

Grade 7

Units 1-4



Unit 1: Integers

Unit 2: Fractions and Decimals

Unit 3: Expressions

Unit 4: Equations

Name: _____

Teacher: _____

Period: _____

UNIT 1

INTEGERS

	Date		Lesson
			First Day of School
		1	Order of Operations
		2	Introduction to Integers and Absolute Value
		3	Adding Integers
		4	Subtracting Integers
		5	Quiz - Mixed Adding and Subtracting Integers
		6	Multiplying and Dividing Integers
		7	Evaluating Expressions
		8	Word Problems
			Review
			Test

Lesson 1
Order of Operations

Vocabulary

Operations: _____

Exponents: _____

Order of Operations: _____

Use the acronym **PEMDAS** to help you determine the order.

P _____

E _____

M _____

D _____

A _____

S _____

Examples: Simplify the following problems

1) $10 - 2 + 3$

2) $(7 - 5) \cdot 6 + 4$

3) $15 - 6 \div 2 \cdot 3$

4) $27 \div 3 - 5$

5) $10 - 3 \cdot (5 - 2)$

6) $3^2 + 4 \cdot 3$

7) $9 - 14 \div 2 + 3$

8) $\frac{2 \cdot 6 + 3}{11 - 6}$

Try These: Simplify the following problems

1) $5 - 2 + 7$

2) $2 + (3 - 2)$

3) $12 + 3 \cdot 2$

4) $2^2 - 12 \div 6 - 2$

5) $24 \div 2 \cdot 6$

6) $10 + 8 \div 2$

7) $(10 + 8) \div 2$

8) $\frac{5 \cdot 6 + 2}{12 - 4}$

Lesson 1 – Homework

Simplify the following expressions:

1) $12 - 8 \div 2$

2) $(3 + 4) \div 7$

3) $(8 - 4) \div 2$

4) $6 \cdot (4 - 1) \div 2$

5) $4^2 + (5 - 2)^2$

6) $5^2 - 3^2$

7) $4^2 - 12 \div (4 - 2)$

8) $(2^3 - 2) \div 3 - 2$

9) $3 \cdot (5 - 2)$

10) $56 \div (7 \cdot 2) + 1$

11) $\frac{5 \bullet 4 + 2}{17 - 2 \bullet 3}$

12) $10 - 4 \cdot (3 - 1)$

13) $8 \div 4 + 2 \cdot 3$

14) $14 \div (7 - 5) \cdot 3$

15) $20 \div 4 + 3 \cdot 6 -- 12$

Extended Response:

16) Sally was given the problem $3 + 5 \times 10$. Her answer to the problem was 80. Is this correct? If not, explain what she did wrong.

Lesson 2
Introduction to Integers

Vocabulary

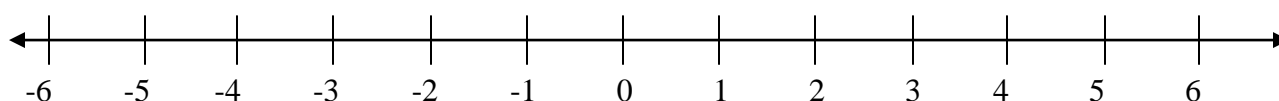
Integers: _____

Additive Inverse: _____

Absolute Value: _____

Part I: Introduction to Integers

Examples:



1) Plot the following integers on the number line:

[A] 3 [B] 5 [C] -4 [D] -1 [E] 0 [F] $-\frac{1}{2}$ [G] $5\frac{3}{4}$

Write an integer to represent each situation:

2) \$5.00 off the original price

3) 2 degrees above zero

4) 8 yard gain

5) 4.5 yard loss

6) \$25 deposit

7) \$15.00 withdrawal

8) 42 degrees below zero

9) Income of \$500

10) \$35 deficit

11) 450 feet below sea level

Inequality Symbols

$<$	Less than
\leq	Less than or equal to
$>$	Greater than
\geq	Greater than or equal to

12) Compare using $<$, $>$, or $=$ to make each inequality true:

[A] $-12 \bigcirc 4$

[B] $-5 \bigcirc -6$

[C] $-10 \bigcirc 8$

[D] $5\frac{3}{4} \bigcirc 5\frac{1}{3}$

[E] $-6 \bigcirc 6$

[F] $-7 \bigcirc -6$

[G] $-4 \bigcirc -5$

[H] $9 \bigcirc 9$

Order the following integers from least to greatest:

13) $\{-3, -500, 43, 1, 0, -73, 300\}$

14) $\{0, -20, 50, 3, 37, -25, 1000\}$

Name the additive inverse of each integer:

15) -7

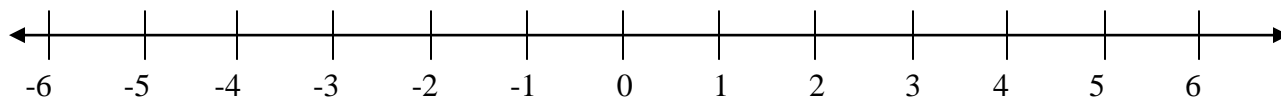
16) 23

17) 0

PART II: Absolute Value

Absolute Value Rules:

- 1) Absolute value represents the DISTANCE from zero.
- 2) Absolute value will ALWAYS be a POSITIVE number.
- 3) Treat the absolute value symbol as parentheses. You must do what is INSIDE FIRST!!!



Examples:

1) What is the distance from -3 to 0 ?

2) What is the absolute value of -3 ?

3) What is the distance from 3 to 0 ?

4) What is the absolute value of 3 ?

5) $|-5|$

6) $|9|$

7) $|-1|$

8) $|-100|$

9) $|400 - 100|$

10) $|-3| + |-1|$

11) $|-1| + |-3|$

12) $|3 - 1|$

13) $|3| + |-1|$

Try These:

14) Which of the following is the largest integer?

a) -300

b) 1

c) 250

d) 0

15) What is the absolute value of 0 ?

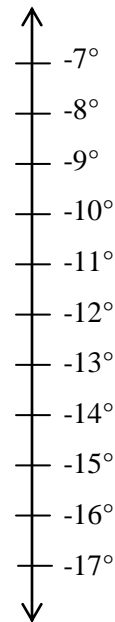
16) The temperature in Alaska at noon is -12° . Use the number line to answer the following questions

[A] How many degrees warmer is -9° ?

[B] How many degrees colder is -15° ?

[C] At midnight, the temperature had dropped 5° . What is the temperature now?

[D] How many degrees would the temperature at noon have to increase to get to 0° ?



Write an integer for each situation.

- | | | |
|------------------|---------------------------|-------------------------------|
| 1) 6-yard loss | 2) 8-yard gain | 3) \$5 off the original price |
| 4) 2° above zero | 5) Loss of 15 pounds | 6) \$35 withdrawal |
| 7) \$75 deposit | 8) 1 mile above sea level | 9) 20 ft. below sea level |

10) A stock opened at \$7 per share on Monday.

[A] The stock's value increased \$3 on Monday. What is the value now?

[B] On Tuesday, the value of the stock decreased by \$5. What is the stock's value now?

[C] By the end of the week, the value of the stock decreased by \$9 *from its original value*. What is the value at closing on Friday? Use a number line to justify your answer.

Compare using <, >, or = to make each inequality true:

11) $-3 \bigcirc -4$

12) $-7 \bigcirc 10$

13) $-1 \bigcirc -15$

14) $-9 \bigcirc -10$

15) $5 \bigcirc -7$

16) $-12.9 \bigcirc -12.6$

Order the integers in each set from least to greatest.

17) $\{-3, 5, -7, -2, 0\}$

18) $\{5, 400, -400, -350, -35\}$

Name the additive inverse of each integer:

19) -7

20) 23

21) -400

22) -1

23) 3

24) The absolute value of two numbers that are additive inverses will _____ be the same.

a) always

b) sometimes

c) never

Compare using $<$, $>$, or $=$ to make each inequality true.

25) $|-12| \bigcirc 4$

26) $|-5| \bigcirc |-6|$

27) $|-10| \bigcirc 10$

28) $|15-4| \bigcirc -13$

29) $|-6| \bigcirc |6|$

30) $|-7| \bigcirc -6$

31) $|-4| \bigcirc |-5|$

32) $9 \bigcirc |10-1|$

Order the integers in each set from least to greatest.

33) $\{-3, 4, |-2|, |5|, 0\}$

34) $\{-1, -4, |-4|, |0|, 5\}$

Evaluate

35) $|5-3|$

36) $|6|-|2|$

37) $|-3|+|-3|$

38) $|0-7|$

39) $-|6|+9$

40) $|12|-3+|0|$

CHALLENGE

Decide if each of the following is *always true*, *sometimes true*, or *never true* for all integer values of x .

[a] $|x| = x$

[b] $|-x| = x$

[c] $-|x| = x$

[d] $|x| = |-x|$

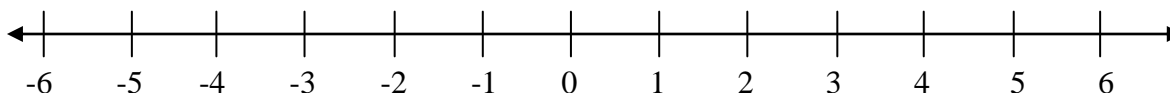
Lesson 3
Adding Integers

Vocabulary

Sum: _____

Commutative Property: _____

Addition with a number line:

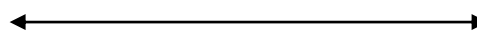


For Example:



1) $-1 + 3$

- Steps:** 1. Start at -1 on the number line
2. Move 3 spaces in the positive direction



2) $-1 + (-3)$

- Steps:** 1. Start at -1 on the number line
2. Move 3 spaces in the negative direction

Alternate Method:

Same Signs
Add and Keep

Different Signs
Subtract and Keep the sign of the larger number

Examples:

- 1) $5 + 2$ 2) $-2 + -9$ 3) $-8 + 1$ 4) $6 + -4$ 5) $6 + (-8)$
- 6) $-9 + (-9)$ 7) $-5 + 5$ 8) $-6 + 3$ 9) $-1 + -2 + 8$ 10) $12 + (-6) + (-8)$

Try These:

- 1) $-2 + 4$ 2) $(-5) + (3)$ 3) $-2 + (-5)$ 4) $-3 + (7)$ 5) $-6 + 7$
- 6) $-3 + -4 + 4$ 7) $-5 + (-1) + 6$ 8) $2 + (-5) + 5$ 9) $-3 + (7) + 3$ 10) $(-7) + -7 + 7$

Adding Larger Integers:

KEEP IN MIND: If you are adding a positive, the number should get bigger (move in positive direction)
If you are adding a negative, the number should get smaller (move in negative direction)

1) $-30 + 20$

2) $40 + -10$

3) $73 + (-13)$

4) $-120 + 20$

5) $-120 + (-20)$

6) $-47 + (-3)$

7) $-78 + 80$

8) $38 + (-24) + 14$

9) The temperature in Vermont is recorded at -12° . At the same time, the temperature in New York is 15° warmer. What is the temperature in New York?

More Examples:

10) $5 + -9$

11) $-2 + 7$

12) $10 + -1$

13) $-8 + 10$

14) $7 + (-3)$

15) $-12 + (-8)$

16) $-44 + 14$

17) $-15 + (-5)$

18) $-9 + 9$

19) $53 + (-28)$

20) $-3 + -4$

21) $-10 + 80$

22) $-5 + -5 + -5$

23) $10 + -4 + 5$

24) $-4 + (-4) + 20$

Review (Multiple Choice):

25) Which of the following integers represents the greatest negative integer?

a) -4

b) -1

c) 400

d) -400

26) Which of the following integers represents the distance from -3 to 5 ?

a) 5

b) 2

c) 8

d) -8

27) What is the absolute value of -7 ?

a) 7

b) -7

c) 14

d) -14

Lesson 3 – Homework

1) $-2 + -4$

2) $2 + 10$

3) $-7 + 8$

4) $12 + (-4)$

5) $-17 + 10$

6) $-11 + -4$

7) $-15 + 10$

8) $20 + (-8)$

9) $-5 + (-5)$

10) $8 + (-4) + 6$

11) $-3 + -6 + 4$

12) $-2 + -1 + -9$

13) $8 + (-10) + 2 + (-5)$

14) $12 + (-26) + 4 + 26$

15) $12 + (-12) + 47$

16) A submarine is 350 feet below sea level, over the course of the next three hours, the submarine rose 120 feet. What is the submarine's distance below sea level?

17) An elevator starts on the ground floor. If it goes up 3 floors, then down 2 floors, and finally up 6 floors, what floor is it on?

18) The sum of -7 and what number is 2?

19) The temperature in city A is -35° . If the temperature in city B is the additive inverse of -35° , how much warmer is city B?

Lesson 4
Subtracting Integers

Vocabulary

Difference: _____

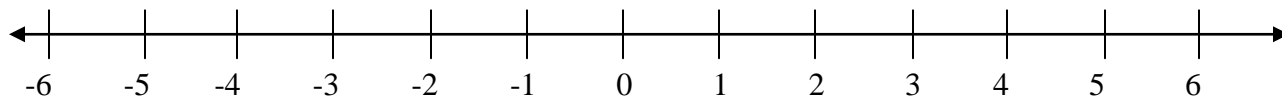
Subtraction with a number line:

To subtract an integer, add its opposite (inverse)

$$a - b = a + (-b)$$

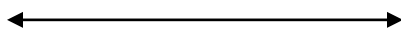
or

$$a - (-b) = a + (b)$$

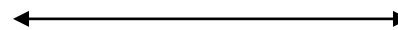


For Example:

1) $-1 - 3$



2) $-1 - (-3)$



Steps:

1. Start at -1 on the number line
2. Move 3 spaces to the _____

Steps: 1. Re-write the problem using addition

2. Start at -1 on the number line
3. Move 3 spaces to the _____

Alternate Method:

Same Signs

Add and Keep

Different Signs

Subtract and Keep the sign of the larger number

Examples:

1) $-2 - 4$

2) $5 - (-3)$

3) $-2 - (-5)$

4) $-3 - (7)$

5) $-6 - 7$

6) $-3 - (-4) - 4$

7) $-5 - (-1) + 6$

8) $2 - (-5) - 5$

9) $-3 - (4) + 3$

10) $-12 - (-12)$

12) The temperature in Chicago is 38° . It is 40° colder in North Dakota. What is the temperature in North Dakota?

13) The temperature in Maine is -21° . At the same time, the temperature in Texas is 79° . What is the difference in the two temperatures?

