

Unit 1

Beaumont Middle School

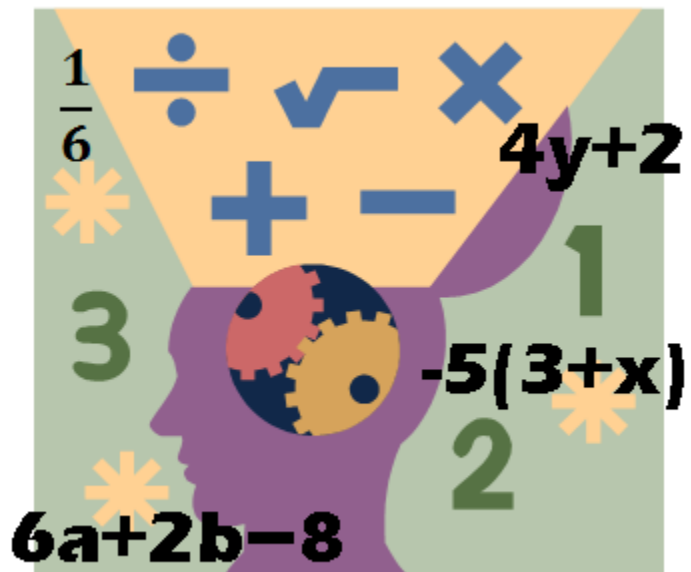
8th Grade, 2016-2017

Introduction to Algebra

Name: _____

Simplifying Expressions

- I can identify expressions and write variable expressions.
- I can solve problems using order of operations.
- I can identify types of real numbers and express equivalent numbers for comparison.
- I can evaluate expressions and solve problems by evaluating expressions.
- I can find opposites and absolute values of integers and add integers.
- I can solve problems by subtracting integers.
- I can solve problems by adding & subtracting integers.
- I can solve problems by multiplying and dividing integers.
- I can combine like terms to simplify variable expressions.
- I can use the distributive property with numerical and variable expressions,



Objectives: I can identify expressions and write variable expressions.

Variables and Expressions

Variables

A variable is a symbol that represents a number. Usually we use letters such as n , t , or x for variables. For example, we might say that s stands for the side-length of a square. We now treat s as if it were a number we could use. The perimeter of the square is given by $4 * s$. The area of the square is given by $s * s$. When working with variables, it can be helpful to use a letter that will remind you of what the variable stands for: let n be the number of people in a movie theater; let t be the time it takes to travel somewhere; let d be the distance from my house to the park.

Expressions

An expression is a mathematical statement that may use numbers, variables, or both. A **variable expression** contains at least one variable. A **numerical expression** contains just numbers.

The following are examples of expressions. Identify each as a numerical expression or variable expression. For each variable expression, name the variable.

- | | |
|--------------------|--------------------|
| 2 _____ | x _____ |
| 3 + 7 _____ | 2y + 5 _____ |
| 2 + 6(4 - 2) _____ | z + 3(8 - z) _____ |

Translating words into expressions

Certain words can be translated into math operation symbols. Write the correct symbol beside each given word(s). Use +, -, *, or ÷

- | | | |
|--------------------|----------------|-----------------|
| less than _____ | times _____ | more than _____ |
| increased by _____ | product _____ | of _____ |
| difference _____ | quotient _____ | sum _____ |
| decreased by _____ | twice _____ | half _____ |
| total _____ | double _____ | quadruple _____ |

'Quantity' means use parentheses around the next expression.

For example, 5 times the quantity of 18 minus h _____

Write a variable expression for each word phrase.

1. The sum of 6 and x _____
2. m multiplied by 11 _____
3. 13 less h _____
4. 13 less than h _____
5. 5 times the sum of n and 8 _____
6. 16 less than the product of m and -1 _____
7. y decreased by the product of y and 2 _____

Write an expression for each quantity.

8. the value in cents of 5 quarters _____ the value in cents of q quarters _____
9. the number of days in 3 weeks _____ the number of days in w weeks _____
10. the number of hours in 240 minutes _____ the number of hours in m minutes _____
11. the number of meters in 400 cm _____ the number of meters in c centimeters _____

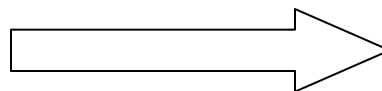
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HOMEWORK

Identify each as a numerical expression or variable expression. For each variable expression, name the variable.

1. $4c$ _____
2. $74 + 8$ _____
3. $\frac{4(9)}{6}$ _____
4. $14 - r$ _____
5. $25k - 9$ _____
6. $3 + 3 + 3 + 3$ _____
7. $19 + 3(12)$ _____
8. $25 - 8 + x$ _____

Homework is continued on the next page.



Write an expression for each quantity.

9. the number of inches in 4 feet _____ the number of inches in f feet _____

10. the number of months in 7 years _____ the number of months in y years _____

11. the number of dollars in 20 dimes _____ the number of dollars in d dimes _____

12. the number of yards in 12 feet _____ the number of yards in f feet _____

Write a variable expression for each word phrase.

13. 9 less than k _____

14. m divided by 6 _____

15. twice x _____

16. 4 more than twice x _____

17. the sum of 18 and h _____

18. three times the quantity 2 plus a _____

19. six minutes less Bob's time _____ (make up your own variable for Bob's time)

20. the cost decreased by ten dollars _____ (make up your own variable for the cost.)

21. the quotient of a number, n , and three increased by five _____

Write a word phrase for each expression. Use words specific to the situation.

Example: The amount of money James saved is d dollars.

a. $d + 20$ James earned \$20

b. $d - 5$ James spent \$5

22. The room temperature is c degrees centigrade. (Specific words would be "warmer" & "colder.")

a. $c + 15$ _____

b. $c - 7$ _____



23. The speed of the race car is r miles per hour. (Use specific "action" words.)

a. $r + 20$ _____

b. $r - 12$ _____



Objectives: I can solve problems using order of operations.

Order of Operations

Jordan solved the problem $5 + 4 * 2$ and got the answer of 18. David solved the same problem and got 13. Can both be correct? Is there only one correct order to perform operations? Who is correct?

Don't forget the different symbols for multiplication:
 $5 * 2$ $5(2)$ $5x2$ $5 \cdot 2$

$$\begin{aligned} 5 + 4 * 2 \\ 9 * 2 \\ 18 \end{aligned}$$

$$\begin{aligned} 5 + 4 * 2 \\ 5 + 8 \\ 13 \end{aligned}$$



Let's use this acronym to help us remember the order of operations...

Please

Excuse

My **D**ear

Aunt **S**ally

P (Level 1) _____

E (Level 2) _____

M & D (Level 3) _____

A & S (Level 4) _____



Practice

Steps must be shown so that each line of work is equal to the line above.

1. $5 * 10 - 6 * 2$

2. $24 \div 6 * 2$

3. $3 + 5(7 - 5)$

4. $18 - 5 * 3$

5. $\frac{9 + 7 * 5}{4}$

6. $2 [9 (6 - 4)] + 4$

7. $30 - 2^3$

8. $3(14 - 8)^2$

9. $10 * 3^4$

HOMEWORK



Find the value of each expression. You must show work as demonstrated in class. Each line should equal the line above. A calculator should NOT be used for this assignment.

1. $50 - 4 \cdot 5$

2. $(100 \div 5) - 6 \cdot 3$

3. $9^2 + 2(8 - 4)$

4. $\frac{16+8}{3+1}$

5. $3(6 - 4)^3$

6. $2[50 - 8(2 + 3)]$

7. $20 \div 4 * 5$

8. $14 - 3(20 - 18)$

9. $54 \div 6 - 3 \cdot 2$

10. $5 + 2(6-4)$

11. $\frac{21+3}{8-6} - 3^2$

12. $[10 - (4 - 1)] \cdot 9$

13. $48 \div 2^3$

14. $18 - 2(8) \div 4$

15. $\frac{5*10}{25} + 4 \div 2$

Evaluating Expressions



Objectives: I can evaluate expressions and solve problems by evaluating expressions.

We have learned that, in an algebraic expression, letters can stand for numbers. When we substitute a specific value for each **variable**, and then perform the operations, it's called **evaluating** the expression.

Evaluating a variable expression

Example 1

Evaluate $18 + 2g$, for $g = 3$.

$18 + 2g$ **Replace the variable**

$18 + 2 \cdot 3$ **Use the order of operations to solve.**

$18 + 6$
24

Example 2

Evaluate $2ab - \frac{c}{3}$, for $a = 3$, $b = 4$, $c = 9$

$2ab - \frac{c}{3}$ **Replace the variable**

$2 \cdot 3 \cdot 4 - \frac{9}{3}$ **Use the order of operations**

$24 - 3$
21

Practice

Evaluate each expression.

1. $63 - 5x$, for $x = 7$

2. $4(t + 3) + 1$, for $t = 8$

3. $6(g + h)$, for $g = 8$ & $h = 7$

Remember that a number beside a variable is multiplied.
2a means 2 * a

4. $2xy - z$, for $x = 4$, $y = 3$, and $z = 1$

5. $\frac{r + s}{2}$, for $r = 13$ and $s = 11$

6. Becky saves \$125 each year since her first birthday.

a. Write an expression for Becky's savings after 3 years. _____

b. Write an expression for Becky's savings after y years _____

c. Write an expression for when Becky is 14 years old, how much will she have saved? _____



HOMEWORK

Evaluate each expression.

1. xy , for $x = 3$ and $y = 5$

2. $18a - 9b$, for $a = 10$ and $b = 5$

3. $24 - 5p$, for $p = 4$

4. $850 - 2h$, for $h = 215$

For #5 – 8, evaluate if $a = \frac{1}{2}$, $x = 4$, and $y = 2$.

