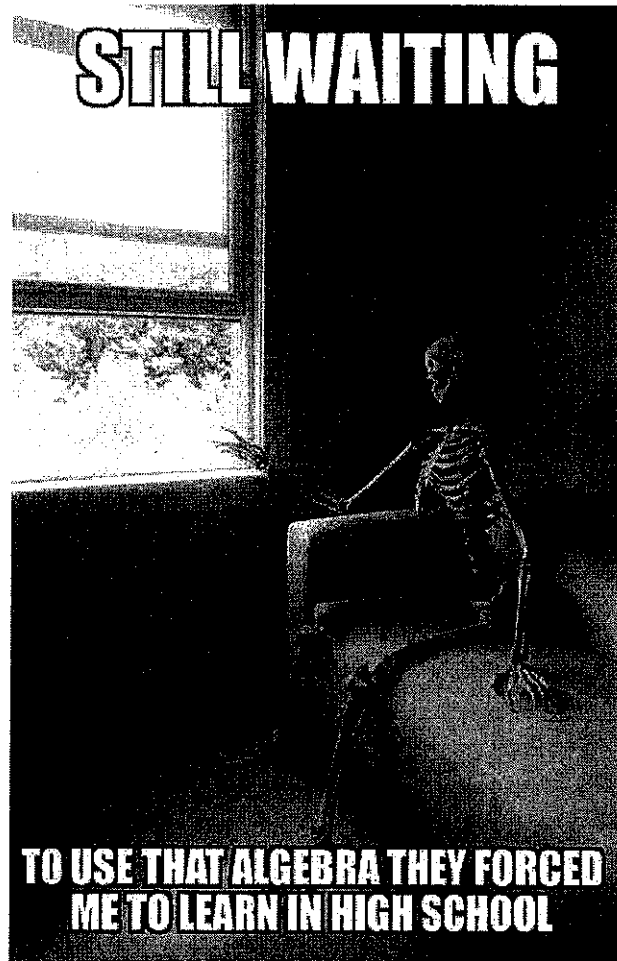


Math Applications

Unit 1a



Basic Algebra Concepts

Name: _____

Period: _____

Unit 1 Overview

1-1 Review of Integers HW _____

1-2 Combing Like Terms HW _____

1-3 Adding/Subtracting Polynomials HW _____

1-4 Distributive Property HW _____

QUIZ #1 **Date:** _____

1-5 Solving Equations HW _____

1-6 Multi Step Equations HW _____

1-7 Solve for Indicated Variable HW _____

1-8 Word Problems HW _____

TEST REVIEW Due: _____

○ TEST DAY 1 (Part I) Date: _____

TEST DAY 2 (Part II, III, IV) Date: _____

1-1 Review of Integers

Let's take a blast to the past and review integer problems. There are many different methods to solve these problems, below are examples of a few. Use the one that works best for you!

<u>ADDING</u> Integers	<u>SUBTRACTING</u> Integers						
1) Open number line: _____ <hr style="border: 1px solid black;"/>	1) Add the _____						
NEGATIVE MOVE DOWN POSITIVE MOVE UP ex) $3 + -6 = \underline{\quad}$ ex) $-4 + 2 = \underline{\quad}$ ex) $-9 + -4 = \underline{\quad}$	LCC <div style="border: 1px solid black; height: 300px; margin-top: 10px;"><p>1)</p><p>2)</p><p>3)</p><p>4)</p></div>						
2) SSS and DSD							
<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%; padding: 5px;">SSS-</td><td style="width: 50%; padding: 5px;">DSD-</td></tr><tr><td style="width: 50%; padding: 5px;">1.</td><td style="width: 50%; padding: 5px;">1.</td></tr><tr><td style="width: 50%; padding: 5px;">2.</td><td style="width: 50%; padding: 5px;">2.</td></tr></table>	SSS-	DSD-	1.	1.	2.	2.	
SSS-	DSD-						
1.	1.						
2.	2.						