KEEP IN MIND: When you subtract a negative you are really adding. ** $(-10) = +10$

Try These:

14) $-30 - 20$

15) $40 - -10$

16) $73 - (-13)$

17) $-120 - 20$

18) $-120 - (-20)$

19) $-47 - (-3)$

20) $-78 - 80$

21) $38 - (-24) + 14$

22) The temperature in San Jose is recorded at 82° . At the same time, the temperature in Seattle is 95° colder. What is the temperature in Seattle? (Draw a picture of a thermometer to help.)

23) The temperature in Michigan is -6° . At the same time, the temperature in New Mexico is 94° . What is the difference in the two temperatures? (Draw a picture of a thermometer to help.)

24) Michael is 8 years old. His sister Anna is 7 years older than him, and his brother Rocco is 11 years younger than his sister. How old is his brother?

Lesson 4 –Homework

1) $-4 - 5$

2) $5 - (-3)$

3) $-9 - 2$

4) $-10 - (-5)$

5) $-12 - (-3)$

6) $8 - 4$

7) $7 - 10$

8) $-15 - (-1)$

9) $20 - 32$

10) $-9 - (-6)$

11) $-3 - 5 + 8$

12) $-3 - 3 - 3$

13) Write $8 - 2$ as many ways as you can.

1) _____

2) _____

3) _____

Can you think of anymore?

14) Your friend is having trouble simplifying $20 - (-38)$. Write an explanation to help your friend solve the problem.

15) Ryan has \$75 in his bank account. He withdraws \$48, and then deposits \$12. What is Ryan's new balance?

REVIEW: SHOW ALL WORK

16) $-|-3| + |4|$

17) $|-4| + |3|$

18) $|-4 + 3|$

19) $|-a|$

Lesson 5
Mixed Adding and Subtracting Integers

Vocabulary Review

Sum: _____

Difference: _____

Additive Inverse: _____

Examples - Use the commutative property and the inverse property to simplify:

1) $30 + 45 + -30$

2) $-53 + 7 + 53$

3) $125 + (-73) + 125 + 73$

4) $21 + 47 + (-47) + -4$

5) $34 + 21 + -34$

6) $\left(-\frac{5}{8}\right) + (-72) + \left(\frac{5}{8}\right)$

7) $83 + -83 + 27 + -27$

8) $-20 + 30 + (-20) + 90$

9) $432 + 68 + 11 + -500$

Try These:

1) $3 + 10$

2) $-7 + 5$

3) $-5 - 6$

4) $8 + (-4)$

5) $-15 + 2$

6) $-8 - 8 - 8$

7) $18 - 9$

8) $25 + (-13)$

9) $-6 + (-6)$

10) $-7 + 12$

11) $-16 + 16$

12) $-12 + 7 + (-5)$

13) $9 + (-15) + 3 + (-5)$

14) $14 + (-26) + (-13) + 7$

15) $15 - (-2) + 2$

Lesson 5 – Homework

1) $6 + 8$

2) $-7 + (-8)$

3) $-6 + 5$

4) $-2 + 14$

5) $-7 - 6$

6) $-9 - 12$

7) $-15 - (-10)$

8) $22 + (-8)$

9) $-3 + (-3)$

10) $11 + (-6) + 6$

11) $-3 + (-8) + 4$

12) $-2 + -2 + -2$

13) $-4 - 3 - 2$

14) $13 + (-13) + 4 + (-4)$

15) $18 - (-6)$

16) $-2 + -6$

17) $-12 - 6$

18) $-9 + 2$

19) $-80 + (-16)$

20) $-26 - (-12)$

21) $-30 + (-30)$

22) $-15 + 16$

23) $18 + (-10) + 3 - (-5)$

24) $-11 + -3$

25) $-5 - 6 - 7 - 8$

26) $-13 + -6 + 8$

27) $-70 - 10 + -9$

Lesson 6
Multiplying and Dividing Integers

Vocabulary

Product: _____

Quotient: _____

Multiplicative Inverse: _____

Undefined: _____

Rules:

1) Count the negative signs

Odd number of negative signs - Answer Negative

Even number of negative signs - Answer Positive

2) Multiply or Divide

Any number multiplied by zero is _____

Any number divided by zero is _____

Examples:

1) $-5 \cdot -2$

2) $-8 \cdot 4$

3) $8 \cdot -4$

4) $-25 \div 5$

5) $25 \div -5$

6) $(7)(0)$

7) $\frac{8}{0}$

8) $\frac{-24}{8}$

9) $(-1)^4$

10) $-1 \cdot -3 \cdot -4 \cdot 2$

Try These

1) $-15 \cdot -2$

2) $(-3)(10)$

3) $56 \div -7$

4) $-2 \cdot 1 \cdot -3$

5) $-2 \cdot -6 \cdot 2 \cdot -1$

6) $(-1)^3$

7) $(-1)^{246}$

8) $\frac{-81}{-9}$

9) $-12 \div -4$

10) $\frac{28}{-7}$

11) $-2(-3)$

12) $-5 \cdot 5 \cdot 2$

Multiply:

1) $(-4)(3)$

2) $(-5)(-8)$

3) $-5 \cdot 7$

4) $16(-3)$

5) $(-50)(-2)$

6) $(-12)(-1)$

7) $(-9)(-8)$

8) $(-15)(-3)$

9) $(16)(-4)$

10) $(-3)(-1)$

11) $(-1)(-1)(-1)$

12) $-8 \cdot 0 \cdot 2$

Divide:

13) $35 \div -5$

14) $\frac{16}{-4}$

15) $\frac{-20}{-5}$

16) $-21 \div 7$

17) $\frac{(-8)}{0}$

18) $\frac{(-32)}{8}$

19) $270 \div (-90)$

20) $-55 \div 11$

21) $\frac{400}{-200}$

22) An oil rig is drilling into the ground at a rate of 7 feet per minute. What integer represents the position of the oil rig after 22 minutes?

23) Monica has 100 shares of stock worth \$8 each. If the price drops \$3 per share, what integer represents the change of Monica's investment?

REVIEW: SHOW ALL WORK

24) $6 + -12$

25) $-25 + -7$

26) $40 - (-20)$

Lesson 7
Evaluating Expressions

Vocabulary

Algebraic Expression: _____

Variable: _____

Evaluate: _____

Substitution Property: _____

STEPS:

- 1) Write the original problem.
 - 2) Rewrite the expression with the values of each variable substituted in parentheses.
 - 3) Simplify by using order of operations. (SHOW ALL WORK)
-

Examples: Evaluate each expression if $n = 4$, $p = 3$, and $t = 6$

- | | | | |
|-------------|-----------------|-------------------|---------------------|
| 1) $3n + p$ | 2) $t^2 - 2p$ | 3) $3p - n + 4$ | 4) $\frac{npt}{3}$ |
| 5) $-6.1p$ | 6) $1.5(p + n)$ | 7) $4n + 3p - 2t$ | 8) $12 \div 3n + p$ |
-

Try These: Evaluate each expression if $n = 2$, $p = -4$ and $t = 3$

- | | | | |
|----------------------|----------------|-----------------------------|---------------------|
| 1) $5n + p$ | 2) $-2.4t$ | 3) $3(p - n) + 4$ | 4) $p \div (t - 1)$ |
| 5) $\frac{p + n}{t}$ | 6) $n - p + t$ | 7) $\frac{p^2 + 4}{3t + 1}$ | 8) $p - n^t$ |
-

USE THE GIVEN FORMULA TO EVALUATE:

9) Drew drove to Chicago at an average rate of 50 mph. The trip took him 17 hours. How far did Drew drive?

Distance = Rate x Time

Evaluate each expression if $x = 2$, $y = 3$ and $z = 5$

1) $2x + z$

2) $z - 2x$

3) $3x - y + 3$

4) $\frac{5xy}{z}$

5) $(xy)^2$

6) $3x^2$

7) $\frac{x^2 + 4}{3y - 5}$

8) $6x^2 - z$

USE THE GIVEN FORMULA TO EVALUATE:

9) John is deciding whether he wants to install a rectangular pool or a cylindrical pool in his back yard. The pool company shows him two models, one a rectangular prism and one a cylinder, that are the same price. He wants to determine which pool would hold a larger volume of water.

[a] The rectangular prism pool has a width of 10 feet, a length of 20 feet, and a height of 5 feet. Using the formula for volume of a rectangular prism, determine the volume of this model.

$$V = lwh$$

[b] The cylindrical pool has a radius of 10 feet, and a height of 4 feet. Using the formula for volume of a cylinder, estimate the volume of this model. (use 3 as an estimate for π at the very end of the problem)

$$V = \pi r^2 h$$

[c] Which pool has a greater volume? By how much?

10) A rectangular prism has a length of 5 inches, a width of 3 inches and a height of 7 inches. Find the surface area of the rectangular prism.

$$\text{Surface Area} = 2lw + 2lh + 2wh$$

Lesson 8
Word Problems

1) One night in January, the temperature in Alaska is -16°F . The next day, the temperature is half of what it was the night before. What is the temperature?

2) During the fourth quarter, the Patriots were penalized 3 times for the same amount for a total of 45 yards. Write a division sentence to represent this equation. Then find the number of yards for each penalty.

3) Joey owes his friend \$10. He pays back \$4, and then borrows another \$17. How much money does Joey owe his friend?

4) A submarine is 800 feet below sea level. Over the course of the next few hours, the submarine ascends 200 feet, descends 400 feet, ascends 200 feet and descends 900 feet. How far below sea level is the submarine?

5) The temperature at midnight is recorded at -11° . Over the next ten hours, the temperature increased 13° . What is the temperature after this ten hour period?

6) An elevator started on the 9th floor goes up 2 floors, then down 5 floors, then up 3 floors, then down 6 floors. On what floor is the elevator now?

7) The temperature in Anchorage, Alaska is recorded at -17° . At the same time, the temperature in Los Angeles, California is 97° warmer than in Anchorage. What is the temperature in Los Angeles?

8) In Buffalo, New York, the temperature was -14°F in the morning. If the temperature dropped 7°F at 12:00pm, what is the temperature now?

9) A submarine was situated 750 feet below sea level. If it descends (goes down) 200 feet, what is its new position?

10) A submarine was situated 800 feet below sea level. If it ascends (goes up) 50 feet per hour, what is its new position after 5 hours?

Lesson 8 –Homework(2 pages)

1) Maggie deposits \$35 in the bank. She then withdraws \$10 on Monday, deposits \$15 on Tuesday, and then withdraws \$14 on Wednesday. How much does Maggie have left in the bank?

2) A submarine was situated 450 feet below sea level. If it descends (goes down) 300 feet, what is its new position?

3) A stock opens at \$450 per share on Monday. The chart displays the change over the course of the next few days. What is the value of the stock per share at closing on Friday?

Day	Change
Monday	+\$21
Tuesday	-\$13
Wednesday	-\$8
Thursday	+\$15
Friday	-\$6

4) In the Sahara Desert one day it was 136°F . In the Gobi Desert a temperature of -50°F was recorded. What is the difference between these two temperatures?

5) Mt. Everest, the highest elevation in Asia, is 20,320 feet above sea level. The Dead Sea, the lowest elevation, is 282 below sea level. What is the difference between these two elevations?

6) A runner jogs 14 miles in one direction. He then turns around and jogs 18 miles in the opposite direction.

[a] How far is the runner from his starting position?

[b] How far did the runner jog in total?

7) A scuba diver is 180 feet below sea level. She ascends 32 feet, and then descends 48 feet. What is her current depth?

8) An explorer jumps out of a plane and parachutes into a cave. He jumped out of the plane at 300 feet above sea level, and lands at the bottom of the cave, which is 900 feet below sea level.

[a] How far was the explorer's jump?

[b] Once in the cave, the explorer continues deeper into the cave. If he climbs to the lowest point in the cave, and records the depth at 1524 feet below sea level, how far down did he climb from where he landed?

9) A roller coaster at Six Flags has a largest drop of -276 feet. A roller coaster at Dorney Park has a largest drop of -239 feet. How much bigger is the drop at the roller coaster at Six Flags?

10) The Volunteer Club raked leaves at several senior citizens' homes in the neighborhood. If each group of three students could remove 8 cubic meters of leaves in one hour, find an integer to represent the number of cubic meters of leaves 12 students could remove in 3 hours?

7R Unit 1 Review

MATCHING:

____ 1) Integer

____ 2) Operations

____ 3) Commutative Property

____ 4) Inverse

____ 5) Expression

a. States that $a + b = b + a$

b. Addition, subtraction, multiplication, and division

c. Negative opposite

d. A mathematical sentence with no equal sign

e. The set of whole numbers and their negative opposites

SIMPLIFY: NO CALCULATOR

6) $3 + 2(2 + 1)$

7) $5 \cdot 2 + 4$

8) $(8 - 6) \div 2 + 1$

9) $3 - (-2)$

10) $-17 + 3$

11) $-12 + -3$

12) $-3 - (-10)$

13) $(-2)^2$

14) -2^2

15) $\frac{-48}{-4}$

16) $-3 \cdot (-12)$

17) $(16 - 4) \div -2$

18) $(4 + 2)^2 - (-12)$

19) $(-1)^3 + 3 - 2$

20) $(-3)(-2)(5)$

21) $(-3 - 6) + (3)(-2)$

22) $-5 - 15 \div -3$

23) $2 - (3 + 6 \div -2)$

24) $|-9|$

25) $|14|$

26) $|-40|$

27) $|-10|$

28) $|100|$

29) $|-4| + |-1|$

30) $|-4 - 1|$

31) $|3 - 1|$

32) $|3| + |-1|$

COMPARE:

33) $|-5| \bigcirc 4$

34) $|6| \bigcirc |-6|$

35) $|-11| \bigcirc 10$

36) $|13| \bigcirc -13$

REPRESENT EACH SITUATION AS AN INTEGER:

37) \$10 withdrawal _____

38) 20 yard gain _____

39) 8° temperature drop _____

40) \$15 deposit _____

EVALUATE THE FOLLOWING IF: $x = 3$, $y = 4$, and $z = -2$

41) $2y - 2x$

42) y^2

43) $1.3xz$

44) $y + z$

45) An elevator begins on the 4th floor and goes up 2 floors and then down 3 floors. What floor is the elevator on?

46) The temperature was 20° at noon. The temperature dropped at a rate of 8° per hour. What is the temperature at 3:00pm? Show all work.

47) Find the difference between 37° and -12° . Prove your answer on a number line.

48) Order from least to greatest {20, -12, -30, 0, 26, -15}

49) John travels for 3 miles at an average speed of 40 mph, how far does he travel in this 3 hour span?

Distance = Rate • Time

50) A school policy requires that there be at least one chaperone for every 6 students on a field trip. How many chaperones are required for a field trip with 42 students?

51) What is the name of the answer to an

Addition problem: _____

Subtraction problem: _____

Multiplication problem: _____

Division problem: _____

52) The temperature on Monday morning was -12° using the chart determine what the temperature is Friday evening.