5. $a(10 - x)$

6. axy

7. $5x - 3y$

8. $4x + 2(x + 3y)$

10. A tree grows 5 inches in a year.

a. Write an expression for the tree's height after x years. _____

b. When the tree is 36 years old, how tall will it be? _____

Evaluate each expression.

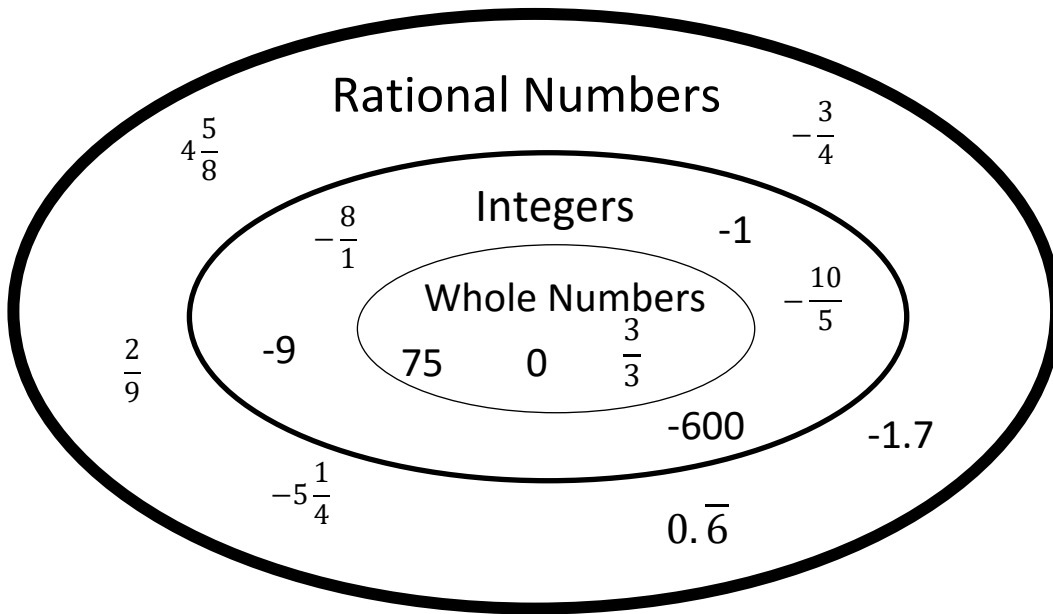
11. $\frac{ab}{2} + 4c$, for $a = 6$, $b = 5$, and $c = 3$

12. $x(y + 5) - z$, for $x = 3$, $y = 2$, and $z = 7$

Objectives: I can identify types of rational numbers and express equivalent numbers for comparison.

Rational Numbers

Numbers have different classifications. Some numbers can be classified in multiple ways. A **rational** number is any number that you can write as a ratio, $\frac{a}{b}$ of two integers, where b is not zero. The diagram below shows relationships among rational numbers.



Always simplify numbers before classifying them. Every whole number is also an integer and a rational number. Every integer is also a rational number.

Practice

Identify the classification(s) for the following numbers by circling the classification(s) for each.

- | | | | |
|---------------------|--------------|---------|-----------------|
| 1) 5.8 | Whole Number | Integer | Rational Number |
| 2) 6 | Whole Number | Integer | Rational Number |
| 3) -10 | Whole Number | Integer | Rational Number |
| 4) $0.\overline{6}$ | Whole Number | Integer | Rational Number |
| 5) $\frac{1}{2}$ | Whole Number | Integer | Rational Number |
| 6) $-\frac{2}{3}$ | Whole Number | Integer | Rational Number |

Express each of the fractions as decimals.

1) $\frac{1}{9} =$ _____

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

3) $\frac{3}{9} =$ _____

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

5) $\frac{5}{9} =$ _____

6) $\frac{6}{9} =$ _____

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

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

9) $\frac{9}{9} =$ _____

10) What pattern is shown when the denominator is 9? _____

11) What fraction do you think would be equivalent to $0.\overline{14}$? _____

12) What fraction do you think would be equivalent to $0.\overline{128}$? _____

13) What fraction do you think would be equivalent to $0.\overline{32}$? _____

Check your answers to #11 - 13 by changing your fraction to a decimal.

Write the fraction equivalent to each of the following decimal numbers.

14) $-0.\overline{2} =$ _____

15) $5.\overline{3} =$ _____

16) $0.444444\overline{4} =$ _____

17) $-0.\overline{16} =$ _____

18) $4.\overline{124} =$ _____

19) $0.272727\overline{27} =$ _____

Graph the following sets of numbers on a number line. Then list them in order from least to greatest.

20) $\{0.6, 0.2, \frac{2}{9}, 0.\overline{4}\}$  _____

21) $\{2.9, \frac{21}{10}, 2.\overline{9}, 3\}$  _____

HOMEWORK

Identify the classification(s) for the following numbers by circling the correct answer(s).


- | | | | |
|----------------------|--------------|---------|-----------------|
| 1) -4.5 | Whole Number | Integer | Rational Number |
| 2) -2 | Whole Number | Integer | Rational Number |
| 3) $0.\overline{8}$ | Whole Number | Integer | Rational Number |
| 4) $-0.\overline{2}$ | Whole Number | Integer | Rational Number |
| 5) $-\frac{5}{2}$ | Whole Number | Integer | Rational Number |
| 6) 100 | Whole Number | Integer | Rational Number |

Write the fraction equivalent to each of the following rational numbers.

- 7) $-6.\overline{1} = \underline{\hspace{2cm}}$ 8) $0.\overline{6} = \underline{\hspace{2cm}}$ 9) $0.\overline{95} = \underline{\hspace{2cm}}$
 10) $0.2222\overline{2} = \underline{\hspace{2cm}}$ 11) $-0.\overline{73} = \underline{\hspace{2cm}}$ 12) $5.\overline{824} = \underline{\hspace{2cm}}$

Graph the following sets of numbers on a number line. Then list them in order from least to greatest.

13) $\{1.2, 1\frac{7}{9}, 1.\overline{2}, 1\frac{1}{2}\}$ 

14) $\{\frac{31}{5}, 6.\overline{5}, 6, 6\frac{2}{9}\}$ 

Review of Lessons 1 through 3

Write an expression for each quantity.

15. the number of cups in 6 quarts the number of cups in q quarts

16. the number of quarts in 8 cups the number of quarts in c cups

Homework is continued on the next page.



Objectives: I can identify types of real numbers and express equivalent or approximate numbers for comparison.

Real Numbers

There are more classifications of numbers beyond rational numbers. Some numbers can't be expressed as the ratio of two integers. If this is the case, they are **irrational numbers**. Rational and irrational numbers together make up real numbers. Irrational numbers do not terminate or repeat when expressed in decimal form. One well known and frequently used irrational number is π . We are going to explore some other irrational numbers.

Complete the following tables.

Perfect Squares

1^2	$1*1$	1
2^2	$2*2$	4
3^2		
4^2		
5^2		
6^2		
7^2		
8^2		
9^2		
10^2		
11^2		
12^2		

Perfect Cubes

1^3	$1*1*1$	1
2^3	$2*2*2$	8
3^3		
4^3		
5^3		
6^3		

You can use the tables from left to right to "undo" the square or cube. This is called taking the square root or cube root of a number.

For example:

$$\sqrt[2]{16} = 4$$

$$\sqrt{144} = 12$$

$$\sqrt[3]{27} = 3$$

Note: The square root is used so frequently, the 2 is just left off. So if there isn't a little number to indicate the root, the square root is implied.

You try:

1) $\sqrt{49} = \underline{\hspace{2cm}}$

2) $\sqrt[3]{8} = \underline{\hspace{2cm}}$

3) $\sqrt{100} = \underline{\hspace{2cm}}$

4) $\sqrt[3]{125} = \underline{\hspace{2cm}}$

Make a conjecture: What if the number isn't on the list? What if you were asked to find $\sqrt{30}$? What if you were asked to find $\sqrt[3]{24}$? (These are examples of irrational numbers.)

Use what you know... $\sqrt{30}$ is between $\sqrt{25}$ and $\sqrt{36}$, therefore $\sqrt{30}$ is between 5 and 6.
 ... $\sqrt[3]{24}$ is between $\sqrt[3]{8}$ and $\sqrt[3]{27}$, therefore $\sqrt[3]{24}$ is between 2 and 3.