3.	3.	ex) $4 - 8 = \underline{\quad}$
ex) $-9 + -6 = \underline{\quad}$ ex) $-12 + 2 = \underline{\quad}$		ex) $5 - 2 = \underline{\quad}$ ex) $-7 - 2 = \underline{\quad}$

Practice:

1) $-3 + 8 = \underline{\quad}$

7) $3 + -2 = \underline{\quad}$

13) $-3 - 3 = \underline{\quad}$

2) $6 + -8 = \underline{\quad}$

8) $5 + -10 = \underline{\quad}$

14) $-9 - 10 = \underline{\quad}$

3) $-4 + -12 = \underline{\quad}$

9) $-4 - 3 = \underline{\quad}$

15) $-2 - 10 = \underline{\quad}$

4) $-9 + 3 = \underline{\quad}$

10) $7 - 2 = \underline{\quad}$

16) $6 - 16 = \underline{\quad}$

5) $-21 + 12 = \underline{\quad}$


11) $-13 - 2 = \underline{\quad}$

6) $-2 + -23 = \underline{\quad}$

12) $1 - 2 = \underline{\quad}$

Multiplying & Dividing Integers

Same Signs -
POSITIVE



$-9 \cdot -5 = 45$
 $-72 \div -8 = 9$

Two negatives -
MAKE A POSITIVE


$$(+)\cdot(+)=(+)$$

$$(+)\cdot(-)=(-)$$

$$(-)\cdot(+)=(-)$$

$$(-)\cdot(-)=(+)$$

Different Signs -
NEGATIVE



$-9 \cdot 5 = -45$
 $72 \div -8 = -9$

One negative
STAYS NEGATIVE

Multiplying & Dividing Rule

___ & ___

If Mom and Dad agree it's _____!

So, if the signs are the same then the answer will also be _____!

ex) $(-9)(-2) = \underline{\quad}$

ex) $-30 \div -5 = \underline{\quad}$

ex) $\frac{-36}{-6} = \underline{\quad}$

If Mom and Dad disagree it's _____.

So, if the signs are different then the answer will also be _____.

ex) $(10)(-2) = \underline{\quad}$

ex) $(-8)(3) = \underline{\quad}$

ex) $-42 \div 7 = \underline{\quad}$

ex) $\frac{60}{-10} = \underline{\quad}$

1) $(-3)(4) = \underline{\quad}$

5) $(-4)(4) = \underline{\quad}$

9) $-10 \div 2 = \underline{\quad}$

13) $\frac{-4}{8} = \underline{\quad}$

2) $(6)(-2) = \underline{\quad}$

6) $(2)(-15) = \underline{\quad}$

10) $\frac{-44}{4} = \underline{\quad}$

14) $100 \div -10 = \underline{\quad}$

3) $(-12)(-4) = \underline{\quad}$

7) $(-45)(-1) = \underline{\quad}$

11) $\frac{18}{-3} = \underline{\quad}$

15) $-81 \div -9 = \underline{\quad}$

4) $(-9)(-5) = \underline{\quad}$

8) $(8)(-7) = \underline{\quad}$

12) $12 \div -3 = \underline{\quad}$

16) $\frac{2}{-1} = \underline{\quad}$

Solve each expression using the correct order of operations.

$$(3 \times 4) \div (7 + 9 - 10)$$

$$8 \times (10 - 6) \div 2 + 4$$

$$(10 \div 2) \times 7 + 5 - 4$$

$$8 \div (7 - 3) \times (4 + 6)$$

$$6 \times (8 - 3 + 5) \div 10$$

$$10 - 6 \times 5 \div (2 + 4)$$

$$(10 - 6 + 8 \div 2) \times 3$$

$$(4 + 8 \div 2 - 6) \times 10$$

$$7 \div (4 \times 2 + 9 - 10)$$

$$((10 - 6 + 5) \div 9) \times 2$$

Integer Word Problems

DIRECTIONS: Using the word problems below write out the expression that represents the situation described.