Day	Change
Monday	-6
Tuesday	3
Wednesday	4
Thursday	-2
Friday	-3

UNIT 2

FRACTIONS AND DECIMALS

	Date	Lesson	
		1	Introduction to Decimals
		2	Adding, Subtracting, Multiplying, & Dividing Decimals with Integers
		3	Introduction to Fractions
		4	Adding and Subtracting Fractions with Integers
		5	Quiz/ Multiplying and Dividing Fractions with Integers
		6	Dividing Complex Fractions
		7	Converting Rational Numbers to Decimals
		8	Comparing and Ordering Rational Numbers
		9	Timed Quiz/ Review
			Review
			Test

Lesson 1
Introduction to Decimals

Vocabulary

Decimal: _____

Part I: Place Values

Fill in the place value in the appropriate space:

9	,	4	7	2	,	3	4	0	.	2	3	9	8

Examples:

Use the given decimal to answer the following questions: **743.1256**

1. Which digit is in the hundreds place?
2. Which digit is in the tens place?
3. Which digit is in the ones place?
4. Which digit is in the tenths place?
5. Which digit is in the hundredths place?
6. Which digit is in the thousandths place?
7. Which digit is in the ten-thousandths place?

Part II: Rounding

Rounding Rules:

1. Underline the place value you are rounding.
2. Form a box around the place value you are rounding to and all numbers that come before that place value.
2. Draw an arrow to the number after the place value you are rounding to.
3. If the number after the place value you are rounding to is **5 or HIGHER**, round **UP**.
4. If the number after the place value you are rounding to is **LESS THAN 5**, the numbers stays the **SAME**.

For Example: Round to the nearest tenth

$$\boxed{2,453.\underline{2}7} = 2.453.3$$

Round the following decimals to the nearest tenth:

Examples:

1. 3.19 2. 4.921 3. 5.909 4. 89.985 5. 12.487

Try These:

6. 5.479 7. 72.134 8. 41.295 9. 9.987 10. 1.05

Round the following decimals to the nearest hundredth:

Examples:

1. 3.297 2. 8.9294 3. 75.989 4. 8.495 5. 18.783

Try These:

6. 6.754 7. 9.987 8. 67.333 9. 28.545 10. 19.296

Round the following decimals to the nearest thousandth:

Examples:

1. 3.2978 2. 2.4234 3. 52.0091 4. 18.1236 5. 21.7253

Try These:

6. 0.0008 7. 8.0612 8. 14.1129 9. 63.9867 10. 7.0054

Place Values:

Use the given decimal to answer the following questions: 4,657.3892

1. Which digit is in the hundreds place?
 2. Which digit is in the tens place?
 3. Which digit is in the ones place?
 4. Which digit is in the tenths place?
 5. Which digit is in the hundredths place?
 6. Which digit is in the thousandths place?
 7. Which digit is in the ten-thousandths place?
-

Rounding:

Round the following decimals to the nearest tenth:

8. 2.68 9. 7.234 10. 12.357 11. 55.021 12. 17.145
-

Round the following decimals to the nearest hundredth:

13. 5.228 14. 30.189 15. 78.972 16. 24.290 17. 7.895
-

Round the following decimals to the nearest thousandth:

18. 0.4444 19. 10.0757 20. 45.2305 21. 20.1033 22. 9.7001
-

Round to the nearest whole number:

23. 5.542 24. 33.276 25. 107.89
-

Lesson 2
Adding, Subtracting, Multiplying, & Dividing Decimals with Integers

Vocabulary Review:

Sum: _____

Difference: _____

Product: _____

Quotient: _____

Adding/ Subtracting Decimals

Rules:

1. Neatly line up the Decimals
2. Add or Subtract

Examples: Find the Sum or Difference

1) 2.13
 $+ 0.4$

2) 0.13
 $+ 3.87$

3) 6.575
 $- 2.82$

4) $195.62 - 35.1$

5) $12.6 + 2.7 + 100.67$

6) $9.001 - (-2.4)$

Try These:

1) $76.32 - 16.81$

2) $20.54 - (-3.6)$

3) $34.88 - 14.12$

4) $16.2 + 24.9$

5) $9.4 - 4.08$

6) $3.8 + 10.5 + 1.2 + 7$

Apply:

- 7) A serving of popcorn contains 0.005 g of sodium. If butter adds .116 g of sodium and salt adds 0.5 g, how much sodium is in a serving of popcorn with butter and salt?

Multiplying Decimals

Rules:

1. Ignore the decimals
2. Multiply the given numbers as if they were whole numbers
3. Count the amount of places after the decimal in each number
4. Move the decimal the number of places you counted from the right

Examples: Find the product

1) 1.02×3.6

2) -58×2.6

3) $(-4.15)(-2.1)$

Try These:

4) $(2.6)(0.45)$

5) $(2.15)(1.5)$

6) $(0.91)(2.7)$

Dividing Decimals

Rules:

1. Rewrite each problem as long division
2. Change the outside number to a whole number
3. Move the inside decimal the same amount of places as the outside number
4. Divide the two numbers as whole numbers to find the quotient
5. Write the decimal UP into the answer

Examples: Find the Quotient

1) $3.12 \div 2.6$

2) $19.2 \div -3.2$

3) $-10.8 \div -2.7$

Try These:

4) $\frac{300}{75}$

5) $\frac{300}{7.5}$

6) $\frac{300}{0.75}$

Find the Sum or Difference:

1) $4.6 + 8.79$

2) $- 8.7 - 2.03$

3) $14.8 + 29.07$

4) $14.5 - 8.3$

5) $8.9 + 2.14 + 7.1$

6) $5.002 - (-4.3)$

Find the Product:

7) 4.6×3.9

8) $(-1.8)(0.7)$

9) $(2.1)(3.1)$

Find the Quotient:

10) $4.85 \div 0.1$

11) $57.4 \div 0.7$

12)
$$\frac{-4.74}{-0.06}$$

Apply:

13) An apple costs \$.60. How much will it cost to purchase a dozen apples?

14) Nina and three friends ate lunch at the cafe. They decided to split the bill evenly. The total bill was \$17.84. How much was each person's share?

15) Alicia paid \$1.32 for a bag of potato chips. The potato chips cost \$0.55 per pound. How much does the bag of potato chips weigh?

Lesson 3
Introduction to Fractions

Vocabulary:

Fraction: _____

Numerator: _____

Denominator: _____

Simplify: _____

Part I: Equal Fractions (Multiply)

$$\frac{5}{8} = \frac{10}{16}$$



Examples: Find the missing numbers

1) $\frac{2}{3} = \frac{10}{\quad}$

2) $\frac{7}{10} = \frac{\quad}{100}$

3) $\frac{6}{7} = \frac{54}{\quad}$

4) $\frac{3}{30} = \frac{\quad}{60}$

5) $\frac{0}{9} = \frac{\quad}{36}$

Try These:

6) $\frac{7}{12} = \frac{42}{\quad}$

7) $\frac{1}{9} = \frac{9}{\quad}$

8) $\frac{8}{21} = \frac{\quad}{63}$

9) $\frac{4}{5} = \frac{100}{\quad}$

10) $\frac{2}{8} = \frac{\quad}{36}$

Part II: Simplify - (Divide by the GCF)

$$\frac{12}{20} = \frac{3}{5}$$



Examples: Simplify each fraction:

1) $\frac{9}{15} = \frac{3}{\quad}$

2) $\frac{8}{32} = \frac{\quad}{4}$

3) $\frac{17}{20} = \frac{17}{\quad}$

4) $\frac{56}{64} = \frac{\quad}{8}$

5) $\frac{12}{48} = \frac{1}{\quad}$

Try These:

6) $\frac{15}{25} = \frac{3}{\quad}$

7) $\frac{6}{12} = \frac{\quad}{2}$

8) $\frac{12}{32} = \frac{\quad}{8}$

9) $\frac{25}{100} = \frac{1}{\quad}$

10) $\frac{13}{17} = \frac{\quad}{17}$

Write three equivalent fractions to each given fraction (Multiply or Divide):

Examples:

1) $\frac{2}{4} =$

2) $\frac{6}{8} =$

3) $\frac{12}{48} =$

Try These:

4) $\frac{9}{15} =$

5) $\frac{1}{7} =$

6) $\frac{16}{20} =$

Compare these fractions using $<$, $>$, or $=$.

Rules:

1. Write each fraction with a common denominator
2. Compare the numerators

Examples:

1) $\frac{6}{7} \bigcirc \frac{4}{7}$

2) $\frac{4}{8} \bigcirc \frac{16}{32}$

$\bigcirc \frac{2}{3} \quad \frac{3}{4}$

Try These:

4) $\frac{19}{32} \bigcirc \frac{21}{32}$

5) $\frac{4}{5} \bigcirc \frac{9}{10}$

6) $\frac{1}{4} \bigcirc \frac{1}{5}$

Apply:

- 1) John has 40 bolts in his toolbox. 12 of them are brass. What fraction of the bolts are brass?
Write the answer as a simplified fraction.

-
- 2) There are 60 washers in John's toolbox. 48 of them are zinc-plated. What fraction of the washers are zinc-plated? Write the answer as a simplified fraction.

-
- 3) John owns a bolt that has a length of $\frac{3}{4}$ in. Give 3 equal measures for the length of the bolt.

Lesson 3 – Homework

Find the missing numbers:

1) $\frac{2}{7} = \frac{12}{\quad}$

2) $\frac{6}{10} = \frac{\quad}{50}$

3) $\frac{20}{25} = \frac{\quad}{100}$

4) $\frac{3}{9} = \frac{21}{\quad}$

5) $\frac{0}{7} = \frac{\quad}{56}$

6) $\frac{4}{6} = \frac{32}{\quad}$

7) $\frac{1}{11} = \frac{\quad}{121}$

8) $\frac{7}{7} = \frac{70}{\quad}$

9) $\frac{12}{20} = \frac{\quad}{40}$

10) $\frac{5}{9} = \frac{\quad}{36}$

Simplify each fraction:

11) $\frac{3}{36} = \frac{1}{\quad}$

12) $\frac{7}{10} = \frac{\quad}{10}$

13) $\frac{16}{24} = \frac{2}{\quad}$

14) $\frac{15}{35} = \frac{\quad}{7}$

15) $\frac{10}{100} = \frac{\quad}{10}$

16) $\frac{14}{20} = \frac{7}{\quad}$

17) $\frac{80}{100} = \frac{\quad}{5}$

18) $\frac{12}{48} = \frac{1}{\quad}$

19) $\frac{36}{40} = \frac{\quad}{10}$

20) $\frac{1}{9} = \frac{\quad}{9}$

Write three equivalent fractions to each given fraction:

21) $\frac{20}{25} =$

22) $\frac{1}{8} =$

23) $\frac{7}{9} =$

24) $\frac{4}{5} =$

25) $\frac{8}{16} =$

26) $\frac{5}{12} =$

Compare these fractions using $<$, $>$, or $=$:

27) $\frac{4}{9} \bigcirc \frac{5}{9}$

28) $\frac{1}{2} \bigcirc \frac{1}{3}$

29) $\frac{2}{3} \bigcirc \frac{8}{12}$

30) $\frac{16}{17} \bigcirc \frac{17}{17}$

31) $\frac{11}{12} \bigcirc \frac{55}{60}$

32) $\frac{13}{14} \bigcirc \frac{6}{7}$

Order the following fractions from least to greatest:

33) $\frac{2}{5}, \frac{1}{4}, \frac{3}{10}$

Lesson 4
Adding and Subtracting fractions

Vocabulary:

Proper Fraction: _____

Improper Fraction: _____

Mixed Number: _____

Least Common Denominator: _____

Add/ Subtract fractions

Rules:

- 1. Write each fraction with a common denominator**
- 2. Add or Subtract the numerators**
- 3. Keep the common denominator**
- 4. If possible, simply the answer into lowest terms**

Examples: Add

1) $\frac{5}{12} + \frac{1}{12}$

2) $\frac{2}{5} + \frac{3}{5}$

3) $\frac{5}{16} + \frac{5}{16}$

4) $\frac{3}{4} + \frac{1}{20}$

5) $\frac{3}{5} + \frac{1}{7}$

Try These:

1) $\frac{3}{9} + \frac{2}{9}$

2) $\frac{1}{8} + \frac{1}{10}$

3) $\frac{1}{9} + \frac{2}{3}$

4) $\frac{1}{4} + \frac{5}{8}$

5) $\frac{5}{12} + \frac{8}{15}$

Examples: Subtract

1) $\frac{3}{5} - \frac{2}{5}$

2) $\frac{7}{12} - \frac{1}{12}$

3) $\frac{5}{10} - \frac{5}{10}$

4) $\frac{2}{3} - \frac{1}{4}$

5) $\frac{7}{8} - \frac{3}{16}$

Try These:

1) $\frac{5}{8} - \frac{3}{8}$

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

3) $\frac{4}{9} - \frac{1}{6}$

4) $\frac{8}{9} - \frac{4}{9}$

5) $\frac{3}{5} - \frac{1}{7}$

Introducing Improper Fractions and Mixed Numbers:**Examples:** Perform the given operation

1) $\frac{1}{4} + \frac{15}{16}$

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

3) $\frac{5}{9} + \frac{1}{3} + \frac{5}{6}$

4) $7 + \frac{11}{16}$

5) $2\frac{1}{8} + 9\frac{7}{8}$

6) $4\frac{1}{2} + 3\frac{1}{6}$

$$\begin{array}{r} 7) 15\frac{6}{7} \\ - 8\frac{3}{7} \\ \hline \end{array}$$

$$\begin{array}{r} 8) 10\frac{9}{10} \\ - 3\frac{1}{10} \\ \hline \end{array}$$

$$9) 4\frac{11}{12} - 1\frac{3}{4}$$

Try These:

$$1) \frac{3}{4} + \frac{2}{3}$$

$$2) \frac{9}{10} + \frac{7}{8} + \frac{3}{5}$$

$$3) 7\frac{5}{16} + 3\frac{1}{4}$$

$$4) 11\frac{4}{5} + \frac{5}{6}$$

$$\begin{array}{r} 5) 12\frac{3}{4} \\ - 5\frac{1}{2} \\ \hline \end{array}$$

$$6) 9\frac{17}{20} - \frac{4}{5}$$

Adding and Subtracting Fractions with Integer rules:

$$1) \frac{3}{10} - \left(-\frac{2}{5}\right)$$

$$2) -\frac{5}{7} - \frac{1}{5}$$

$$3) \frac{2}{4} - \frac{15}{20}$$

Find the sum or difference:

1) $\frac{1}{8} + \frac{5}{8}$

2) $\frac{5}{6} - \frac{1}{6}$

3) $\frac{7}{10} - (-\frac{1}{10})$

4) $6\frac{2}{5} + 1\frac{4}{5}$

5) $7\frac{2}{3} - 1\frac{1}{6}$

6) $6\frac{2}{5} + 1\frac{4}{10}$

7) $\frac{1}{7} + \frac{5}{9}$

8) $\frac{11}{12} - \frac{3}{4}$

9) $\frac{9}{10} - \frac{8}{11}$

10) $5\frac{2}{5} + 4\frac{4}{9}$

11) $-8\frac{2}{3} - 9\frac{1}{6}$

12) $16\frac{2}{9} + 1\frac{7}{10}$

13) $\frac{1}{16} + \frac{1}{32}$

14) $\frac{6}{18} - \frac{1}{3}$

15) $\frac{12}{5} - \frac{9}{18}$

16) $-1\frac{2}{3} + 3\frac{7}{9}$

17) $8\frac{1}{3} - 3\frac{1}{27}$

18) $11\frac{2}{5} + 1\frac{11}{30}$

19) $\frac{7}{8} + \frac{7}{8} + \frac{7}{16}$

20) $\frac{5}{6} + \frac{4}{5} + \frac{11}{15}$

21) $5\frac{1}{2} + 7\frac{2}{3} - 4\frac{1}{2}$

Lesson 5
Multiplying and Dividing Fractions

Vocabulary:

Reciprocal: _____

Multiplying Fractions

Rules:

1. Convert each mixed number into an improper fraction
2. Simplify/ Reduce vertically
3. Simplify/ Reduce diagonally
4. Multiply across
5. If possible, convert back to a mixed number

Examples: Multiply

1) $\frac{1}{2} \times \frac{1}{4}$

2) $\frac{1}{5} \cdot \frac{3}{10}$

3) $-\frac{4}{5} \times \frac{5}{8}$

4) $\frac{3}{8} \cdot \frac{4}{9}$

5) $-\frac{2}{5} \times -\frac{15}{16}$

6) $6 \cdot \frac{1}{3}$

7) $1\frac{2}{3} \times -12$

8) $10 \times 4\frac{1}{5}$

9) $2\frac{1}{7} \times 2\frac{1}{3}$

10) $\frac{2}{5} \times 3\frac{3}{4}$

Try These:

1) $\frac{2}{3} \times \frac{1}{4}$

2) $-\frac{2}{3} \cdot \frac{3}{4}$

3) $\frac{3}{10} \times \frac{5}{14}$

4) $-\frac{5}{6} \cdot -\frac{6}{7}$

5) $\frac{3}{4} \times 8$

6) $\frac{2}{5} \times \frac{2}{5}$

7) $10 \cdot \frac{3}{4}$

8) $2\frac{1}{2} \cdot 2\frac{1}{2}$

9) $4\frac{7}{8} \times -6$

10) $5\frac{1}{3} \times 4\frac{1}{2}$

Apply:1) What is $\frac{2}{3}$ of 60?

2) David allows $\frac{1}{3}$ hour per pound to cook the roast. how long will it take to cook a $4\frac{1}{2}$ - pound roast?

Dividing Fractions

Rules:

1. Convert each mixed number into an improper fraction
2. Change the operation from division to multiplication
3. Flip the second fraction
4. Continue the problem using the multiplication rules

Examples: Divide

$$1) \frac{1}{2} \div \frac{1}{4}$$

$$2) \frac{3}{10} \div \frac{1}{5}$$

$$3) \frac{3}{8} \div \frac{7}{16}$$

$$4) -\frac{2}{3} \div \frac{5}{6}$$

$$5) \frac{3}{16} \div \frac{5}{12}$$

$$6) -\frac{7}{9} \div -7$$

$$7) \frac{3}{7} \div \frac{3}{7}$$

$$8) -5 \div \frac{3}{5}$$

$$9) 9 \div 2\frac{1}{4}$$

$$10) 2\frac{1}{12} \div 3\frac{3}{4}$$

Try These:

$$1) \frac{3}{8} \div \frac{6}{7}$$

$$2) -\frac{6}{7} \div \frac{3}{8}$$

$$3) \frac{1}{2} \div \frac{7}{16}$$

$$4) -\frac{4}{5} \div -\frac{2}{9}$$

$$5) \frac{2}{5} \div \frac{2}{5}$$

$$6) \frac{5}{8} \div 5$$

$$7) 2\frac{1}{2} \div -\frac{5}{6}$$

$$8) 6\frac{1}{4} \div 2$$

$$9) -10 \div -3\frac{1}{3}$$

$$10) 2\frac{3}{16} \div 1\frac{1}{4}$$

Find the product or quotient:

1) $\frac{3}{8} \times \frac{1}{2}$

2) $-\frac{4}{5} \div \frac{1}{5}$

3) $\frac{1}{9} \div \frac{5}{6}$

4) $3\frac{1}{3} \times \frac{1}{3}$

5) $4\frac{1}{6} \cdot -2\frac{2}{5}$

6) $6\frac{1}{2} \div 1\frac{1}{2}$

7) $3\frac{3}{8} \div 1\frac{1}{4}$

8) $-\frac{3}{5} \div -\frac{5}{3}$

9) $\frac{4}{7} \cdot -7$

10) $12 \cdot \frac{1}{10}$

11) $-\frac{9}{16} \div 3$

12) $-6 \times \frac{3}{8}$

13) $5\frac{1}{3} \times 6\frac{3}{4}$

14) $-4\frac{1}{3} \cdot -2\frac{2}{3}$

15) $4\frac{1}{4} \div 7\frac{7}{8}$

16) $2\frac{3}{16} \div -1\frac{1}{4}$

17) $\frac{15}{16} \times \frac{2}{5} \times \frac{3}{4}$

18) $-6 \cdot \frac{3}{8} \cdot \frac{4}{5}$

Lesson 6
Complex Fractions

Vocabulary:

Complex Fraction: _____

Rules: "Keep. Change. Flip."

- 1. Convert any Mixed Number into an Improper Fraction**
- 2. Keep the top fraction as is**
- 3. Change the operation from division to multiplication**
- 4. Flip the bottom fraction next to the first fraction**
- 5. Continue the problem using the multiplication rules**

Examples:

1) $\frac{\frac{3}{2}}{\frac{8}{10}}$

2) $\frac{\frac{2}{5}}{\frac{3}{6}}$

3) $\frac{\frac{1}{4}}{\frac{5}{6}}$

Try These:

4) $\frac{\frac{3}{4}}{\frac{4}{3}}$

5) $\frac{\frac{3}{2}}{\frac{8}{10}}$

6) $\frac{\frac{6}{2}}{\frac{12}{12}}$

More Examples:

7) $\frac{5\frac{1}{3}}{1\frac{1}{2}}$

8) $\frac{2\frac{1}{3} + \frac{1}{4}}{\frac{1}{3}}$

9) $\frac{\frac{1}{3} + \frac{1}{2}}{\frac{9}{5} + \frac{1}{5}}$

$$1) \frac{\frac{3}{4}}{\frac{2}{3}}$$

$$2) \frac{\frac{2}{5}}{\frac{4}{3}}$$

$$3) \frac{\frac{1}{6}}{\frac{5}{12}}$$

$$4) \frac{\frac{2}{5}}{\frac{8}{5}}$$

$$5) \frac{3\frac{1}{8}}{25}$$

$$6) \frac{13\frac{1}{3}}{8}$$

$$7) \frac{-6\frac{1}{4}}{2\frac{1}{2}}$$

$$8) \frac{\frac{1}{8} + \frac{1}{10}}{\frac{3}{5}}$$

$$9) \frac{\frac{2}{3} + \frac{1}{9}}{\frac{4}{5} + \frac{1}{15}}$$

Lesson 7

Convert Rational Numbers to Decimals

Types of Fractions	Types of Decimals
Proper Fractions	Terminating Decimals
Improper Fractions	Non-Terminating Decimals
Mixed Numbers	Repeating Decimals

Fractions to Remember:

$\frac{1}{4} = .25$	$\frac{1}{2} = .5$	$\frac{3}{4} = .75$
---------------------	--------------------	---------------------

$\frac{1}{5} = .2$	$\frac{2}{5} = .4$	$\frac{3}{5} = .6$	$\frac{4}{5} = .8$
--------------------	--------------------	--------------------	--------------------

$\frac{1}{3} = .\bar{3}$	$\frac{2}{3} = .\bar{6}$
--------------------------	--------------------------

$\frac{1}{8} = .125$	$\frac{3}{8} = .375$	$\frac{5}{8} = .625$	$\frac{7}{8} = .875$
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$\frac{1}{9} = .\bar{1}$	$\frac{2}{9} = .\bar{2}$	$\frac{4}{9} = .\bar{4}$	$\frac{5}{9} = .\bar{5}$	$\frac{7}{9} = .\bar{7}$	$\frac{8}{9} = .\bar{8}$
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$\frac{1}{10} = .1$	$\frac{2}{10} = .2$	$\frac{3}{10} = .3$	$\frac{4}{10} = .4$	$\frac{5}{10} = .5$	$\frac{6}{10} = .6$	$\frac{7}{10} = .7$	$\frac{8}{10} = .8$	$\frac{9}{10} = .9$	$\frac{10}{10} = 1$
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Converting Fractions to Decimals: Divide the denominator into the numerator

Examples:

1) $\frac{1}{4}$

2) $\frac{4}{9}$

3) $3\frac{2}{5}$

4) $4\frac{8}{9}$

5) $2\frac{7}{8}$

6) $\frac{19}{5}$

Try These:

7) $\frac{5}{8}$

8) $\frac{8}{9}$

9) $2\frac{2}{9}$

Converting Decimals to Fractions or Mixed Numbers:

1. Determine what place the decimal goes to (tenth, hundredth, thousandth, etc.)
2. Write the number in the numerator of a fraction with the place value in the denominator
3. Simplify if possible

Examples:

1) 0.75

2) 0.9

3) 2.125

Try These:

4) 0.234

5) 3.2

6) 0.875

7) $0.\bar{4}$

8) 3.9

9) 0.45

10) The Mets won 77 out of 162 games in the 2011 regular season.

a) Express this as a fraction

b) Convert the fraction to a decimal (round to the nearest hundredth)

11) The Yankees won 97 out of 162 games in the 2011 regular season.

[a] Express this as a fraction

[b] Convert the fraction to a decimal (round to the nearest hundredth)

Convert each fraction or mixed number to a decimal (round to the nearest hundredth if necessary):

1. $\frac{1}{9}$

2. $\frac{7}{8}$

3. $\frac{3}{5}$

4. $2\frac{4}{9}$

5. $3\frac{1}{8}$

6. $\frac{7}{5}$

7. $\frac{5}{11}$

8. $2\frac{3}{7}$

9. $\frac{4}{7}$

10. $5\frac{9}{25}$

11. $\frac{17}{20}$

12. $\frac{53}{50}$

Convert each decimal to a fraction or mixed number:

13. 0.5

14. 0.91

15. 0.15

16. 0.23

17. 0.251

18. 0.625

19. $0.\bar{2}$

20. 3.05

21. 0.36

22. 17.375

23. 0.25

24. 0.7

Lesson 8

Compare and Order Rational Numbers

Method 1

1. Convert all numbers to decimals (all to the same place value)
2. Compare and Order

ex: $\frac{3}{10}$, $\frac{1}{4}$, $\frac{3}{8}$, 0.5 , 0.7

Method 2

1. Convert all numbers to fractions with a common denominator
2. Compare and Order

ex: $\frac{3}{10}$, $\frac{1}{4}$, $\frac{3}{8}$, 0.5 , 0.7

Examples: Compare

1. $0.6 \bigcirc 0.525$

2. $\frac{3}{4} \bigcirc \frac{3}{8}$

3. $0.8 \bigcirc \frac{17}{20}$

4. $3\frac{5}{8} \bigcirc 3.625$

5. $-0.25 \bigcirc -0.2$

6. $-\frac{4}{5} \bigcirc -\frac{7}{9}$

7. $0.5 \bigcirc \frac{11}{20}$

8. $4\frac{7}{8} \bigcirc 3.9$

Try These:

9. $0.\bar{6} \bigcirc 0.6$

10. $-\frac{3}{4} \bigcirc -\frac{7}{8}$

11. $-0.8 \bigcirc -0.9$

12. $2\frac{5}{8} \bigcirc 3.6$

13. $0.75 \bigcirc 0.7$

14. $\frac{3}{5} \bigcirc 0.\bar{6}$

15. $0.6 \bigcirc \frac{7}{11}$

16. $5\frac{7}{8} \bigcirc 5.9$

Order the given set of numbers from least to greatest

Examples:

1. $\frac{7}{10}$, $-\frac{1}{8}$, 0.25 , 0.9

2. $\frac{5}{8}$, $-\frac{3}{4}$, $1\frac{3}{8}$, 1.25 , -1.1

Try These:

3. $\frac{1}{3}$, $\frac{5}{2}$, $0.\bar{6}$, 0.6

4. $\frac{3}{5}$, $-\frac{1}{4}$, $-\frac{3}{4}$, π

Plot the given set of numbers on the number line

Examples:

1. $\frac{7}{10}$, $-\frac{1}{8}$, 0.25 , 0.9

2. $2\frac{5}{8}$, $-\frac{1}{4}$, $-1\frac{1}{4}$, 0.25 , -1.75



Compare:

1. $0.7 \bigcirc 0.60$

2. $\frac{3}{20} \bigcirc \frac{7}{40}$

3. $0.4 \bigcirc \frac{9}{20}$

4. $3\frac{1}{4} \bigcirc 3.3$

5. $-0.5 \bigcirc -0.7$

6. $-\frac{4}{9} \bigcirc -\frac{5}{9}$

7. $0.7 \bigcirc \frac{15}{20}$

8. $6\frac{1}{8} \bigcirc 6.12$

9. $0.\bar{4} \bigcirc 0.4$

10. $-\frac{3}{12} \bigcirc -\frac{1}{4}$

11. $-0.75 \bigcirc -0.7$

12. $4\frac{1}{9} \bigcirc 4.5$

Order the given set of numbers from least to greatest:

13. $\frac{3}{4}$, $-\frac{1}{8}$, -0.5 , 0.1

14. $\frac{7}{8}$, $-\frac{5}{4}$, $5\frac{3}{8}$, -11

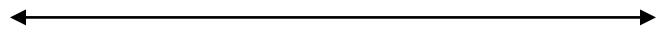
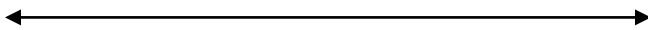
15. $\frac{2}{5}$, $\frac{4}{5}$, $-\frac{2}{5}$, $\frac{3}{5}$

16. $\frac{7}{5}$, $1\frac{1}{5}$, $-\frac{5}{6}$, π

Plot the given set of numbers which are from #13 and #14 above on the number line:

17. $\frac{3}{4}$, $-\frac{1}{8}$, -0.5 , 0.1

18. $\frac{7}{8}$, $-\frac{5}{4}$, $5\frac{3}{8}$, -11



Lesson 9 Using the Calculator

Inputting fractions into the calculator

You must use the $\boxed{a \frac{b}{c}}$ button

Use $\boxed{(-)}$ if you need to make a number negative.