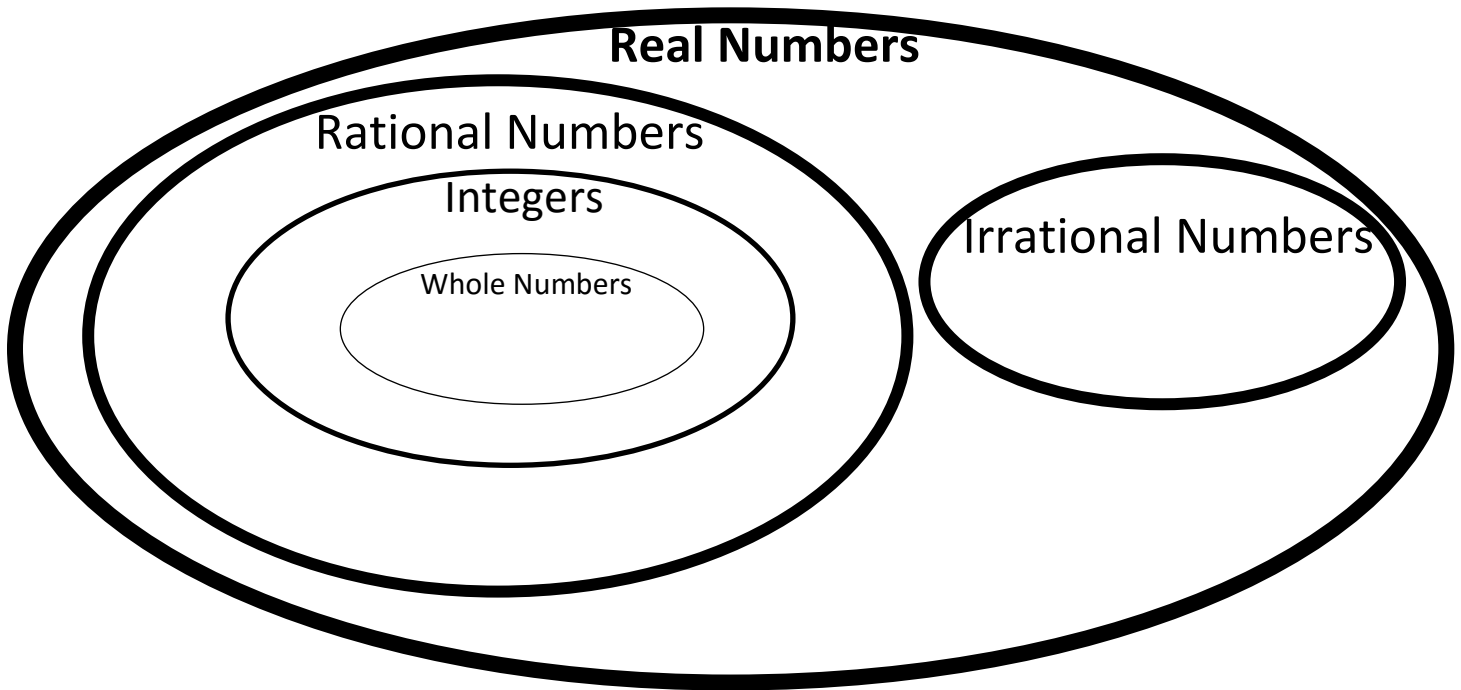
State the two consecutive integers that the following irrational numbers are in between:

Consecutive: in a row or one following another. For example 2, 3, 4, 5 are consecutive whole numbers.

- 1) $\sqrt{61}$ is between _____ and _____ 2) $\sqrt[3]{118}$ is between _____ and _____
 3) $\sqrt[3]{100}$ is between _____ and _____ 4) $\sqrt{135}$ is between _____ and _____

Place the following set of numbers on the Venn diagram to classify the type of number. Then indicate in the table below to which set(s) of numbers it belongs.

$$\{-12, \sqrt{6}, -2.6, 0.222\bar{2}, -0.\bar{2}, \frac{7}{3}, \sqrt{100}, \sqrt[3]{12}\}$$

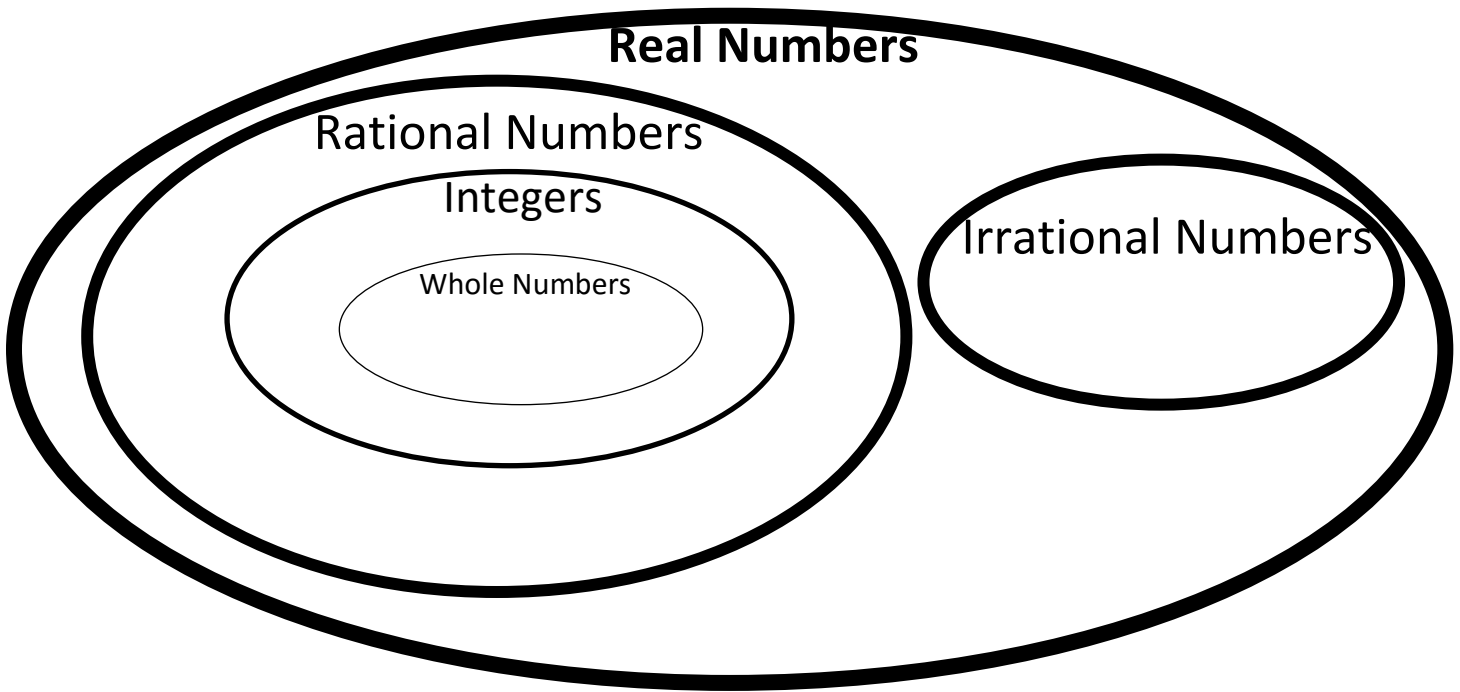


	Whole #	Integer	Rational #	Irrational #	Real #
1) -12					
2) $\sqrt{6}$					
3) -2.6					
4) $0.222\bar{2}$					
5) $-0.\bar{2}$					
6) $\frac{7}{3}$					
7) $\sqrt{100}$					
8) $\sqrt[3]{12}$					

HOMWORK

Place the following set of numbers on the Venn diagram to classify the type of number. Then indicate in the table below to which set(s) of numbers it belongs.

$$\left\{ 6\frac{2}{5}, \sqrt[3]{125}, \sqrt{50}, -\frac{3}{4}, 7.2\bar{3}, -8, \frac{15}{3}, \sqrt[3]{25}, 0, \pi \right\}$$



1) $6\frac{2}{5}$	Whole #	Integer	Rational #	Irrational #	Real
2) $\sqrt[3]{125}$	Whole #	Integer	Rational #	Irrational #	Real
3) $\sqrt{50}$	Whole #	Integer	Rational #	Irrational #	Real
4) $-\frac{3}{4}$	Whole #	Integer	Rational #	Irrational #	Real
5) $7.2\bar{3}$	Whole #	Integer	Rational #	Irrational #	Real
6) -8	Whole #	Integer	Rational #	Irrational #	Real
7) $\frac{15}{3}$	Whole #	Integer	Rational #	Irrational #	Real
8) $\sqrt[3]{25}$	Whole #	Integer	Rational #	Irrational #	Real
9) 0	Whole #	Integer	Rational #	Irrational #	Real
10) π	Whole #	Integer	Rational #	Irrational #	Real

Homework is continued on the next page.



Simplify.

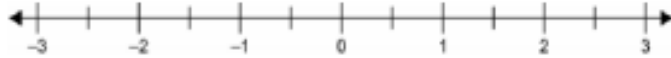
11) $\sqrt{25} =$ _____ 12) $\sqrt[3]{64} =$ _____ 13) $\sqrt{64} =$ _____ 14) $\sqrt[3]{1} =$ _____ 15) $\sqrt{1} =$ _____

State the two consecutive integers that the following irrational numbers are in between:

- 1) $\sqrt{20}$ is between _____ and _____ 2) $\sqrt[3]{40}$ is between _____ and _____
 3) $\sqrt[3]{134}$ is between _____ and _____ 4) $\sqrt{96}$ is between _____ and _____

5) Plot and label the following numbers to their correct places on the number line to the right.

$$\frac{4}{3}, -\frac{2}{3}, \sqrt{4}, \sqrt{8}$$



Multiple Choice: Circle the letter beside the correct answer.

6) Which statement is correct?

- A. All integers are rational numbers.
- B. All irrational numbers are whole numbers.
- C. A real number must be a rational number.
- D. A repeating decimal is an irrational number.

9) Which set below includes only irrational numbers?

- A. $\{-\sqrt{12}, -3.7\bar{6}, \sqrt{36}, 4.3858\dots\}$
- B. $\{-7.2322\dots, \sqrt{5}, \sqrt{15}, 8.27451\dots\}$
- C. $\{-5.6, \sqrt{14}, 6.\overline{3245}, \sqrt{81}\}$
- D. $\{-\sqrt{8}, .3\bar{7}, 3.265165065\dots, \sqrt{90}\}$

7) Which number is irrational?

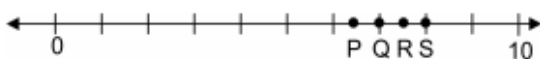
- A. $(1.5)^2$
- B. $\sqrt{41}$
- C. $\sqrt{49}$
- D. $(15)^2$

10) Which expression shows the first step in finding the value of $6 + 3(5 - 2)^2$?