1. The temperature was -3° C last night. It is now -4° C. What was the change in temperature?

2. While watching a football game, Matt decided to list yardage gained as positive integers and yardage lost as negative integers. After these plays, Matt recorded 14, -7 , and -9 . What was the net gain or loss?

3. A deep-sea exploring ship is pulling up a diver at the rate of 25 feet per minute. The diver is 200 feet below sea level. How deep was the diver 10 minutes ago?

4. Gianna has \$47 left on her checking account. If she writes a check for \$55, what will Josie's balance be?

1-2 Combining Like Terms

- Like terms have to have the _____ **variable** raised to the _____ **exponent/power**.

Variable- _____

*DON'T FORGET there is a coefficient of _____ before any single variable.

Exponent - _____

- o Like terms are added together and combined into simplest form.

5x, -8x, 109x and _____ are like terms.

-34, 7, 1.5, 98, 243, and _____ are like terms.

$4x^2$, $\frac{1}{2}x^2$, $-10x^2$, x^2 and _____ are like terms.

Simplify by combining like terms:

1) $5a + 7a - 6 - 10a =$ _____

2) $9x + 2x =$ _____

3) $-16cd + 3cd - (-cd) =$ _____

4) $19y^2 - y^2 =$ _____

5) $2x - 3y =$ _____

6) $-19y^2 + y^2 =$ _____

7) $-14x^2 + 14x^2 =$ _____

8) $6xyz - 17x + 4xyz + 2x =$ _____

$$9) -4x - 15x^2 - 9x^2 + 3x = \underline{\hspace{4cm}}$$

$$10) -5c - 15 - 4c - 3 = \underline{\hspace{4cm}}$$

$$11) -8x^2y - x^2y = \underline{\hspace{4cm}}$$

$$12) 7y - xy + xy - 9 = \underline{\hspace{4cm}}$$

$$13) 3 + 4xyz - 15xyz - 7 = \underline{\hspace{4cm}}$$

$$14) 5x + 8y - 9x + 7y = \underline{\hspace{4cm}}$$

$$15) -5y + 4x + 6y - 7x + 9y + 3x - 14y = \underline{\hspace{4cm}}$$

$$16) 6x^2 - 9x + 2 + 8x^2 - 7x + 7 = \underline{\hspace{4cm}}$$

$$17) 7x - 6y + 8x - 2z + 8 - 3y + 6x = \underline{\hspace{4cm}}$$

$$18) 5x^2 + 8y - 5x^2 + 8 - 6y + 4 = \underline{\hspace{4cm}}$$

$$19) 3ab + 5b - ab + 4ab - 2b = \underline{\hspace{4cm}}$$

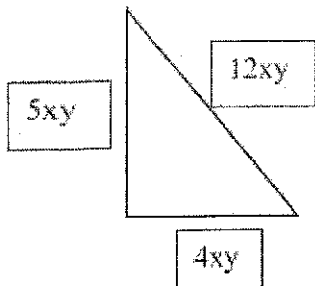
$$20) 15x^3 - 8x^2 + 9x - 8 + 15x^3 - 2x^2 - 8 = \underline{\hspace{4cm}}$$

$$21) x^3 + 11x^3 - 8x^3 - 4x^3 = \underline{\hspace{4cm}}$$

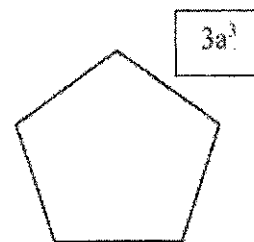
Find the perimeter of each object in simplest form.



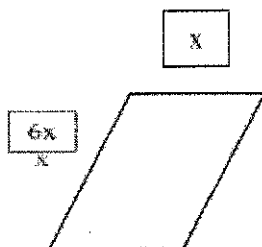
22)



24)



23)



Combining Like Terms Puzzle

Practice

Combining Like Terms Puzzle

Simplify each expression by combining like terms. Find the answer at the bottom of the page. Then write the letter on the appropriate line below to spell out a secret message. (Some letters may be used more than once!)