- Simple fractions such as $\frac{1}{2}$ are entered as:

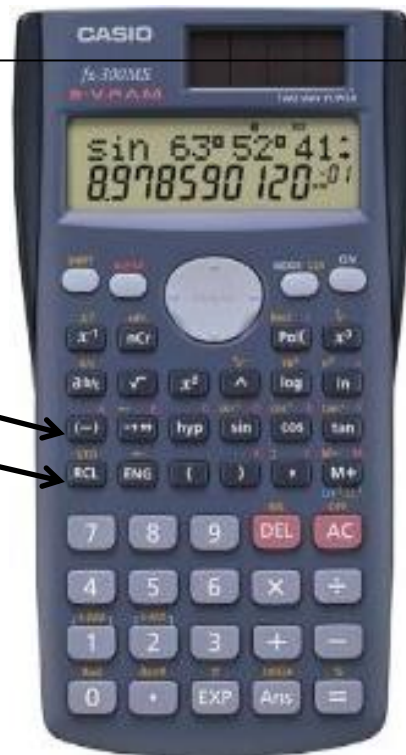
$\boxed{1} \quad \boxed{a \frac{b}{c}} \quad \boxed{2}$

- Mixed numbers such as $-1\frac{1}{2}$ are entered as:

$\boxed{(-)} \quad \boxed{1} \quad \boxed{a \frac{b}{c}} \quad \boxed{1} \quad \boxed{a \frac{b}{c}} \quad \boxed{2}$

- To change a mixed number to an improper fraction:

$\boxed{\text{Shift}} \quad \boxed{a \frac{b}{c}}$



Examples:

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

Enter the following: $\boxed{1} \quad \boxed{a \frac{b}{c}} \quad \boxed{4} \quad \boxed{+} \quad \boxed{2} \quad \boxed{a \frac{b}{c}} \quad \boxed{3}$

The correct answer is _____

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

Enter the following: $\boxed{1} \quad \boxed{a \frac{b}{c}} \quad \boxed{3} \quad \boxed{a \frac{b}{c}} \quad \boxed{4} \quad \boxed{+} \quad \boxed{2} \quad \boxed{a \frac{b}{c}} \quad \boxed{1} \quad \boxed{a \frac{b}{c}} \quad \boxed{3}$

The correct answer is _____

Solve the following using your calculator:

1) $\frac{1}{6} + \frac{2}{3} =$

2) $0.98 - 6.3 =$

3) $5\frac{1}{4} - 2\frac{2}{3} =$

4) $9.65 \times 78.54 =$

5) $-\frac{3}{10} \div 4\frac{1}{3} =$

6) $9\frac{1}{8} \cdot 2\frac{2}{5} =$

Convert the following into a mixed number using your calculator:

7) $\frac{16}{6} =$

8) $-\frac{223}{5} =$

9) $-\frac{654}{25} =$

Convert the following into an improper fraction using your calculator:

10) $2\frac{1}{7} =$

11) $-8\frac{5}{14} =$

12) $-22\frac{4}{5} =$

Use your calculator to solve:

13) Mrs. Aronow's family went for a trip. To make the journey interesting, they traveled the first $53\frac{1}{4}$ miles by car and the remaining $10\frac{2}{3}$ miles by horse. What was the total distance of the trip?

14) $\frac{4}{7}$ of birthday cake was eaten on your birthday. The next day your dad ate half of what was left. You get to finish the cake. How much was left?

15) The recipe for mint chocolate chip ice cream requires 2.25 cups of cream for 5 people. You need ice cream for 10 people. How much cream will you need?

16) One parking lot at MetLife Stadium will hold 1000 vehicles. At 10:00 there were 400 cars and some trucks in the parking lot. The parking lot was $\frac{3}{4}$ full. How many trucks were in the parking lot?

Solve the following using your calculator:

1) $\frac{1}{5} + \frac{2}{7} =$

2) $\frac{94}{110} + \left(-\frac{15}{38}\right) =$

3) $64.6 \times -93.1 =$

4) $-\frac{12}{15} \times \frac{1}{4} =$

5) $-8\frac{4}{9} \div -2\frac{3}{7} =$

6) $10\frac{5}{7} \times -2\frac{6}{9} =$

Convert the following into a mixed number using your calculator:

7) $\frac{25}{8} =$

8) $-\frac{3871}{6} =$

9) $-\frac{676}{3}$

Use your calculator to solve.

- 10) Vincent ordered pizza for him and his wife for dinner. When they had finished, they realized that $\frac{5}{8}$ of the pizza was gone. For lunch the next day, Vincent decided to eat $\frac{1}{4}$ of what was left. How much was left after lunch?

-
- 11) Mrs. Strom decided to participate in a triathlon. She first had to run **4.5** miles. Next, she swam 3.25 miles and then finished the remaining **15.75** miles by bike. What was the total distance of the triathlon?

-
- 12) Mr. DeMeo was baking brownies. His recipe called for $3\frac{1}{2}$ cups of melted chocolate to make enough brownies for 24 people. He is having 72 people over for his birthday. How much chocolate will he need?

Fractions to Remember:

$$\frac{1}{4} = .25 \quad \frac{1}{2} = .5 \quad \frac{3}{4} = .75$$

$$\frac{1}{5} = .2 \quad \frac{2}{5} = .4 \quad \frac{3}{5} = .6 \quad \frac{4}{5} = .8$$

$$\frac{1}{3} = .\bar{3} \quad \frac{2}{3} = .\bar{6}$$

$$\frac{1}{8} = .125 \quad \frac{3}{8} = .375 \quad \frac{5}{8} = .625 \quad \frac{7}{8} = .875$$

$\frac{1}{9} = .\bar{1}$	$\frac{2}{9} = .\bar{2}$	$\frac{4}{9} = .\bar{4}$	$\frac{5}{9} = .\bar{5}$	$\frac{7}{9} = .\bar{7}$	$\frac{8}{9} = .\bar{8}$
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$\frac{1}{10} = .1$	$\frac{2}{10} = .2$	$\frac{3}{10} = .3$	$\frac{4}{10} = .4$	$\frac{5}{10} = .5$	$\frac{6}{10} = .6$	$\frac{7}{10} = .7$	$\frac{8}{10} = .8$	$\frac{9}{10} = .9$	$\frac{10}{10} = 1$
---------------------	---------------------	---------------------	---------------------	---------------------	---------------------	---------------------	---------------------	---------------------	---------------------

Unit 2 Review Sheet

Round the following decimals to the

- a) nearest tenth:
- b) nearest hundredth:
- c) nearest whole number:

1) 18.1286

2) 2.4234

3) 3.2978

Write each fraction or mixed number as a decimal.

4) $\frac{2}{3}$

5) $\frac{1}{2}$

6) $2\frac{4}{5}$

Write each decimal as a fraction.

7) .6

8) .45

9) 4.3

Replace \bigcirc with $<$, $>$, or $=$.

10) $\frac{4}{5} \bigcirc \frac{5}{6}$

11) $.35 \bigcirc \frac{1}{3}$

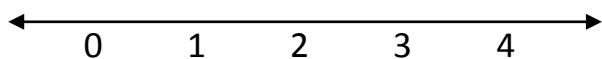
12) $5.1 \bigcirc 5\frac{1}{5}$

Order the set of rational numbers from least to greatest. Graph on the number line.

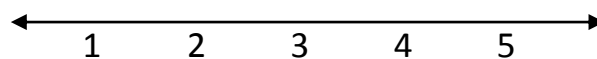
13) $\left\{ \frac{1}{5}, 3.8, 2\frac{2}{3}, 0.75 \right\}$

14) $\left\{ \frac{6}{3}, 1.5, 2\frac{1}{3}, 4\frac{3}{8} \right\}$

Graph on the number line.



Graph on the number line.



Convert the following into a mixed number or an improper fraction:

15) $2\frac{1}{3}$

16) $\frac{16}{5}$

17) $6\frac{5}{6}$

Find the sum or difference:

18) $4.1 + 2.9$

19) $-12.8 + 3$

20) $12.362 - (-3.41)$

Find the product:

21) $(4.3)(1.45)$

22) $(6.3)(-7.4)$

23) $(-13.1)(-2.6)$

Find the quotient:

24) $15.8 \div 2$

25) $\frac{-22}{0.4}$

26) $\frac{12.15}{2.7}$

Find each sum or difference:

27) $\frac{1}{4} + \frac{3}{6}$

28) $\frac{7}{12} - \frac{1}{3}$

29) $\frac{3}{5} - \frac{1}{3}$

30) $3\frac{3}{10} - (-1\frac{3}{5})$

31) $4 - 2\frac{3}{10}$

32) $-3\frac{1}{2} + -4\frac{1}{3}$

Find each product or quotient:

33) $\frac{5}{8} \cdot \frac{2}{5}$

34) $\frac{3}{8} \div \frac{2}{3}$

35) $\frac{\frac{2}{3}}{\frac{4}{5}}$

36) $3\frac{5}{6} \cdot 2\frac{1}{4}$

37) $3\frac{3}{5} \div 1\frac{1}{5}$

38) $\frac{6}{3\frac{3}{5}}$

Word Problems:

39) What is $\frac{3}{4}$ of 24?

40) Monica had 18 cookies. If Monica ate $\frac{1}{6}$ of the cookies after dinner, how many cookies were left?

41) Joe made two types of desserts. He used $\frac{2}{3}$ cups of sugar for one recipe and $\frac{1}{4}$ cups of sugar for the other recipe. How much sugar did he use in all?

42) Six cases of paper cost \$43.50. How much does one case cost?

Unit 2 Vocabulary:

Sum: _____

Difference: _____

Product: _____

Quotient: _____

Numerator: _____

Denominator: _____

Reciprocal: _____

Improper Fraction: _____

Mixed Number: _____

Simplify: _____

Convert: _____

LCD: _____

Complex Fraction: _____

Unit 3

Expressions

	Date	Lesson	
		1	Classifying Polynomials & Combining Like Terms
		2	Combining Like Terms with Negatives
		3	The Distributive Property
		4	Distribute and Combine Like Terms
		5	Greatest Common Factors (GCF)
		6	Factoring
			Quiz
		7	Adding and Subtracting Expressions
		8	Translating Expressions
			Review
			Test

Lesson 1
Classifying Polynomials & Combining like Terms

Important Vocabulary:

Variable: _____

Coefficient: _____

Constant: _____

Ex: $3x + 5$ **Variable:** _____ **Coefficient:** _____ **Constant:** _____

Term: _____

Polynomial: _____

Monomial: _____

Ex 1: _____ **Ex 2:** _____ **Ex 3:** _____

Binomial: _____

Ex 1: _____ **Ex 2:** _____ **Ex 3:** _____

Trinomial: _____

Ex 1: _____ **Ex 2:** _____ **Ex 3:** _____

Like Terms: _____

Ex 1: _____ **Ex 2:** _____ **Ex 3:** _____

Perimeter: _____

Examples:

Identify the Variable, Coefficient and Constant in Each of the Following:

1. $4y + 7$ Variable:_____ Coefficient:_____ Constant:_____

2. $3x + 12$ Variable:_____ Coefficient:_____ Constant:_____

3. $-2z + 17$ Variable:_____ Coefficient:_____ Constant:_____

4. $x - 3$ Variable:_____ Coefficient:_____ Constant:_____

5. $19x$ Variable:_____ Coefficient:_____ Constant:_____

Classify Each of the Following as Monomials, Binomials, or Trinomials:

6. $14x - 2$ 7. $3x + 4y$ 8. $5x$ 9. $3x + 2y - 2z$ 10. $3xyz$

11. $x + y + z$ 12. $2x - y$ 13. $14x$ 14. $5x + y - z$ 15. $2x$

State whether the given terms are like terms or not like terms:

16. $3x$ & 4 17. $5x$ & $8x$ 18. $4ab$ & $2ac$ 19. 12 & 3 20. $8a$ & $-4a$

21. x & $4x$ 22. xy & x 23. x^2 & x 24. $10z$ & $2z$ 25. $2x$ & -4

Combining Like Terms:

Step 1 – Identify like terms

Step 2 – Perform appropriate operation to combine like terms

Simplify Each Expression:

1) $3x + 6x$

2) $2x + 2 + 1$

3) $8y + 7y$

4) $8x + 2x + 5$

5) $5x + x$

6) $3x + 2 + y$

7) $9x + 4y + 2x + 3y$

8) $7x + 8 + x + 3$

9) $8x + 4x$

10) $4x + 7y + 4 + 5x + y$

11) $8x + 10.2 + 4x + 2.9$

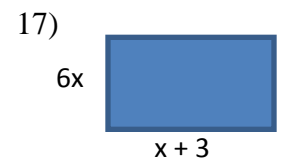
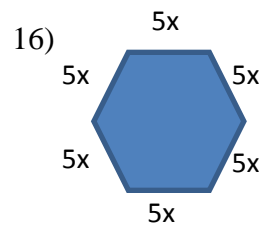
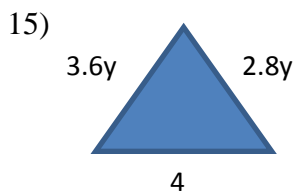
12) $8y + 4 + 7$

13) $9.2x + 4.3y + x$

14) $9y + 2y$

15) $3x + 5y + 6$

Write an expression in simplest form for the perimeter of each figure:



Circle "like" or "not like" for the following terms:

- 1) x $2x$ 2) $6a$ 4 3) $2x^2$ x 4) z $3z$ 5) $\frac{1}{2}x$ $.4y$

like not like like not like like not like like not like like not like

a) Determine what the *coefficient* is, **b)** Determine what the *variable* is, and **c)** Determine what the *constant* is:

- | | | | | |
|-------------|-------------|---------------|--------------|----------------|
| 6) $3x + 5$ | 7) $2y + 9$ | 8) $-9a + 10$ | 9) $7z + 18$ | 10) $12z - 10$ |
| a)_____ | a)_____ | a)_____ | a)_____ | a)_____ |
| b)_____ | b)_____ | b)_____ | b)_____ | b)_____ |
| c)_____ | c)_____ | c)_____ | c)_____ | c)_____ |

Simplify the following expressions:

- | | | |
|-----------------------------|--------------------------------|---|
| 11) $5x + 3x$ | 12) $8x + 4x$ | 13) $6x + 4x + x$ |
| 14) $2x + x + 8$ | 15) $3x + 5 + x$ | 16) $3x + 2x + y + 3y$ |
| 17) $7 + 6x + 2 + 3x$ | 18) $x + 2x + 2y + 3y$ | 19) $x + x + y + y$ |
| 20) $7x + 3 + 4x + 5y + 10$ | 21) $9x + 6y + 4 + 2x + y + 2$ | 22) $x + 5 + 6x$ |
| 23) $3.2x + 5 + 6.8x$ | 24) $4x + 4.2 + 5x + 2.6$ | 25) $\frac{2}{5}x + 7y + \frac{3}{10}x + 10y$ |

Lesson 2
Combining Like Terms with Negatives

Simplify the following expression: $3x + 5y - 2x - 8y$

Step 1: Draw a shape around like terms $\boxed{3x} + \boxed{5y} - \boxed{2x} - \boxed{8y}$

Be sure to take the sign in front of the coefficient!!!