- A. $6 + 3(3)^2$
- B. $9(5 - 2)^2$
- C. $6 + (15 - 2)^2$
- D. $6 + 3(25 - 4)$

8) Which point on the number line shows the *best* estimate of the irrational number below?

$$\sqrt{57}$$



- A. P
- B. Q
- C. R
- D. S

11) Which operation should be performed first in the expression

$$18 - 2 + 5 \times (16 + 66 \div 2)$$

- A. $2 + 5$
- B. 5×16
- C. $16 + 66$
- D. $66 \div 2$

Homework is continued on the next page.



Review of Lessons 1 through 4

Write the fraction equivalent for each decimal representation of the following rational numbers.

12. a) 0.6 _____ b) $0.\overline{6}$ _____ c) $2.\overline{6}$ _____

13. a) 3.1 _____ b) $3.\overline{1}$ _____ c) $-3.\overline{1}$ _____

14. a) -17.2 _____ b) $-17.\overline{2}$ _____ c) $17.\overline{22}$ _____

Write an expression for each quantity.

15. the number of days in 6 weeks _____ the number of days in w weeks _____

16. the number of weeks in 72 days _____ the number of weeks in d days _____

Write a variable expression for each word phrase.

17. 5.2 more than f _____

18. The product of $\frac{3}{5}$ and p _____

19. 8 less u _____

20. 6 less than twice x _____

Find the value of each expression. You must show work as demonstrated in class. Each line should equal the line above. A calculator should NOT be used.

21. $2 + 4(30 - 20)$

22) $6 + (2)\sqrt{81}$

23. $\frac{3+5^2}{8-6}$



Evaluate if $a = 10$, $x = \frac{1}{3}$, and $y = 6$. You must show work as demonstrated in class. Each line should equal the line above. A calculator should NOT be used.

24. $5 + a(8 - y)$

25. axy

26. $12x + 2y$

Objectives: I can find opposites and absolute values of integers and add integers.

Adding Integers (Absolute Value and Opposites of Integers)

absolute value

The distance of a number from zero; the positive value of a number.

Two parallel lines around a number or expression mean "the absolute value."

For example: $|-4| = 4$ $|8| = 8$ $|0| = 0$

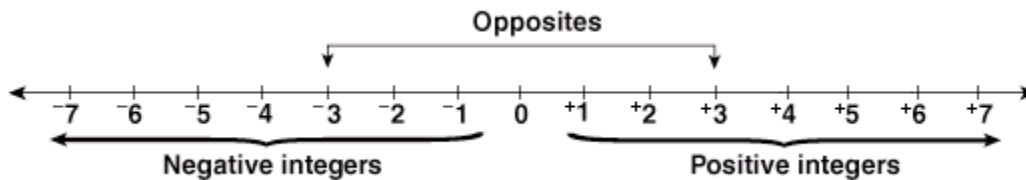
opposites

Two numbers that lie the same distance from 0 on the number line but in opposite directions.

For example: The opposite of 2 is -2 The opposite of -5 is 5.

A negative sign in front of a number or variable means "the opposite of."

Therefore, $-(-9) = 9$



Write an integer for each situation.

- | | |
|-------------------------|-----------------------------------|
| 1. Lose \$7 _____ | 2. 1,300 ft below sea level _____ |
| 3. 8°C below zero _____ | 4. 3 yards gained _____ |
| 5. 5 floors down _____ | 6. Deposit of \$150 _____ |
| 7. Profit of \$40 _____ | 8. Borrowed \$6 _____ |

Compare. Use >, < or = to complete each statement.

- | | | |
|-----------------------------------|---------------------------------------|------------------------------------|
| 1. -4 <input type="text"/> -2 | 2. $ -4 $ <input type="text"/> $ -5 $ | 3. -7 <input type="text"/> $ 4 $ |
|-----------------------------------|---------------------------------------|------------------------------------|

Notes about adding integers...

More notes...

Practice **Applying Rules of Addition**

Find each sum.

1. $9 + (-12) =$ _____ 2. $-4 + 10 =$ _____ 3. $-1 + (-8) =$ _____

4. $-6 + (-11) =$ _____ 5. $-5 + 15 =$ _____ 6. $2 + (-14) =$ _____

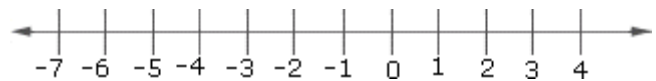
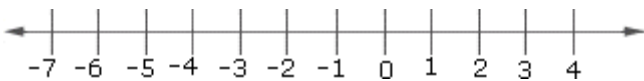
7. $1 + (-3) + 2 + (-10) =$ _____ 8. $-12 + (-6) + 15 + (-2) + 5 =$ _____

HOMEWORK

Graph each set of numbers on a number line. Then order the numbers from least to greatest. (On #3 and 4, you have to write your own numbers under the number lines.)

1. -4, -7, 3

2. 3, -3, -2



least to greatest: _____

least to greatest: _____

3. 0, -6, -4

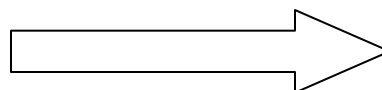
4. -7, -1, -3



least to greatest: _____

least to greatest: _____

Homework is continued on the next page.



Write an integer to represent the quantity.

5. 5 degrees below zero _____
6. 2,000 ft above sea level _____
7. a loss of 12 yd _____
8. 7 strokes under par _____

Simplify each expression.

9. the opposite of -15 _____
10. $|-9|$ _____
11. $|25|$ _____
12. the opposite of $|8|$ _____
13. $-|-3|$ _____
14. $|847|$ _____
15. $-(-2)$ _____
16. The opposite of 4 _____

Write the integer represented by each point on the number line.



17. A _____
18. B _____
19. C _____

Compare. Use $>$, $<$, or $=$ to compare each statement,

20. -3 4
21. 5 1
22. -7 -6
23. 7 $|8|$
24. $|-2|$ 4
25. $|-1|$ -6
26. $|4|$ $|-5|$
27. 0 $|-7|$

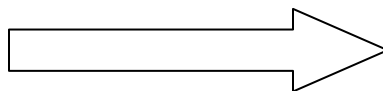
Write a numerical expression for each of the following. Then find the sum.

28. climb up 26 steps, then climb down 9 steps _____
29. earn \$100, spend \$62, earn \$35, spend \$72 _____

Find each sum.

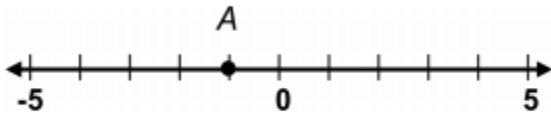
30. $-8 + (-3)$ _____
31. $6 + (-6)$ _____
32. $-12 + (-17)$ _____
33. $9 + (-11)$ _____
34. $-4 + (-6)$ _____
35. $18 + (-17)$ _____
36. $-8 + 8 + (-11)$ _____
37. $-15 + 7 + 15$ _____
38. $12 + (-7) + 3 + (-8)$ _____

Homework is continued on the next page.



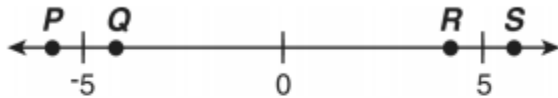
Multiple Choice: Circle the letter beside the correct answer.

39) What is the coordinate of point A?



- A. -3 B. -1 C. 1 D. 4

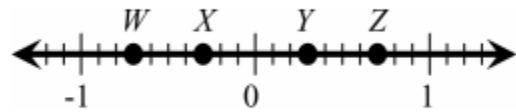
40) Look at the number line.



What point shows the location of -6 on the number line?

- A. Point P B. Point Q
C. Point R D. Point S

41) Which point is located closest to $-\frac{7}{10}$ on the number line below?



- A. W B. X C. Y D. Z

42) The three running backs on the Thunderbolts football team ran for the following yardage in the last game:

Thibeaux: -3, 5, 10, -5, -2, 1, 13

Walker: 4, 3, -1, 2, -1, 4, 5

Smith: -2, 5, -5, 4, 22, 1, -3

Which running back had the *most* yards gained?

- A. Thibeaux
B. Walker
C. Smith
D. No player had more yards gained than either of the others.

43) The lowest elevations for five states are recorded in the table below.

Lowest Elevations					
State	Arkansas	California	Louisiana	Massachusetts	Texas
Lowest Elevation (feet above sea level)	55	-282	-8	0	-2

Which of the following lists the numbers in the table in order from least to greatest?

- A. -282, -8, -2, 0, 55
B. -282, 55, -8, -2, 0
C. 0, -2, -8, 55, -282
D. 0, 55, -2, -8, -282

44) What is equal to $\sqrt[3]{27}$?

- A. $\frac{3}{27}$ B. 3 C. $\frac{24}{3}$ D. 9

45) Between which two consecutive integers is the value of this irrational number?

$$\sqrt{117}$$

- A. 8 and 9 B. 10 and 11
C. 14 and 15 D. 20 and 21

46) Label the following numbers to their correct places on the number line below.

$$\frac{1}{3}, -\frac{5}{3}, -\sqrt{4}, \sqrt{5}$$



47) Which of the following is a square number?

- A. 10 B. 24 C. 36 D. 55

Objectives: I can solve problems by subtracting integers.

Subtracting Integers

Addition is the same as subtracting the opposite.

$$\begin{aligned} 7 + (-4) &= 3 \\ 7 - 4 &= 3 \end{aligned}$$

$$\begin{aligned} 8 + (-2) &= 6 \\ 8 - 2 &= 6 \end{aligned}$$

Let's not have to memorize a bunch of rules! Subtracting integers just requires you to add the opposite. Change the subtraction sign to addition; change the sign of the next number. (Never change the number before the subtraction sign.)

Examples: $10 - (-4) =$
 $10 + (+4) = 14$

$-6 - 5 =$
 $-6 + (-5) = -11$

$3 - 9 =$
 $3 + (-9) = -6$

Practice Rewrite the subtraction problems below as addition problems, then solve.