Did you hear the one about the acupuncture?

$\frac{1}{2}$ $\frac{3}{4}$ $\frac{5}{6}$ $\frac{7}{8}$ $\frac{9}{10}$
 $\frac{11}{12}$ $\frac{13}{14}$ $\frac{15}{16}$ $\frac{17}{18}$

1. $2m + 3m^2 - 4m$	2. $2x + x - 4y$	3. $2m + 4m - 3m^2$	4. $2y + 14x - 7x + 9y$
5. $8n - 4n^2 + 6n$	6. $11g - 9g + 8g$	7. $3m^2 - 2m + 4m$	8. $20 + 10q + 3q - 4$
9. $4xy + x + 2xy$	10. $6m^2 + 6m - 9m^2$	11. $3n - 6mn + 2n$	12. $\frac{1}{2}x - y + \frac{1}{3}x + 3y$
13. $y + x + y + x$	14. $8n + 4n^2 - 8n$	15. $5 + 5mn - 11mn$	16. $15y + 6y - 3x + xy$
17. $3xy - 6xy + 21y$			

I. $3m^2 - 2m$ S. $-4n^2 + 16n$ E. $-2xy + 21y$ O. $-6mn + 5$ T. $3x - 4y$	N. $-3x + xy + 21y$ W. $-3m^2 + 6m$ J. $3m^2 + 2m$ B. $x + 6xy$ A. $10g$	A. $7x + 11y$ E. $-6mn + 5n$ A. $13q + 16$ L. $2x + 2y$ D. $4n^2$
--	--	---

1-3 Adding & Subtracting Polynomials

Adding Polynomials:

1) _____

2) _____

3) _____

Examples:

1) $(x^2 - 4x + 3) + (3x^2 - 3x - 5) =$	2) $(2x^2 + x - 5) + (x^2 + x + 6) =$
3) $(3x^2 + 2x + 3) + (3x + 2) =$	4) $(4x^2 + 8x - 3) + (6x^2 - 10) =$
5) $(5x^3 + 2x^2 - x + 7) + (3x^2 - 4x + 7) + (-x^3 + 4x^2 - 8) =$	

$$6) (-9ax^3 - 5ax^2 + 6ax) + (-3ax^3 - 6ax^2 - 7ax + 1x) =$$

$$7) (20x^2 + 2) + (15x^2 - 8) + (3x^2 - 4) =$$

$$8) (6x + 2y + 9) + (-3x - 5y - 8) =$$

$$9) (4x + 5y + 1) + (x - 7) =$$

$$10) (10x^2 + 7x) + (5x - 1) =$$

$$11) (-3x^2 - 2x) + (2x^2 + 3) =$$

Subtracting Polynomials:

WHEN YOU SUBTRACT **ADD THE OPPOSITE** or _____

1) _____

2) _____

3) _____

Examples:

$$1) (4x^2 + 2x - 3) - (2x^2 - 5x - 3) =$$

$$2) (5x^2 - 6x + 3) - (2x^2 - 9x - 6) =$$

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

$$4) (3a - 9b) - (5a - 7b) =$$

$$5) (x^2 + 6x - 12) - (2x^2 - 3x + 7) =$$

$$6) (5x^2 + 2x) - (3x^2 - 9x) =$$

$$7) (5m^2n^2 + 4mn - 6) - (5m^2n^2 + 6mn + 17) =$$

$$8) (6a^2 + 7a - 9) - (-5a^2 + a - 10) =$$

1-4 Distributive Property

Distributive Property is used when we are multiplying. You distribute () the term outside the parentheses to each term inside the parenthesis.