Step 2: Use your integer rules to combine (add) the like terms.

Same signs add and keep,
Different signs subtract.
Keep the sign of the higher number,
Then you'll be exact!! ☺

X's	Y's
3x	5y
+ -2x	+ -8y
1x	-3y

$$= 1x - 3y$$

Step 3: Use the sign in your second term as your plus or minus sign.

Examples: Simplify Each Expression

1) $7x - 2x$

2) $-3y - 4y$

3) $6x + 3 - 4x + 5$

4) $10s + 4t - 5s - 2t$

5) $4y - 3 + 2y - 2$

6) $7x - 9 + 3x$

Try These: Simplify Each Expression

7) $7x + 5 - 7x - 9$

8) $6x + 8y - 9x - 2y$

9) $5x + 7y - 5y - 5x$

10) $8x + 9y - 4 + x - 6y - 3$

11) $4x + 9y - 5y + 3x$

12) $6.2y - 5.6x + y$

Lesson 2 –Homework

Simplify each expression:

1) $5x - 2x$

2) $-4y - 6y$

3) $7x + 4y + x - 8y$

4) $6x + 8 - 2x + 5$

5) $9y - 7 + 2y - 2$

6) $5x - 9 + 2x + 9$

7) $-9x + 5 - 7x - 7$

8) $6x + 5y - 6x - 2y$

9) $-10s + 4t - s - 9t$

10) $-4x + 4x$

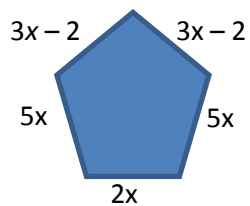
11) $8y - 4 - 7$

12) $-x - 5 + 6x$

13) $7.2x - 5 + 3.6x + 6$

14) Write an expression with a sum of $-5x + 4$.

15) Find the perimeter:



Lesson 3 Distributive Property

The **Distributive Property** is one of the basic properties of the real number system.

To **distribute** something means to hand it out. If you distribute a test paper to your class, you give a test to each person in the class.

The Distributive Property says that if a , b , and c are real numbers, then:

$$\begin{aligned} \mathbf{a(b + c)} &= \mathbf{(a \cdot b) + (a \cdot c)} \\ &= \mathbf{ab + ac} \end{aligned}$$

To "simplify" this, we have to remove the parentheses. The Distributive Property says to **multiply** the outside number to **everything** inside the parentheses. Draw arrows as a reminder.

Example 1: Simplify $3(x + 4)$

$$3(x + 4)$$

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

$$3x + 12$$

Example 2: Simplify $-3(x + 4)$

$$-3(x + 4)$$

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

$$-3x + -12 \text{ or } -3x - 12$$

Examples: Distribute

1) $4(2x - 1)$

2) $6(x + 3)$

3) $5(3x - 4)$

4) $3(8x + 2)$

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

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

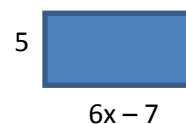
7) $-(2x - 5)$

8) $(4x + 1)3$

9) $\frac{1}{2}(4x + 6)$

10) $\frac{1}{5}(10x - 15)$

10) Find the area of the following:



Try These:

1) $2(3x + 2)$

2) $4(5x - 4)$

3) $3(6x + 7)$

4) $-4(x - 4)$

5) $5(-6x + 2)$

6) $-3(x - 5)$

7) $5(-2x - 6)$

8) $-(5x + 4)$

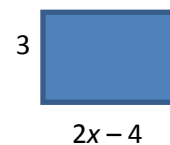
9) $-2(4x - 3)$

10) $-6(2x - 3)$

11) $\frac{1}{3}(9x + 12)$

12) $\frac{1}{4}(16x - 4)$

13) Find the area of the following:



Classwork:

1) $3(4 + 3y)$

2) $-2(6x - 8)$

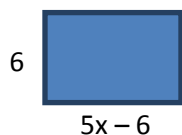
3) $4(x + 5)$

4) $-(-2 - 5n)$

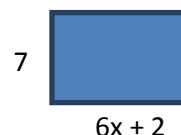
5) $\frac{1}{2}(8n + 2)$

6) $-2(3x + 1)$

7) Find the area of the following:



8) Find the area of the following:



Lesson 3 - Homework

1) $-4(x + 3)$

2) $2(x - 5)$

3) $-3(x + 6)$

4) $-(-x + 7)$

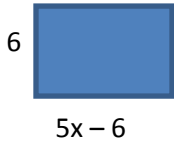
5) $9(-x - 2)$

6) $5(3x - 4)$

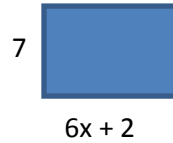
7) $\frac{1}{3}(6x + 15)$

8) $-10(a - 5)$

9) Find the area of the following:



10) Find the area of the following:



Review:

Identify the Variable, Coefficient and Constant in Each of the Following:

11) $2a + 6$ Variable: _____ Coefficient: _____ Constant: _____

12) $x + 12$ Variable: _____ Coefficient: _____ Constant: _____

13) $-z + 1$ Variable: _____ Coefficient: _____ Constant: _____

Classify Each of the Following as Monomials, Binomials, or Trinomials:

14) $14x - 2x$ 15) $3x + 4y$ 16) $5x$ 17) $3x + 2y - 2z$ 18) $3xyz$

Simplify the following expression

19) $6x + 4y + 7x + y$

20) $9x - 7y - 2x + 9y$

21) $7x + 5y - 7x - 8y$

Lesson 4
Distribute and Combine Like Terms

Example:

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

Step 1: Box out the distributive property
(Be sure to take the sign in front)

Step 2: Bring down everything outside the box

Step 3: Distribute

Step 4: Combine Like Terms

$$\begin{array}{c} \boxed{2(3x + 5)} + 4 \\ \downarrow \quad \downarrow \quad \downarrow \\ 6x \quad + 10 \quad + 4 \\ \boxed{6x} \quad \textcircled{+ 10} \quad \textcircled{+ 4} \end{array}$$

Answer: $6x + 14$

Remember: You must distribute first before you combine like terms!

Examples: Simplify each expression:

1) $4(2x + 3) + 6x$

2) $8(x - 5) + 20$

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

4) $3 + 2(2x + 6) + x$

5) $5x + 3(2x - 6) + 1$

6) $2(3x - 4) + 4 - 9$

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

8) $9x + 5(-3x - 5)$

Try These: Simplify Each Expression

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

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

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

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

5) $5x + 3(2x - 6) + 1$

6) $6(3x - 4) - 15x$

7) $9 + \frac{1}{2}(2x + 4)$

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

Lesson 4 - Homework

Simplify.

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

2) $-5(x + 8) - 12$

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

4) $8 - 9(x + 4)$

5) $8x + 4(2x - 5)$

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

7) $6(5 - 2x) - 20$

8) $10x + 4(-3x - 5)$

9) $6x + 3(x - 7)$

10) $\frac{1}{2}(6x - 4) - 5x$

11) $-(6 + 2x) - 12$

12) $7x - (-3x - 5)$

13) $3(3x - 5) + 6x$

14) $2(4 - 2x) + 4x - 8$

15) $-2(5 + 2x) + 12x$

16) $-10x + 4(-8x - 2)$

Lesson 5:
Greatest Common Factors (GCF)

Do Now: Find the prime factors using prime factorization.

1) 30

2) 45

3) 14

4) 49

Vocabulary:

Factors - _____

Prime - _____

Composite - _____

Greatest Common Factors (GCF) - _____

Finding the Greatest Common Factor (GCF)

Method 1 (List the factors)

30 and 45 GCF= _____

30

45

Method 2 (Prime Factorization)

30

45

Prime factors of 30 _____

Prime factors of 45 _____

Finding GCF using Prime Factorization

1. List the prime factors of each number.
2. Multiply the factors **both** numbers have in common. If there are no common prime factors, the GCF is 1 (**relatively prime**).

Prime factors of 30 and 45 in common _____

Examples:

Find the Greatest Common Factors using prime factorization method if necessary.

- 1) 18 and 24 2) 12 and 8 3) 99 and 18 4) $\frac{8}{5}$ and $1\frac{4}{5}$

- 5) 8 and 4 6) 15 and 10 7) 6 and 9 8) $\frac{1}{2}$ and $4\frac{1}{4}$

Try These:

Find the GCF of the numbers given:

- 1) 16 and 28 2) 30 and 24 3) 8 and 16 4) 5 and 20

-
- 5) 24 and 36 6) 12 and 15 7) 30 and 40 8) 35 and 49

-
- 9) 21 and 7 10) 6 and 12 11) $\frac{2}{3}$ and $2\frac{2}{3}$ 12) $\frac{12}{7}$ and $1\frac{1}{7}$

Determine if the following numbers are prime, composite or neither.

- 1) 33 2) 23 3) 3 4) 7 5) 49 6) 18 7) 1

Find the GCF using prime factorization if necessary.

- 8) 15 and 10 9) 9 and 12 10) 2 and 6

-
- 11) 30 and 42 12) 36 and 144 13) 8 and 24

-
- 14) $\frac{4}{3}$ and $4\frac{2}{3}$ 15) $1\frac{3}{5}$ and $\frac{6}{5}$

Lesson 6
Factoring

Do Now:

Find GCF of each set of numbers:

1) 10 and 25

2) 10 and 18

3) 24 and 36

4) 20 and 40

5) $\frac{4}{5}$ and $\frac{8}{5}$

Vocabulary:

Greatest Common Factor (GCF): _____

Factoring: _____

Factoring Steps:

1. Find the GCF of all terms
2. Write the GCF outside of the set of parentheses
3. Divide each term by the GCF

Examples:

Factor:

$6x + 9$

$5x - 15$

Factor:

6) $10x + 25$

7) $7x + 14$

8) $16x - 12$

9) $30x + 45$

10) $24x - 32$

11) $10 - 18x$

12) $15x - 25$

13) $3x - 3$

14)

$$\frac{2}{5}x + \frac{4}{5}$$

15)

$$\frac{2}{3}x - \frac{4}{3}$$

Find the missing side of the rectangle given the area:

16) Area = $12x + 9$

3



17) Area = $18x - 45$



9

Try These:

Factor:

1) $4x + 6$

2) $18 - 9x$

3) $8x - 10$

4) $15x + 20$

5) $2x - 5$

6) $24x - 32$

7) $12x - 48$

8) $10x - 10$

9) $\frac{3}{5}x + \frac{6}{5}$

10) $\frac{6}{7}x - 1\frac{2}{7}$

11) Area = $21x + 28$

7



Factor:

1) $8x - 8$

2) $10 - 6x$

3) $4x - 16$

4) $9x + 12$

5) $5x - 10$

6) $12x + 12$

7) $\frac{5}{6}x - \frac{10}{6}$

8) $\frac{2}{3}x + 2\frac{2}{3}$

Find the missing side of the rectangle given the area:

9) Area = $81x + 18$



$9x + 2$

10) Area = $25x - 40$



5

11) Area = $24x - 12$



$4x - 2$

12) Area = $18x + 81$



9

Lesson 7
Adding and Subtracting Expressions

Example 1: What is the sum of $(6x^2 + 5x - 3) + (x^2 - 9)$?

Rewrite the expressions clearing the parentheses.
Then combine like terms.

$$\boxed{6x^2} + \boxed{5x} - \boxed{3} + \boxed{1x^2} - \boxed{9} = 7x^2 + 5x - 12$$

Example 2: Find the difference of $(3p - 5) - (p + 4)$.

We need to distribute the negative (-1) to the second expression to clear the parentheses.
Then combine like terms.

$$(3p - 5) - (p + 4) = \boxed{3p} - \boxed{5} - \boxed{1p} - \boxed{4} = 2p - 9$$

Examples:

1) $(4p + 2) + (p - 9)$

2) $(2x^2 + 5x + 7) + (3x^2 - 4x - 1)$

3) $(4x^2 + 2x + 4) - (3x^2 - x + 6)$

4) Subtract $8x + 10$ from $14x + 15$.

Try These:

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

6) $(4x^2 - 6) - (2x^2 + 1)$

7) $(4x + 4) + (-5x + 1)$

8) $(x^2 + 8x - 5) + (3x^2 - 4x - 7)$

9) $(2x^2 - 4x + 1) - (3x^2 + 8x - 9)$

10) Subtract $2x + 3$ from $6x - 1$

Simplify the following expressions:

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

2) $(8x - 2) - (-4x + 1)$

3) $(6x^2 + 2x + 9) + (x^2 - 4x - 12)$

4) $(x^2 - 5x + 13) - (4x^2 - 5x - 7)$

5) $(7x^2 + x - 4) + (11x^2 - 8x + 5)$

6) Subtract $12x + 5$ from $10x - 2$.

7) Subtract $4x^2 + 9x$ from $2x^2 + 3x$

8) Katy wants to simplify the subtraction expression shown below:

$$(2mn - 5m^2) - (4n^2 + 3mn - m^2)$$

Which of the following expressions is equivalent to this subtraction expression?

A $2mn - 5m^2 - 4n^2 + 3mn - m^2$

B $2mn - 5m^2 - 4n^2 - 3mn + m^2$

C $-2mn + 5m^2 - 4n^2 + 3mn + m^2$

D $-2mn + 5m^2 - 4n^2 - 3mn + m^2$

9) What is the sum of the expression below?

$$(8p + q + 5) + (p + q - 7)$$

A $8p + q + 2$

B $8p + q - 2$

C $9p + q - 2$

D $9p + 2q - 2$

10) What is the GCF of $45x^2 + 18$?

A 6

B 9

C 18

D 45

11) Which expression has a GCF of 6?