1) $-7 - 3$ _____

2) $12 - 23$ _____

3) $15 - (-3)$ _____

4) $-28 - (-8)$ _____

5) $-2 - 98$ _____

6) $-63 - (-12)$ _____

7) $14 - (-9)$ _____

8) $-4 - 15$ _____

9) $5 - 8 - (-4)$ _____

10) $-2 - 5 - (-7)$ _____

Write a numerical expression for each situation and then simplify.

11) Terry has \$43 in a checking account. If Terry writes a check for \$62, what is the new account balance?

12) Suppose you score 35 points in a game but then you get a 50 point penalty. What is your new score?

Evaluate each expression if $m = -2$, $n = 3$, and $p = -6$.

13) $m - p$

14) $p - n - m$

15) $2n - m$

Homework

Rewrite the subtraction problems below as addition problems, then solve.

1) $8 - 12$ _____ 2) $13 - 6$ _____ 3) $9 - (-13)$ _____

4) $60 - 39$ _____ 5) $-28 - 90$ _____ 6) $70 - (-12)$ _____

7) $84 - (-9)$ _____ 8) $40 - 15$ _____ 9) $5 - 28$ _____

10) $-80 - 120$ _____ 11) $36 - (-50)$ _____ 12) $-75 - (-5)$ _____

13) $-70 - (-4) - 6$ _____ 14) $35 - (17) - 20$ _____

Evaluate each expression if $a = -4$, $b = 10$, and $c = -2$

15) $a - b$ 16) $b - c$ 17) $a - c$

18) $a - b - c$ 19) $a - 2b$ 20) $a - c - 3$

Write a variable expression for each word phrase.

21) 7 less than m _____ 22) the product of a number and 9 _____

23) the total of 5 and c _____ 24) a number increased by 11 _____

25) twice as many points as Bob _____ 26) the price decreased by \$4 _____

27) 15 years older than Tom _____ 28) 3 times as many dimes _____

Multiple Choice: Circle the letter beside the correct answer.

- 29) The temperature on Monday was -23°F . The temperature on Tuesday was 18° higher. What was the temperature on Tuesday?
- 30) Which expression represents the product of n and 25?

A. -41°F

B. -5°F

A. $25n$

B. $25 - n$

C. 5°F

D. 41°F

C. $25 + n$

D. $25 \div n$

Objectives: I can solve problems by adding & subtracting integers.

Adding & Subtracting Integers

Don't forget how to add integers now that we know how to subtract!

Rules for adding integers:

If the signs are the same: _____

If the signs are different: _____

Rule for subtracting integers:

Practice

Solve.

1. $-6 - (-2)$ _____

2. $5 + -3$ _____

3. $3 + -5$ _____

4. $-2 + -3$ _____

5. $5 - (-1)$ _____

6. $-1 + 1$ _____

7. $3 + -10$ _____

8. $-20 + 21$ _____

9. $-6 - 4$ _____

10. $4 - (-3)$ _____

11. $-9 - (-6)$ _____

12. $5 - 12$ _____

13. $-4 - 9$ _____

14. $-2 - 10 + (-4)$ _____

15. $10 + (-6) - 15 - (-6)$ _____

16. $-2 - 6 + (-1) - (-3)$ _____

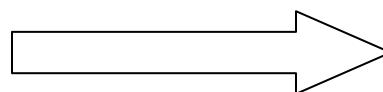
Evaluate if $a = 2, b = -6$ and $c = 10$

17. $a - b + c$

18. $c - b - a$

19. $a - b - 2c$

Homework is continued on the next page.



Homework

Solve. You must show changing subtraction to adding the opposite.

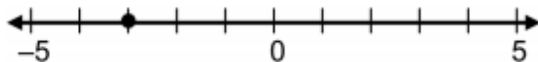
- | | | |
|-----------------------------------|-------------------------------------|------------------------|
| 1. $4 - 50$ _____ | 2. $-4 - (-72)$ _____ | 3. $-4 + -85$ _____ |
| 4. $3 - (-97)$ _____ | 5. $60 - (-6)$ _____ | 6. $5 - 86$ _____ |
| 7. $3 + 10$ _____ | 8. $-20 + 20$ _____ | 9. $-2 - 60$ _____ |
| 10. $-6 - (-70)$ _____ | 11. $-7 - (-52)$ _____ | 12. $-8 + (-31)$ _____ |
| 13. $-12 - 13 + (-5)$ _____ | 14. $16 + (-8) - 16 - (-3)$ _____ | |
| 15. $28 - 3 + (-6) - (-14)$ _____ | 16. $-24 + 5 - (-5) - 6 + 15$ _____ | |

Evaluate if $a = -2, b = 8, c = 10$ and $d = -10$. Show all work.

- | | | |
|---------------------|------------------|----------------------|
| 17. $c + d$ | 18. $a - d$ | 19. $a - b$ |
| 20. $a + b$ | 21. $c - d$ | 22. $a + d$ |
| 23. $a - b + d$ | 24. $d - a + 2b$ | 25. $a + c + d$ |
| 26. $a - b + c - d$ | 27. $a + c - d$ | 28. $a + b - 2c + d$ |

Multiple Choice: Circle the letter beside the correct answer.

29. What is the absolute value of the coordinate of the point shown on the number line?



- A. -4 B. -3 C. 3 D. 4

30. Chanler placed parentheses in the expression $4 * 8 + 2$ and calculated the answer to be 40. Which of the following expression shows where Chris placed the parentheses?

- | | |
|------------------|------------------|
| A. $4 * 8 + (2)$ | B. $(4 * 8) + 2$ |
| C. $4 * (8 + 2)$ | D. $(4 * 8 + 2)$ |

Objectives: I can combine like terms to simplify variable expressions.

Combining Like Terms

In an expression, the **terms** are the elements separated by the plus or minus sign. A **coefficient** is the number being multiplied by a variable.

3 is the coefficient

3 a

a is the variable

3a is a term.

b is a term.

-5 is a term.

3a + b - 5

-5 is a constant b/c there is no variable beside it.

Like terms have the same variable(s).

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

2x and 4x are like terms.
3y and -5y are like terms.

You can add like terms by adding their coefficients.

$$2x + 4x = 6x \quad \text{and} \quad 3y + (-5y) = -2y$$

So you can simplify $2x + 3y + 4x - 5y = \underline{6x + -2y}$

Practice

Problem 1. $2x + 3y + z$

- a) What number is the coefficient of x? _____
- b) What number is the coefficient of y? _____
- c) What number is the coefficient of z? _____

Typically, you do not write the coefficients 1 or -1.

$1x = x$

$-1x = -x$

Problem 2. $5x - 4y - z$ (hint: change the subtraction to plus the opposite)

- a) What number is the coefficient of x? _____
- b) What number is the coefficient of y? _____
- c) What number is the coefficient of z? _____

Problem 3. Add like terms.

- | | | |
|-----------------------------|-----------------------------|------------------------|
| a) $6x + 2x$ _____ | b) $6x - 2x$ _____ | c) $5x + x$ _____ |
| d) $5x - x$ _____ | e) $-4x + 5x$ _____ | f) $4x - 5x$ _____ |
| g) $-5x - 3x$ _____ | h) $-x - x$ _____ | i) $-7x - (-7x)$ _____ |
| j) $-3x - 4 + 2x + 6$ _____ | k) $x - 2 - 4x - 5$ _____ | |
| l) $4x + y - 2x + 3z$ _____ | m) $3x - y - 8x + 2y$ _____ | |

Homework

Identify how many terms are in each expression. (Do NOT simplify.)

1) $2x + 3z - 5$ _____

2) $3x$ _____

3) $4c - 7g$ _____

4) $10 + 6p - 5y + 4u$ _____

5) $4k - 9$ _____

6) $5d + 8 - 6y + w$ _____

For each expression name the coefficient and the constant.

7) $-4x + 5$ Coefficient _____

Constant _____

8) $2y$ Coefficient _____

Constant _____

9) $9h - 6$ Coefficient _____

Constant _____

10) -3 Coefficient _____

Constant _____

Simplify.

11) $2x + 5y + 9x$ _____

12) $a + 9b + 6a$ _____

13) $2p + 3q - 5p + 2q$ _____

14) $\frac{3}{4}x + z + \frac{1}{4}x$ _____

15) $3j + 4k - 2f + 6k$ _____

16) $1.4h - 5 + 3h$ _____

17) $4s + (-7t) - 2t + 3s$ _____

18) $4u - 6 + (-10u) - 2$ _____

19) $a + b - a + b$ _____

20) $2 - 4w + 12w$ _____

Choose the correct answer for each multiple choice question.

21) If $a + b = c$, then which of the following is true?

A. $b - c = a$

C. $b * a = c$

B. $a = b + c$

D. $b + a = c$

22) Simplify: $16x - 8 - 10x + 15$

A. $6x + 7$

C. $(-26)x - 23$

B. $26x + 23$

D. $(-6)x + 7$

23) Identify the correct variable expressions for the following phrase:

How many months are in x years?

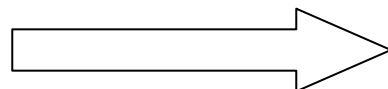
A. $12 - x$

C. $x \div 12$

B. $12 + x$

D. $12x$

Homework is continued on the next page.



Review of Lessons 1 through 6

Write the fraction equivalent for each decimal representation of the following rational numbers.

24. a) 0.7 _____ b) $0.\bar{7}$ _____ c) $4.\bar{7}$ _____

25. a) 2.4 _____ b) $2.\bar{4}$ _____ c) $-2.\bar{4}$ _____

Write an expression for each quantity.

26. the number of meters in 3 kilometers _____ the number of meters in k kilometers _____

27. the number of yards in 15 feet _____ the number of yards in f feet _____

Write a variable expression for each word phrase.