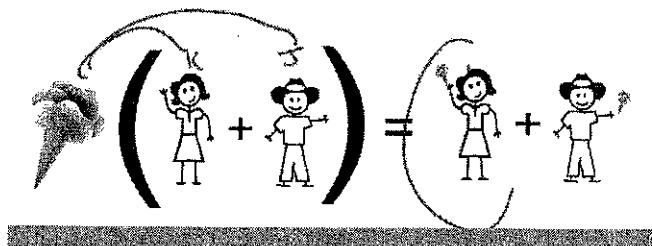
You only distribute when you are working with a variable.

one combo meal

$$3(2 \text{ burger} + 1 \text{ drink}) = 6 \text{ burgers} + 3 \text{ drinks}$$

$$3(2t + d) = 6t + 3d$$

want the same flavor! How do they both get the same flavor of ice cream? Duh - **distribute** some to each of them!



$$5(2x - 3)$$


DON'T FORGET!

Exponent Rule – When you are multiplying exponents you _____ the exponents.

*when there is a single variable there is really an imaginary exponent of _____.

ex) $3a(6a^2 + 7a - 9) =$

ex) $xy(x^2y + y - x) =$

 Integer Rules – When you are distributing a term you **MUST** also _____ the **sign (+/-)** of the term when multiplying/distributing your terms.

ex) $-3a(a^2 + 4a - 2) =$

ex) $2 - 2y(6y^2 + 7) =$

Simplify the following. Distribute and then combine like terms:

1) $2(n+9)$	2) $3(x-1)$
3) $2(x+7)$	4) $9(-n-9)$
5) $-6(n+4)+5n$	6) $2(5x-6)-9x$
7) $-5x(x^2-4x+1)$	8) $-4(x+3)+7x-10$
9) $6-(3x-1)$	10) $x(xy^2-3x^2+y)$
11) $2x-4(7x-4)-16$	12) $5y-3(y+6)-7y-8$

13) $-x^4(x^2 - 9x)$	14) $3x^2y^2 \cdot (-4xy^5)$
15) $(-2ab^3c) \cdot (-5ac^2)$	16) $2x \cdot 7xy$
17) $-x^2(3x - y) + x^2y$	18) $5c - 3v(6 + v) - 5c$
19) $-3d(d^2 - 7d - 4)$	20) $abc \cdot 7a^2bc^3$

1-4 cont. Binomial Multiplication

Double Distributive: _____

Binomial: _____

$$(x + 2)(x + 3)$$

1) FOIL!!!

2) Combine like terms

Practice:

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

2) $(a - 3)(a + 7)$



3) $(y + 6)(y - 2)$

4) $(x + 3)(x - 3)$

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

6) $(3n + 5)(2n - 7)$



7) $(2x - 3)(3x - 8)$

8) $(m - n)(m - n)$

9) $(x - 6)^2$

10) $(2x - 3)^2$



11) $(x-a)(x+b)$

12) $(x-4)(x-3)$

13) $(x+2)(x+4)$

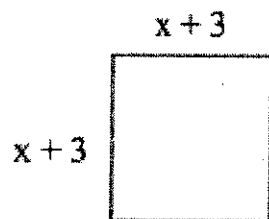
14) $(2x-3)(3x+1)$

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

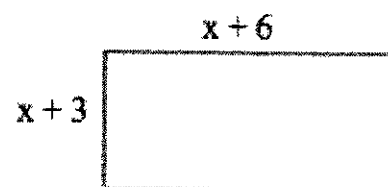
16) $(5x-1)^2$

Find the area of each of the following shapes:

17)



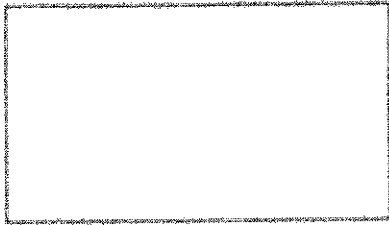
18)



19)

$$2x + 7$$

$$x - 2$$



Multiplying Binomials Maze

Name _____

Directions: Help Polly Penguin find her way back to her igloo! Solve the problems and follow the correct path to the igloo! Watch out for dead ends!