A $6w^2 + 8$

B $12w^2 - 3$

C $24w^2 + 36$

D $30w^2 - 18$

Lesson 8
Translating Expressions

Addition Phrases	Expression	Subtraction Phrases	Expression
*8 more than a number The sum of a number and 8 x plus 8 x increased by 8	$x + 8$	*6 less than a number *6 subtracted from a number r The difference of r and 6 r minus 6 r decreased by 6	$r - 6$
Multiplication Phrases	Expression	Division Phrases	Expression
4 multiplied by n 4 times a number The product of 4 and n	$4n$	A number divided by 3 The quotient of z and 3 The ratio of z and 3	$\frac{z}{3}$

Examples: Write each verbal phrase as an algebraic expression

- 1) The sum of 8 and x 2) The quotient of g and 15 3) The product of 5 and b
-
- 4) p increased by 10 5) 14 less than f 6) The difference of 32 and x
-
- 7) Twice Sue's height 8) Four times John's score 9) Eight less than Amy's shoe size
-
- 10) The taxi fare of \$.50 for each mile
-
- 11) 5 more than 3 times a number
-
- 12) The quotient of 5 and x decreased by 8
-
- 13) A cab ride has a flat fee of \$3 plus \$0.50 per mile. Write an expression to represent this situation.

Try These: Write each verbal phrase as an algebraic expression

1) The cost of 7 CDs at $\$d$ each

2) The height decreased by 2 inches

3) A number divided by 5

4) The total of Ben's score and 75

5) 2 hours more than the estimated time

6) 14 more than s

7) \$500 less than the sticker price

8) 25 times the number of students

9) The score increased by 8 points

10) The cost split among 4 people

11) 8 less than the product of 10 and x

12) The quotient of x and 4 plus 12

13) A plumber charges a flat rate of \$50 plus \$25 for each additional hour. Write an expression to represent this situation.

14) You watch x minutes of television on Monday, the same amount on Wednesday, and 30 minutes on Friday. Express the situation in simplest form.

15) Colleen and her friends paid a total of \$7 for tickets to the school football game. While at the game, they bought 5 hotdogs at x dollars each, 4 boxes of popcorn at y dollars each, and 2 pretzels at z dollars each.

a) Write an expression to show the total cost of admission and the snacks.

b) Hot dogs cost \$4, popcorn cost \$3, and pretzels cost \$2. What was the total cost for admission and snacks?

Lesson 8 - Homework

Write each verbal phrase as an algebraic expression.

1) The number divided by 5

2) The sum of x and 7

3) The product of 10 and c

4) 6 less than x

5) Twice y

6) The difference of t and 1

7) 17 more than a number x

8) The quotient of z and 10

9) The number of members divided by 5

10) The total of Josh's savings and \$350

11) The total area decreased by 75 sq ft

12) The cost of 10 books at $\$d$ each

13) Sue's height plus 2 inches

14) The cost split among 5 friends

15) Five increased by a number

16) Triple John's weight

17) The quotient of x and 5

18) Seven less than y

19) 10 increased by 2 times a number

20) 8 less than the quotient of x and 2

21) The product of 3 and a number minus 4

22) 6 times the sum of x and 4

23) A carnival has an entrance fee of \$10 plus \$2 for each ride. Write an expression to represent this situation.

7 Review Sheet Unit 3

Lesson 1:

Define the following AND give an example of each:

Monomial: _____

Binomial: _____

Trinomial: _____

Polynomial: _____

State the operation represented by each:

Sum: _____

Product: _____

Quotient: _____

Difference: _____

1) $5x^3 + 4$ x is the _____ 5 is the _____ 3 is the _____ 4 is the _____

2) Classify the following expressions as a Monomial, Binomial or Trinomial.

a) $9x + 3y$

b) $10xz$

c) -2

d) 7

e) $15abc$

f) $14x + 4y - 3$

3) State whether the given terms are like terms or not like terms.

a) $8a$ and $-4a$

b) 12 and 3

c) $12xy$ and $2xz$

d) $3x$ and x

e) $4x$ and 4

Simplify each expression.

4) $2x + x$

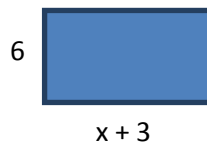
5) $8y + 4 + 7$

6) $3x + 5y$

7) $x + 3 + x + 15$

8) $5.6x + 2 + 9.1x$

9) Find the perimeter



Lesson 2: Simplify each expression.

10) $-8x + 8x$

11) $4y - 10y + y$

12) $-\frac{1}{3}x + 9 - 3\frac{4}{9}x + 10$

13) $-3.9x + 2 + 4.5x$

Lesson 3: Simplify each expression.

14) $3(5x + 1)$

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

16) $-(7x + 4)$

17) $(-x + 2)3$

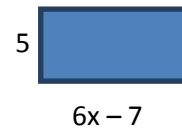
18) $-(8x + 9)$

19) $\frac{1}{3}(12x - 6)$

20) $\frac{1}{2}(20x + 10)$

21) $\frac{1}{5}(20x + 15)$

22) Find the area



Lesson 5 and 6:

Find the GCF of the numbers given:

22) 20 and 28

23) 16 and 32

24) 40 and 45

Factor:

25) $8x + 10$

26) $12 - 16x$

27) $25x + 30$

28) $10x + 50$

29) $3x - 9$

Lesson 4 and 7: Simplify

30) $5x + 4(2x + 7)$

31) $-(x - 5) + 4x$

32) $(3x + 10) + (5x - 4)$

33) $(5x - 14) - (2x + 6)$

34) $(x + 8) - (-2x - 7)$

Lesson 8: Translate each expression

35) The difference of x and 4

36) The quotient of a number(n) and 15

37) 5 decreased by y

38) The product of 32 and x

39) 5 more than twice a number

40) Six times the sum of x and 3

41) Four less than five times a number(x).

42) \$20 divided among (x) students.

43) 30 less than five times x .

44) A painter charges a flat rate of \$100 plus \$20 for each hour of work. Write an expression to represent this situation.

45) The aquarium charges a \$30 entrance fee plus \$10 for each additional activity. Write an expression to represent this situation.

Review: Simplify

46) $-1 + 10$

47) $-5 - 9$

48) $20 \div 2 \cdot 5$

49) $\frac{10 \div 2}{4^2 - 14}$

50) $4 \cdot -5$

51) $1.2 \cdot 3$

Unit 4

Equations

	Date	Lesson	
		1	One-Step Equations
		2	Two-Step Equations
		3	Two-Step Equations - Day 2
		4	Combine Like Terms & Solve
		5	Combine Like Terms with Negatives
		6	Solving with Distribution
			Quiz (Lessons 1-5)
		7	Solving with Distribution of Negatives
		8	Equations with Decimals
		9	Equations with Fractions
		10	Translate and Solve
			Review
			Test

Lesson 1
One-Step Equations

Vocabulary

Inverse Operations: _____

*Remember, whatever you do on one side of an equation _____.

Rules:

- | |
|----------|
| 1) _____ |
| 2) _____ |
| 3) _____ |
| 4) _____ |

Examples:

1) $x + 3 = 4$

check

2) $h - 18 = 25$

check

3) $3m = 27$

check

4) $\frac{x}{2} = 15$

check

5) $6 = x + 2$

check

6) $12 + x = -10$

check

7) $-5x = 40$

check

8) $b - 3 = -7$

check

Try These: (show all work)

1) $x - 3 = 12$

2) $4t = 16$

3) $n + 6 = 6$

4) $8 = k + 7$

5) $e - 9 = 10$

6) $12 = p + 30$

7) $y + 16 = 26$

8) $5 + r = 10$

9) $9 + w = 19$

10) $-6x = 36$

11) $s + 6 = 4$

12) $5 = d + 10$

13) $n - 12 = -8$

14) $b + 44 = -7$

15) $b + 7 = 6$

16) $d - 22 = 45$

17) $r + 88 = 333$

18) $m + 736 = 542$

19) $t - 121 = -111$

20) $k - 88 = -68$

Solve for x: (show all work)

1) $g - 10 = 12$

2) $\frac{x}{7} = 3$

3) $w + 21 = 50$

4) $18 = j + 9$

5) $m - 10 = -5$

6) $14 = n + 7$

7) $c - 7 = -12$

8) $x + 4 = -10$

9) $p + 15 = -5$

10) $5m = 25$

11) $n - 12 = -36$

12) $g + 55 = 11$

13) $f + 77 = -75$

14) $789 - m = 7$

15) $w + 97 = 132$

16) $q + 33 = -30$

17) $444 - j = 258$

18) $h = 47 + b$

19) $a + 745 = -55$

20) $s - 4654 = 477$

Lesson 2
Two-Step Equations

Vocabulary:

Inverse Operations - _____

*Remember, whatever you do to one side of an equation _____.

Rules:

- | |
|----------|
| 1) _____ |
| 2) _____ |
| 3) _____ |
| 4) _____ |

Examples:

1) $2x + 4 = 8$

2) *check #1*

3) $7 + 2x = 9$

4) $\frac{x}{2} + 5 = 13$

5) $2x + 2 = 8$

6) *check #5*

7) $5 + 2x = 11$

8) $4 - x = 12$

Try These:

1) $3x - 8 = -32$

2) *check #1*

3) $-5x + 5 = -45$

4) $\frac{x}{-5} + 2 = 12$

5) $2x + 4 = 26$

6) *check #5*

7) $\frac{x}{5} + 2 = 12$

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

9) $3x + 5 = 38$

10) *check #9*

11) $2x + 30 = 50$

12) $5x - 7 = 52$

$$13) -5x + 20 = 55$$

14) *check #13*

$$15) \frac{x}{10} - 3 = -7$$

$$16) \frac{x}{9} - 3 = -1$$

$$17) \frac{x}{3} + 6 = 2$$

18) *check #17*

$$19) 6x + 6 = 12$$

$$20) 3x - 10 = 11$$

Lesson 2 - Homework

$$1) 3x + 2 = 26$$

2) *check #1*

$$3) \frac{x}{5} + 2 = 7$$

$$4) \frac{x}{2} - 7 = 7$$

$$5) 7x - 5 = 44$$

6) *check #5*

$$7) 2x + 30 = -100$$

$$8) 10x - 14 = 104$$

$$9) -7x + 20 = 55$$

10) *check #9*

$$11) \frac{x}{10} - 10 = 10$$

$$12) \frac{x}{9} - 3 = 0$$

$$13) \frac{x}{3} + 1 = 2$$

14) *check #13*

$$15) \frac{x}{6} + 7 = -5$$

$$16) \frac{x}{-2} - 6 = 3$$

Lesson 3
Two-Step Equations - Day 2

Examples: (show all work)

1) $2x + 4 = 8$

2) $4y + 3 = 15$

3) $5 - 2x = 9$

4) $\frac{x}{2} + 5 = 17$

Check:

Check:

Check:

Check:

Try These: (show all work)

1) $2x - 2 = 12$

2) $3x - 12 = 12$

3) $5x + 6 = 21$

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

5) $-x - 9 = 10$

6) $-7x + 2 = -19$

7) $4x + 10 = 26$

8) $4 + 3x = 13$

9) $9 - 5x = 19$

10) $3x - 17 = 10$

11) $\frac{x}{5} + 10 = 15$

12) $-11 = 3x + 10$

13) $\frac{x}{2} - 3 = -11$

14) $2x - 1 = -1$

15) $9x + 7 = -11$

16) $3x + 8 = -10$

17) $-5 = 2x - 15$

18) $2 - \frac{x}{8} = 0$

19) $\frac{x}{6} - 1 = 7$

20) $-x - 12 = -8$

Lesson 3 – Homework (1.5 pages)

1) $4x - 4 = 12$

2) $2x - 12 = 10$

3) $3x + 4 = 25$

4) $\frac{x}{3} + 6 = 10$

5) $-x - 15 = 10$

6) $10 = -2x + 6$

7) $-2x + 12 = -26$

8) $14 + 10x = 4$

9) $-y + 7 = 11$

10) $3x - 12 = 6$

11) $\frac{x}{5} + 15 = 15$

12) $-3 = 3x - 30$

13) $5x - 3 = -13$

14) $2x + 1 = -5$

15) $9x + 8 = 71$

16) $2x - 8 = -6$

Review & Simplify the following:

17) $\frac{1}{3}(4 + 3^2 - 1)$

18) $7a + 2a + a$

19) What is the constant of $3x - 1$?

20) $12 - (-5)$

21) $12 - |-5|$

22) $2\frac{3}{7} \div 3\frac{1}{2}$

23) The lowest temperature ever recorded in New York City was -15 degrees Fahrenheit on February 9, 1934. The highest temperature recorded was set as high as 106 °F on July 9, 1936 in Central Park. What is the difference between these two temperatures?

Lesson 4
Combine Like Terms

What are some important things to remember when we are combining like terms?

- Must have the same **Variable** and **Exponent**
- Make sure you **include the sign**.

Review

- 1) Can we combine $2d$ and $8d$? _____ Why? _____
- 2) Can we combine 2 and $8d$? _____ Why? _____

Steps to Success

Step 1: Make a shape around the terms that have the same variable.

Example: $5k + 8m + 3k - 7m$

It is super important that you take the sign in front of the coefficient!

When there are like terms on the same side of an equation, you must combine them first!!

Examples:

1) $3x + 4x = 49$

2) $9x + x = 60$

3) $6x - 3x = 18$

4) $4x + x = 25$

5) $8x - 3x + 15 = 45$

6) $3x - 7 = -5 - 8$

7) $4x + 20 = 50 - 10$

8) $\frac{x}{10} + 3 = 2 - 4$

Try These:

1) $2x + 4 = 5 + 9$

2) $2x + 5x - 4 = 17$

3) $2x + 6 + x = 36$

4) $3x - 7 = 10 + 4$

5) $\frac{x}{5} + 2 = 10 + 2$

6) $\frac{x}{2} - 7 = 4 + 4$

7) $4x + 5 + x = 55$

8) $\frac{x}{9} - 3 = 1 + 2$

9) $2x + 3x = 25$

10) $7x - x = 24$

11) $5x - 2x = 18$

12) $9x - x = 16$

13) $-2x + 3 + 3x = 34 + 4$

14) $2x - 14 + 5x = 20 + 1$

15) $8x + 5 + 3x = 45 + 4$

Lesson 4 - Homework

Solve for x:

1) $2x + x = 27$

2) $7x + 2x = 45$

3) $5x + 2x = 56$

4) $3x + x = 16$

5) $9x + 2x + 16 = 38$

6) $2x + 4x - 5 = 13$

7) $4x + 10 + x = 35$

8) $3x + 8 + x = 48$

9) $-5x + 3 = 2 - 9$

10) $-5x + 7 = 5 + 12$

11) $7x + 20 = 65 - 10$

12) $9x - 7 = 11 + 9$

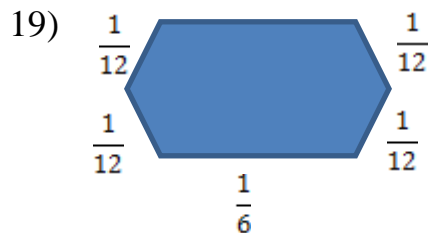
13) $\frac{x}{5} + 3 = 19 - 6$

14) $\frac{x}{3} + 7 = -1 - 4$

17) $-6x + 3 - 2x = 59$

18) $9x - 19 + x = 21$

Review



20) Translate: A number m less than a number h

Find the perimeter: _____

21) $9(3 - 2 \cdot 4)$

Lesson 5
Combine Like Terms with Negatives

What are some important things to remember when we are combining like terms?