28. 8.7 less than f _____

29. The sum of $\frac{2}{9}$ and t _____

Find the value of each expression. You must show work as demonstrated in class. Each line should equal the line above. A calculator should NOT be used.

30. $-4 - 8 + 6$

31. $3 - [4 + (6 - 9)]$

32. $\frac{-2+4^2}{5+2}$



Evaluate if $a = 2$, $x = \frac{1}{5}$, and $y = 10$. You must show work as demonstrated in class. Each line should equal the line above. A calculator should NOT be used.

33. $5 + a(14 - y)$

34. axy

35. $15x + 3y$

Simplify.

36. $-3 + 8$ _____

37. $2 - (-10)$ _____

38. $-4 - 8$ _____

39. $5w - 12w$ _____

40. $-7y - (-10y)$ _____

41. $-9t + 8t + 10$ _____

Objectives: I can solve problems by multiplying and dividing integers.

Multiplying and Dividing Integers

Rules for multiplying & dividing integers:

If the signs are the same: _____

If the signs are different: _____

Multiplication answer is a product.
 Division answer is a quotient.

Practice

Solve.

- | | | |
|----------------------------|------------------------------|---------------------------|
| 1. $-6 * (-2)$ _____ | 2. $5 * -3$ _____ | 3. $3 * -5$ _____ |
| 4. $-2 * -3$ _____ | 5. $5 \div (-1)$ _____ | 6. $-24 \div -3$ _____ |
| 7. $3 (-10)$ _____ | 8. $\frac{-36}{-9}$ _____ | 9. $-6 \cdot 4$ _____ |
| 10. $-2 * 10 * (-4)$ _____ | 11. $10 (-6) (-2) (5)$ _____ | 12. $\frac{54}{-6}$ _____ |

Homework

Find each product or quotient.

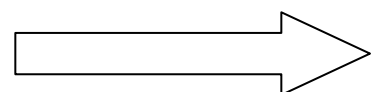
- | | | |
|----------------------------|--------------------------------|---------------------------|
| 1. $4 * (-12)$ _____ | 2. $-24 \div (-6)$ _____ | 3. $8 (-6)$ _____ |
| 4. $\frac{-15}{5}$ _____ | 5. $-4 \cdot (-7)$ _____ | 6. $-12 \div 2$ _____ |
| 7. $-5 * 8$ _____ | 8. $\frac{-34}{-34}$ _____ | 9. $7 \cdot (-6)$ _____ |
| 10. $-25 \div 5$ _____ | 11. $-6 (-15)$ _____ | 12. $\frac{10}{-2}$ _____ |
| 13. $-7 * -3$ _____ | 14. $12 \div 2$ _____ | 15. $7 \cdot -11$ _____ |
| 16. $-80 \div (-8)$ _____ | 17. $30 * (-6)$ _____ | 18. $\frac{-50}{5}$ _____ |
| 19. $-10 * 2 * (-3)$ _____ | 20. $-50 \div 10 * (-5)$ _____ | |

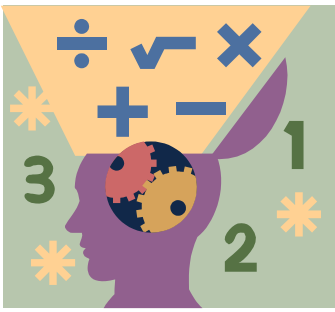
Evaluate if $w = -2$, $x = -10$, $y = 16$, & $z = 8$.

- | | | | |
|----------|-----------|-------------------|----------|
| 21. wx | 22. wxy | 23. $\frac{z}{w}$ | 24. xy |
|----------|-----------|-------------------|----------|

Homework is continued on the next pages with an ERQ.

(Write your answer on the grid provided.)





JAMES, JACKSON AND RACHAEL'S COMPUTATION

Read all parts of the extended-response question before you begin. Write your answers to the extended-response question on the answer page. For each extended-response question, use the grid provided to create any required charts or graphs. If a question does not require a chart or graph, write your written response over the grid lines.

James, Jackson, and Rachael solved the following problem:

$$-20 - 5 + 3^2 \cdot 4$$

James's response was 11, Jackson's response was -1 and Rachael's response was -76.

- Whose response is correct? Correctly calculate the answer showing all work and justifying your reasoning.
- Create a new problem using at three different operations using only the numbers $-3, 5, -7, 15$. The answer must be an integer.
- Solve the problem you created. Show the steps to the solution.

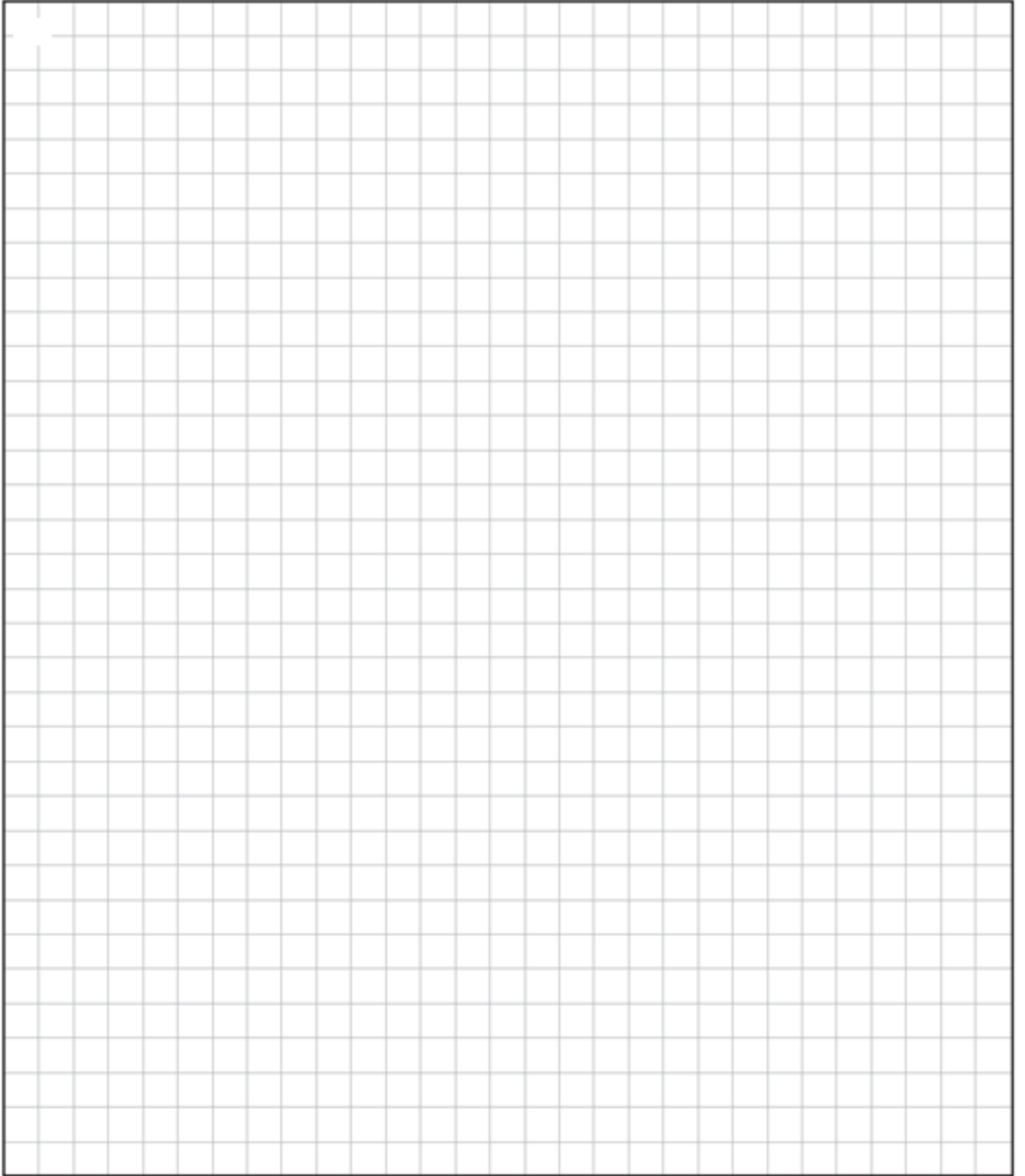
BE SURE TO LABEL YOUR RESPONSES (a), (b), AND (c).

RUBRIC

Part a	1 ½ points	for correctly identifying whose response is correct and accurately showing all work. 1 point for showing all work with minor calculation error. ½ point for accurately stating whose answer is correct.
Part b	1 point	for creating a new problem using directions in part b.
Part c	1 ½ points	for accurately showing all work with correct solution. 1 point for showing all work with minor calculation error. ½ point for correct solution with no work shown.

You earned:	Your score is:	Your grade will reflect:
4 points	4 (A score of 4 is only possible if accurate mathematical vocabulary is used.)	10/10 points
3.0-3.5 points	3	9/10 points
2.0-2.5 points	2	7.5/10 points
0.5-1.5 points	1	5/10 points
0 points	1 -- your answers demonstrates minimal understanding OR 0 -- your answer is irrelevant	1/10 points for an honest effort 0 points for a blank

Do not write outside this box.



I can use the distributive property with numerical and variable expressions,

Distributive Property

According to the **Distributive Property**, you **distribute** or “pass out” a multiplication to each part of a sum or difference in parentheses.

In $2(a + 3) = 2a + 6$, we “pass out” the 2 by multiplying it by both the a and the 3.

Multiply $6(x - 9)$

$$6(x) - 6(9)$$

$$\boxed{6x - 54}$$

Multiply $-3(h + 2)$

$$-3(h) + -3(2)$$

$$\boxed{-3h + -6}$$

Look at the examples, and then try the other problems.