- Must have the same **Variable** and **Exponent**
- Make sure you **include the sign.**

When there are like terms on the same side of an equation, you must combine them first

Examples:

1) $-21x - 6x = 54$

2) $5y - 10y + 6y = 22$

3) $m - 9m + 6m - 7m = -72$

Try These:

1) $-7p + -3p = 200$

2) $9k - 15k + 2k = 16$

3) $15y - 10y + 3y = -64$

4) $14x - 10x - 7x + x = 44$

5) $12y + 8y - 25y = -40$

6) $16y + 18y - 10y + 2y = 78$

7) $-27 = 2x - 7 - 6x$

8) $-8x - 8 - x = 5 + 5$

9) $3x - 4x - 3 = 18$

10) $3x - 5x + 16 = 32$

11) $2x - 4x - 6 = 18$

12) $2x + 3 - 3x = 34 + 4$

Lesson 5 - Homework

Solve:

1) $-20 = -4x - 6x$

2) $6 = 1 - 2n + 5$

3) $-2 = -9 + 7x - 8x$

4) $a - 5a + 5 = 21$

5) $8m - 6 - 14m = -42$

6) $-1 = 4p + 3p - 8$

7) $-3x = -12 - 6$

8) $14 = -p + 8$

9) $-7 + 4x = 9$

10) $5p - 8p = 4 + 14$

11) $-4 = -9 + p - 6p$

12) $2x - 3x = 55 - 3$

13) $-5 = -48 - 40n - 3n$

14) $-1 - 7x + 42 + x = 36$

15) $-12x - 9 + 24x = 39$

Lesson 6
Solving with Distribution

Steps:

1. Distribute (If possible)
2. Combine Like Terms on Each Side
3. Isolate The Variable (Inverse Operations)

Examples:

1) $3(2x + 4) = 60$ 2) $30 = 2(x + 5)$ 3) $2 + 2(x - 4) = 14$ 4) $2(5 - 2x) = 21$

5) $3 + 2(3x - 10) = 7$ 6) $3(x - 7) = 9$ 7) $5(2x - 5) = 55$ 8) $2(2x + 4) = 20$

9) $3(x + 2) = 27$ 10) $7(2x - 5) = 35$ 11) $4(x + 5) = 40$ 12) $5(2x + 6) = 40$

Try These:

13) $8 + 2(x + 5) = 16$ 14) $3(x + 3) = 21$ 15) $2 + 3(6 - 5x) = 50$ 16) $30 = 2(x + 5)$

17) $9 = 2(x - 3)$ 18) $3(x - 3) = 6$ 19) $2(4x + 1) = 14$ 20) $2(5x + 4) = 48$

21) $60 = 3(x + 9)$ 22) $3(4x + 2) = 30$ 23) $4(x + 2) = 24$ 24) $54 = 6(2x + 1)$

Solve:

1) $6(2x + 4) = 60$

2) $60 = 4(x + 5)$

3) $14 + 4(5 - 2x) = 50$ 4) $6(x - 3) = 12$

5) $6 + 4(3x - 10) = 14$

6) $5(x - 7) = 10$

7) $-20 = 2(x + 5)$

8) $2(x + 5) = 0$

9) $4(x + 2) = 28$

10) $45 = 3(2x - 5)$

11) $2(x + 5) = 20$

12) $40 = 4(2x + 6)$

13) $16 + 4(x + 5) = 32$

14) $6(x + 3) = 42$

15) $4 + 6(6 - 5x) = 100$

16) $12 = 4(x + 8)$

REVIEW:

17) $3x + 9 + x = 49$

18) $50 = 10x - x + 23$

19) $-24 = 6x - 15 - 5x - 1$

Lesson 7
Solving with Distribution of Negatives

Steps:

1. Distribute (If possible)
2. Combine Like Terms on Each Side
3. Isolate The Variable (Inverse Operations)

Examples:

1) $2(x + 5) = 26$ 2) $-21 = -7(x - 3)$ 3) $-5(x + 4) = 45$ 4) $-(x - 3) = -7$

5) $22 = 2(3x - 10)$ 6) $-3(6x - 4) = -24$ 7) $110 = 10(2x - 5)$ 8) $-4(2x + 4) = 40$

9) $2(x + 2) = 14$ 10) $-3(4x - 5) = 39$ 11) $-4(x + 5) = 40$ 12) $80 = 5(2x + 6)$

Try These:

13) $8 = -2(x + 2)$ 14) $-3(x + 3) = 21$ 15) $60 = -3(x - 4)$ 16) $-2(x - 3) = 20$

17) $-(x + 4) = 10$ 18) $-(x - 3) = 7$ 19) $-2(4x + 1) = 14$ 20) $-3(2x + 2) = 6$

21) $3(2x - 4) = -24$ 22) $-4(2x + 6) = 16$ 23) $4(x - 2) = -20$ 24) $-(8x - 2) = 18$

Lesson 7 - Homework

Solve:

1) $-2(x + 3) = 10$

2) $25 = -5(x + 2)$

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

4) $28 = -7(x - 2)$

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

6) $-(-3x - 2) = 11$

7) $-2(3x + 2) = 2$

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

9) $-2(x + 8) = 44$

10) $30 = 5(x - 4)$

11) $-3(x + 4) = 27$

12) $9(x - 2) = 9$

13) $5(2x - 4) = 20$

14) $24 = 3(2x - 4)$

15) $5(2x - 5) = 65$

16) $-6 = -2(x + 2)$

Review:

17) $x + 4x = 35$

18) $4x + 8 = 10 + 18$

19) $7x + 5 = 61$

20) $\frac{x}{3} - 2 = 10$

21) $6x + 4 + x = 53$

22) $3(x + 4) = 48$

23) $4(5x - 2) = 32$

24) $2(2x + 4) = 24$

Lesson 8
Equations with Decimals

Steps:

- 1. Distribute (If possible)**
- 2. Combine Like Terms on Each Side**
- 3. Isolate The Variable (Inverse Operations)**

Examples:

1) $2.5 + x = 10.5$

2) $.5x + 2x - 4 = 6$

3) $10.6 = x - 7.4$

4) $.5 + .2x = .9$

5) $4.5 + x = 12$

6) $.9 - 10x = -9.1$

7) $.3x = 9$

8) $.23x + .37x - .1x = .2 - .41$

9) $-20 = .2(10x - 30)$

Try These:

10) $z + 1.25 = -9.54$

11) $c - 14.59 = -88.22$

12) $14.9 - x = 15.1$

13) $2t + 9.4 = 39.8$

14) $3.25k + 5.75k = 72$

15) $7a = 1.4$

16) $.5(2x + 3) = 4.5$

17) $3x = -2.4$

18) $.25(12x + 8) = 17$

Lesson 8 - Homework

1) $9 - 79.2 = x$

2) $-1.30 + v = -9.3$

3) $b + 4 = 25.65$

4) $n - 14 = -7.7$

5) $q + 11.25 = 5.3$

6) $-.4x = 16$

7) $3y + 13.6 = 40.6$

8) $g - 1.68 = -34.44$

9) $.5x + 2x - 4 = 6$

10) $138.75 = 9.25(-6 + t)$

11) $21 = .5(4x + 6)$

12) $-.2(10x - 15) = 9$

Review:

13) Sal did the following work:

Explain his error.

$$9y - 2 + 4y$$

$$9y - 4y + 2$$

$$5y + 2$$

14) Today it is 25° . Last month, it was -15° .

What was the difference in temperature?

15) $\$25.99 - \217.47

Lesson 9
Equations with Fractions

Examples:

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

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

3) $g + \frac{1}{9} = \frac{4}{9}$

4) $\frac{5}{6}x - \frac{1}{6}x = 8$

5) $50 = \frac{2}{3}(3x + 6)$

6) $54 = \frac{2}{3}(6x - 9)$

7) $\frac{1}{2}(2x + 2) = 48$

8) $\frac{1}{3}(9x - 12) = -25$

Try These:

1) $\frac{5}{8} + x = \frac{3}{4}$

2) $h + \frac{15}{25} = \frac{13}{50}$

3) $x - \frac{30}{40} = \frac{5}{20}$

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

5) $\frac{1}{4}(12x + 8) = 17$

6) $-20 = \frac{1}{5}(10x - 30)$

7) $\frac{1}{6}(6x - 18) = -4$

8) $20 = \frac{1}{2}(4x + 8)$

9) $\frac{2}{3}(6x + 9) = 22$

10) $24 = \frac{3}{5}(5x + 10)$

11) $\frac{1}{3}(3x - 6) = 9$

12) $-\frac{1}{5}(10x - 15) = 9$

Lesson 9: Homework

$$1) f + \frac{1}{7} = -\frac{1}{7}$$

$$2) x + \frac{6}{15} = \frac{5}{15}$$

$$3) \frac{2}{3}y - \frac{1}{3}y = 33$$

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

$$5) \frac{1}{2} = d + \frac{5}{12}$$

$$6) \frac{1}{4} + p = \frac{3}{20}$$

$$7) \frac{1}{4}y + \frac{1}{3} = \frac{1}{12}$$

$$8) k - \frac{4}{7} = \frac{1}{4}$$

$$9) \frac{1}{3}(3x - 6) = 9$$

$$10) 21 = \frac{1}{2}(4x + 6)$$

$$11) -(x - 7) = 12$$

$$12) -\frac{1}{5}(10x - 15) = 9$$

13) Drew made fruit punch for 12 people. The punch contains sparkling water and $\frac{2}{3}$ of a pint of fruit juice per person. If there are $10\frac{2}{5}$ pints of fruit punch, how many pints of sparkling water did Drew add per person?

Review

Write and solve an equation for each:

14) A tile man is laying an 84 inch border using 12 inch tiles.

How many tiles would need to be placed?

15) Student Government sold 175 bags of popcorn at the dance. If they made \$306.25, how much was the cost of each bag of popcorn?

Lesson 10
Translate and Solve

Vocabulary for each operation

+	-	×	÷

****Switch Words****

Translate each sentence into an equation, and then solve the equation.

1) Six more than a number is 12.

2) Three times a number is 21.

3) Seven less than a number is 20.

4) Five more than twice a number is 7.

5) Six less than half of a number is 12.

6) The product of a number and three-fourths is 12.

7) Six more than four times a number is -9
number is 52.

8) The difference between 12 and ten times a

Lesson 10 –Homework

-
- 1) Eleven less than 5 times a number is 24. 2) The quotient of a number and -9 increased by 10 is 11.
-
- 3) Fifteen more than twice a number is -23 . 4) Five less than the product of -3 and a number is -2 .
-
- 5) Nine more than -8 times a number is -7 . 6) The difference between 5 times a number and 4 is 16.
-
- 7) Eleven less than five times a number is 19. 8) Thirteen more than four times a number is -91 .
-
- 9) Three times half of a number is 21. 10) Twelve less than the quotient of a number and 8.4 is -9 .
-
- 11) While at the music store, Drew bought 5 CD's all at the same price. The tax on his purchase was \$6 and the total was \$61. Write an equation to represent this situation and solve.
-
- 12) A taxi service charges \$1.50 plus \$0.60 per minute for a trip to the airport. The total charge is \$13.50.
How many minutes did the ride to the airport take?

7R Unit 4 Review Sheet

Date: _____

Solve and Check:

1) $2 + x = 10$

2) $x - 7 = 3$

3) $-5x = 15$

4) $\frac{x}{4} = -10$

5) $-x = 3$

6) $7m + 3 = 10$

7) $\frac{x}{7} - 2 = 4$

8) $8y + 2 = 18$

9) $\frac{x}{3} - 2 = 7$

10) $2x + 9x = 44$

11) $3r + 5r = 24$

12) $d + 3 + 4d = 38$

13) $6c + 12 = 22 + 20$

14) $3(5z - 2) = 24$

15) $2(3x + 2) = 13 + 15$

16) $-(x + 5) = 16$

17) $-4(2h + 2) = 16$

18) $5y + 3 - y = -41$

19) $\frac{x}{3} - 5 + 11 = -12$

20) $\frac{1}{5}(5x - 15) = 32$

21) $\frac{2}{3}(6x - 18) = 16$

22) $0.5x - 1.5 = 8.5$

23) $-3.7 - 0.7x = -5.8$

24) $3.2x + 1.8x + 4.2 = 15.2 + 4$

25) $\frac{5}{6}x - \frac{1}{6}x = 8$

26) $7x - (3x - 6) - 2 = -20$

27) $-10 - 2 = \frac{1}{2}(4x - 4) - 4x$

Write and solve an equation for each:

28) Three times a number is 21.

29) Seven less than a number is 20.

30) Eleven less than five times c is 19.

31) Thirteen more than four times a number is -91 .

32) Three times the sum of a number and 2 is 27.

33) Five less than the product of -3 and a number is -2 .

34) Nine more than -8 times a number is -7 .

35) Five more than twice a number is 7.

36) Sally loves to text her friends. Her cell phone company charges her $\$0.05$ per text. She has to pay a connection fee of $\$25$ a month. Sally can only afford to pay $\$40$ a month. What is the greatest number of texts she can send/receive per month?

37) Kelly is renting a car and is charged $\$120$ for the day plus $\$0.25$ for each mile driven. Write an equation of the situation. Find out how many miles can be driven if Kelly is going to pay $\$170$.

Review Chapters 1-3:

38) Mercury freezes at -38° F and boils at 674° F. Find the difference between the two temperatures.

39) Drew made fruit punch for 12 people. The punch contains sparkling water and $\frac{2}{3}$ of a pint of fruit juice per person. If there are $10\frac{2}{5}$ pints of fruit punch, how many pints of sparkling water did Drew add per person?

40) Student Government sold 175 bags of popcorn at the dance. If they made \$306.25, how much was the cost of each bag of popcorn?

41) Evaluate the expression, if $r = 5$, $s = 7$, and $t = 10$.

$$3(rs) - t$$

42) Simplify:

a) $7x + 9x$

b) $-6x - x$

c) $\frac{3}{5} + \frac{9}{10}$

d) $\frac{\frac{3}{7}}{\frac{4}{12}}$

43) $(13.55)(-2.6)$

44) $32.37 + 11.765$

45) $25.67 - 3.94$

46) $\frac{-24}{.3}$