Arithmetic

Order of Operations

$$3(2 + 6)$$

$$3(8)$$

$$\boxed{24}$$

Distributive property

$$3(2 + 6)$$

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

$$6 + 18$$

$$\boxed{24}$$

Algebraic

$$4(b + 3)$$

$$4(b) + 4(3)$$

$$\boxed{4b + 12}$$

Order of Operations

$$7(6 - 4)$$

$$7(2)$$

$$\boxed{14}$$

Distributive property

$$7(6 - 4)$$

$$7(6) - 7(4)$$

$$42 - 28$$

$$\boxed{14}$$

$$-2(x + 4)$$

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

$$\boxed{-2x + -8}$$

With numerical expressions, whether you solve using the distributive property or using the correct order of operations, you get the same solution.

Order of Operations

$$5(4 + 1)$$

Distributive property

$$5(4 + 1)$$

Order of Operations

$$-2(3 + 4)$$

Distributive property

$$-2(3 + 4)$$

Sometimes, we need to use the distributive property to simplify variable expressions. We will simplify these together.

$$5(t + 1)$$

$$-2(y + 4)$$

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

$$-6(2 - 7g)$$

$$(3v - 4)9$$

Practice

Use the distributive property to simplify.

1. $4(j + 10)$ _____

2. $7(4n - 6)$ _____

3. $-2(-g - 4)$ _____

4. $(4c + 2)3$ _____

5. $6(-2p + 7)$ _____

6. $5(2r - 4)$ _____

Homework

Simplify using order of operations and then solve using the distributive property.

Order of Operations

Distributive property

Order of Operations

Distributive property

1. $3(-4 - 8)$

$3(-4 - 8)$

2. $-6(-5 + 8)$

$-6(-5 + 8)$

Use the distributive property to simplify.

3. $3(x + 4)$ _____

4. $-7(t - 3)$ _____

5. $-2(y + 8)$ _____

6. $-4(-y + 3)$ _____

7. $8(-x + 7)$ _____

8. $11(4x + 3)$ _____

9. $(x + 4)2$ _____

10. $3(-2b - 8)$ _____

11. $-3(1 - 2k)$ _____

12. $(-2s + 9)6$ _____

13. $10(3a - 6)$ _____

14. $\frac{1}{2}(-6x + 14)$ _____

Review

Combine like terms to simplify.

13. $5a + a$ _____

14. $6x + 3y + 6y - 2x$ _____

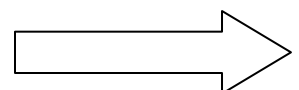
15. $18 + 7x - 12 - 7x$ _____

16. $10r + 100s + 50t$ _____

17. $3r + 4 - 5 - 2r$ _____

18. $12 + 2 + 3x - 12 - 5y + 7z - 10x$ _____

Homework is continued on the next page.

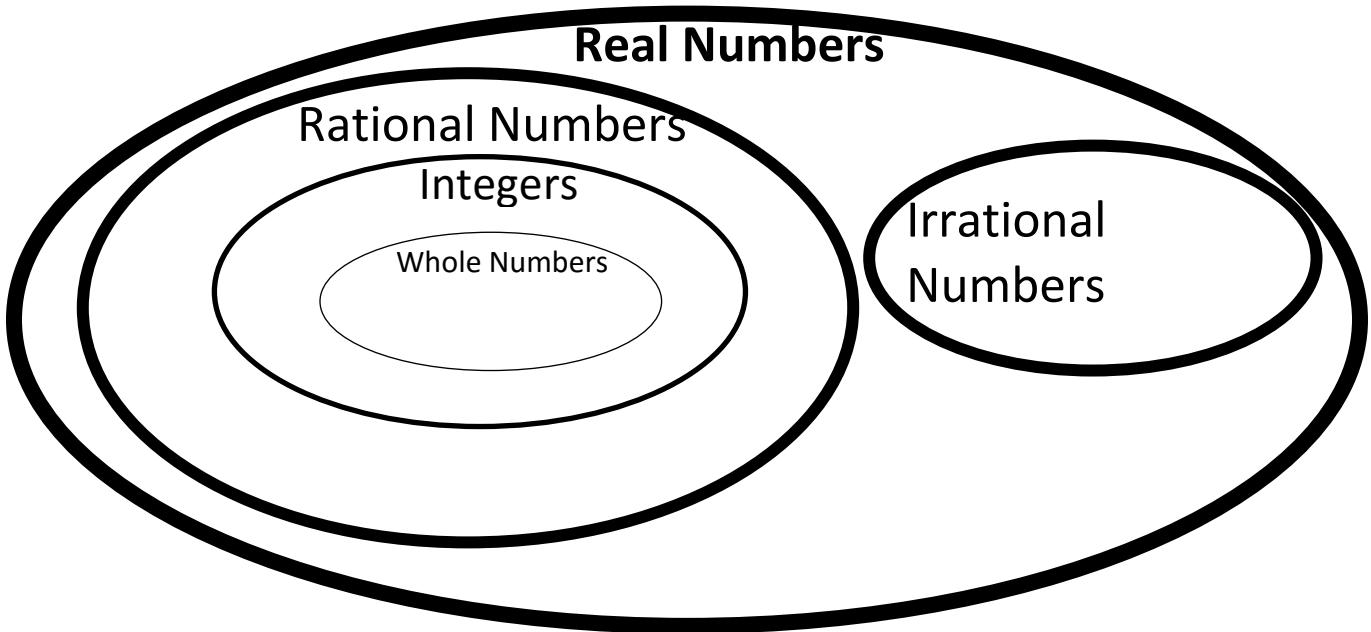


19. For each expression name the coefficient and the constant.

- a) $-4 + 5x$ Coefficient _____ Constant _____
- b) 10 Coefficient _____ Constant _____
- c) $6h - 7$ Coefficient _____ Constant _____
- d) $-6x$ Coefficient _____ Constant _____

20. Place the following set of numbers on the Venn diagram to classify the type of number. Then indicate in the table below to which set(s) of numbers it belongs.

$$\left\{ \sqrt{25}, \frac{2}{5}, -\frac{8}{2}, \sqrt[3]{9}, 2.\bar{6}, -7, \pi, -\sqrt{8} \right\}$$



1) $\sqrt{25}$	Whole #	Integer	Rational #	Irrational #	Real
2) $\frac{2}{5}$	Whole #	Integer	Rational #	Irrational #	Real
3) $-\frac{8}{2}$	Whole #	Integer	Rational #	Irrational #	Real
4) $\sqrt[3]{9}$	Whole #	Integer	Rational #	Irrational #	Real
5) $2.\bar{6}$	Whole #	Integer	Rational #	Irrational #	Real
6) -7	Whole #	Integer	Rational #	Irrational #	Real
7) π	Whole #	Integer	Rational #	Irrational #	Real
8) $-\sqrt{8}$	Whole #	Integer	Rational #	Irrational #	Real

Objectives: I can use the distributive property with numerical and variable expressions.

Distributive Property with Mental Math

Notes

You can use the distributive property to help with mental math.

6 (31)	7(49)	9(102)	3(88)
6(30 + 1)	7(50 – 1)		
180 + 6	350 – 7		
186	343		

Practice

Use the distributive property to solve with mental math.

1. 5(39)	2. 7(51)	3. 4(38)	4. 9(62)
----------	----------	----------	----------

Notes

You can use the distributive property to multiply mixed numbers.

12 $(2 \frac{1}{3})$	5 $(3 \frac{2}{11})$	7 $(5 \frac{2}{7})$	4 $(5 \frac{1}{2})$
12 $(2 + \frac{1}{3})$	5 $(3 + \frac{2}{11})$		
24 + 4	15 + $\frac{10}{11}$		
28	15 $\frac{10}{11}$		

Practice

Use the distributive property to multiply mixed numbers..

1. 8 $(2 \frac{1}{4})$	2. 3 $(4 \frac{3}{10})$	3. 2 $(7 \frac{2}{5})$
------------------------	-------------------------	------------------------

Combining Like Terms and The Distributive Property

The following examples involve both the Distributive Property and combining like terms.

$$5(2x + 8) - 7$$

1st: Distribute the #outside the ()
just to the terms inside the ().

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

$$-3(5x - 9y) + 15x$$

$$10x + \underline{40} - 7$$

2nd: Combine like terms

$$10x + 33$$

Homework

Part 1: Using the distributive property to simplify numerical expressions.

Use the distributive property to solve.

1. $4(91)$

2. $8(79)$

3. $7(103)$

4. $6(58)$

5. $8\left(4\frac{1}{2}\right)$

6. $6\left(5\frac{1}{3}\right)$

7. $2\left(4\frac{2}{5}\right)$

Part 2: Combining Like Terms and The Distributive Property

Combine like terms to simplify each expression.

1. $-4x + 9x + 3$

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

3. $-8n - (-2n) - 7$

4. $6n + (-5n) - 4$

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

6. $-3x + x + 7 + 4x$

7. $9 - 6n - (-5n) - (-8)$

8. $-8x + (-5) + (-x) - 1$

9. $-2y + 7 - (-y) + 9y$

10. $13u + 5 + 9 - (-u)$

11. $-w - (-10w)$

12. $-k + (-10k) + (-4) - (-1)$

Use the Distributive Property to write each expression as an equivalent algebraic expression.

13. $7(x + 2)$

14. $5(b - 8)$

15. $(q + 9)4$

16. $3(c - 6)$

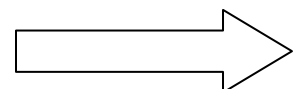
17. $(m - 2)10$

18. $-12(d + 14)$

19. $-18(n - 10)$

20. $-5(h + 48)$

Homework is continued on the next page.



21. **Standardized Test Practice** Use the Distributive Property to write an equivalent algebraic expression for $-22(x - y + z - 13)$.
- A $22x + 22y - 22z + 286$ B $-22x - y + z - 13$
 C $-22x - 22y - 22z - 286$ D $-22x + 22y - 22z + 286$

Use the Distributive Property and then combine like terms to simplify each expression.

22. $5(r + 2) + 7r$ 23. $5(x + 5) + 2y$ 24. $3(r + 2s) - 3r$

25. $6x + 7(y + x)$ 26. $35a + 5n + 2(n - 1)$

Review

Find the value of each expression. You must show work as demonstrated in class; each line should equal the line above.

1. $-50 - 4 \cdot 5$ 2. $(100 \div -5) - 6 \cdot -3$ 3. $6^2 + 2(-8 - 4)$

4. $\frac{-8-12}{-7+5}$ 5. $-3(-6 + 4)^3$ 6. $-2[50 + 8(-2 + -3)]$

7. $20 \div 4 * (-5)$ 8. $-14 + 3(-20 + 18)$ 9. $54 \div -6 - 3 \cdot -2$

Review Simplifying Expressions

Objective: I can write and simplify numerical and variable expressions.

Simplify.

1) $|17| = \underline{\hspace{2cm}}$

2) $|-2| = \underline{\hspace{2cm}}$

3) $|0| = \underline{\hspace{2cm}}$

Choose the correct symbol to make a true sentence (>, <, or =).

4) $-5 \underline{\hspace{1cm}} 3$

5) $-8 \underline{\hspace{1cm}} -20$

6) $|5| \underline{\hspace{1cm}} -1$

7) Order the set $\{58, -6, 22, -1, -15, 5, 0\}$ from least to greatest.

{ , , , , , , }

8) Graph the following numbers on a number line: 1, -3, -2, 4



Simplify. Don't make careless errors.

9) $9 + (-3)$

10) $-14 + (-5)$

11) $\frac{36}{-6}$

12) $6 - (-4)$

13) $-8 - 2$

14) $-3 * -5$

15) $-10 + 6(-4)$

16) $(5 + -8)(-4)$

17) $-8 + (-5) - 8$

18) $4 - 2 - 7$

19) $-8 - 2(-5 - 6)$

20) $-20 \div 5 * 2$

Evaluate if $m = -5$, $n = 2$, $p = -2$, $r = 4$

21) $3m$

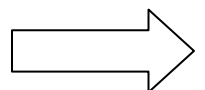
22) $n - p$

23) $-m + 2pr$

24) $3r^2$

25) $\frac{r}{p}$

Assignment is continued on the next page.



26) Write an expression for the following: the product of Travis' height and 6 _____

27) Write an expression for the following: 3 times the quantity eight plus x _____

28) Write an expression for the following: How many yards are in f feet? _____

29) Write an expression for the following phrase: *the sum of b and 3, divided by two.* _____

30) Write an expression for the following phrase: *20 less n .* _____

31) Write an expression for the following: How many months are in y years? _____

Simplify.

32) $8g + 60g$

33) $4(n + 9)$

34) $-6(p - 2)$

35) $x - 8 + 4x - 7$

36) $5 + 6y - 5y - 2$

37) $6(-x - 2)$

38) $(-4 - c)5$

39) $-4(6c - 8) + 2c$

40) $-3 + 7(x - 2)$

Identify the classification(s) for the following numbers by circling the classification(s) for each.

41)	$\frac{3}{8}$	Whole #	Integer	Rational #	Irrational #	Real
42)	$0.\overline{2}$	Whole #	Integer	Rational #	Irrational #	Real
43)	-150	Whole #	Integer	Rational #	Irrational #	Real
44)	$\sqrt{20}$	Whole #	Integer	Rational #	Irrational #	Real
45)	-0.5	Whole #	Integer	Rational #	Irrational #	Real
46)	0	Whole #	Integer	Rational #	Irrational #	Real

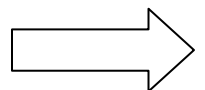
Write the fraction equivalent to each of the following decimal numbers.

47) $-0.\overline{1} =$ _____

48) $8.\overline{62} =$ _____

49) $0.\overline{245} =$ _____

Assignment is continued on the next page.



Multiple Choice: Circle the letter beside the correct answer.

50) Which set below shows the integers in order from *least to greatest*?

- A. $\{-2, -3, 2, 3\}$ B. $\{2, 3, -3, -2\}$
 C. $\{-3, -2, 2, 3\}$ D. $\{3, 2, -2, -3\}$

51) A hot air balloon is flying at 212 feet above the ground. It goes down 72 feet, then goes up 37 feet.

Which expression represents the height of the hot air balloon after these changes?

- A. $212 + 72 + 37$
 B. $212 + (-72) + 37$
 C. $212 - (-72) + 37$
 D. $212 + 72 + (-37)$

52) The square root of 51 is between which two whole numbers?

- A. 4 and 5 B. 5 and 6
 C. 6 and 7 D. 7 and 8

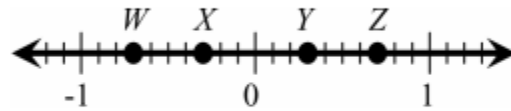
53) Naomi picked y flowers and will put an equal number of flowers in n vases. Which expression represents the number of flowers Naomi will put in each vase?

- A. $\frac{n}{y}$ B. $n - y$
 C. $\frac{y}{n}$ D. $y - n$

54) Which expression has a value of -3 ?

- A. $-7 - (4)$ B. $-4 - (-7)$
 C. $-7 - (-4)$ D. $-4 - (7)$

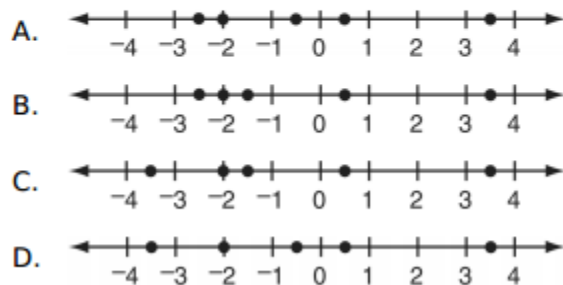
55) Which point is located closest to $-\frac{7}{10}$ on the number line below?



- A. W B. X C. Y D. Z

56) Which number line below shows the set of numbers graphed correctly?

$$\left\{3.5, -\frac{7}{2}, \frac{1}{2}, -2, -1\frac{1}{2}\right\}$$



57) On a winter Monday in Prescott, the temperature at 8 a.m. was -8°F . At 1 p.m. it was 27°F . By how many degrees did the temperature change from morning to afternoon?

- A. -35° B. -19°
 C. 19° D. 35°

58) Which expression below has been simplified using the correct procedure?

- A. $2 + 4(x + 2)$ B. $2 + 5(x - 7)$
 $2 + 4x + 8$ $7(x - 7)$
 $4x + 10$ $7x - 49$
 C. $4 - 7(x + 5)$ D. $7 - 3(x - 5)$
 $4 - 7x + 5$ $7 - 3x - 15$
 $-7x + 9$ $-3x - 8$

59) Which is an irrational number?

- A. $\sqrt{5}$ B. $\sqrt{9}$ C. -1 D. $-\frac{2}{3}$

Objective: I can write and simplify numerical and variable expressions.

Review 2 Simplifying Expressions

Simplify.

1) $|-8| = \underline{\hspace{2cm}}$

2) $|21| = \underline{\hspace{2cm}}$

3) $|0| = \underline{\hspace{2cm}}$

Choose the correct symbol to make a true sentence (>, <, or =).

4) $7 \underline{\hspace{1cm}} -133$

5) $-88 \underline{\hspace{1cm}} -2$

6) $|-8| \underline{\hspace{1cm}} 8$

7) Order the set $\{8, -26, 2, -10, -25, 55, 10\}$ from least to greatest.

{ , , , , , , }

8) Graph the following numbers on a number line: 3, -4, -1, 2



Simplify. Don't make careless errors.

9) $8 + (-10)$

10) $-4 + (-7)$

11) $\frac{-30}{-6}$

12) $10 - (-2)$

13) $-1 - 2$

14) $-8 * -6$

15) $10 + 6(-2)$

16) $(20 + -20) (-3)$

17) $-6 + (-8) - 1$

18) $14 - 4 - 5$

19) $-6 - 2(-3 - 5)$

20) $-27 \div 9 * 3$

Evaluate if $m = -4$, $n = 3$, $p = -1$, $r = 5$

21) $3m$

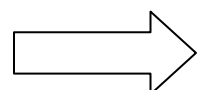
22) $n - p$

23) $-m + 2pr$

24) $3r^2$

25) $\frac{r}{p}$

Homework is continued on the next page.



- 26) Write an expression for the following: the difference between Flor's money and 10 _____
- 27) Write an expression for the following: 8 times the quantity eight minus h _____
- 28) Write an expression for the following: How many inches are in f feet? _____
- 29) Write an expression for the following phrase: *the sum of b and 3, divided by two.* _____
- 30) Write an expression for the following phrase: *20 less n .* _____
- 31) Write an expression for the following: How many quarters are in d dollars? _____

Simplify.

- 32) $5f + 70f$ 33) $8(n + 5)$ 34) $-6(3p + 4)$
- 35) $6x - 4 + x - 3$ 36) $10 + 5y - 5y - 7$ 37) $-4(-x - 10)$
- 38) $(-3 - p)9$ 39) $6(8v - 5) + 2v$ 40) $-7 + 5(x - 2)$

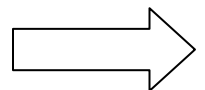
Identify the classification(s) for the following numbers by circling the classification(s) for each.

- | | | | | | | |
|-----|----------------|---------|---------|------------|--------------|------|
| 41) | $-\frac{3}{8}$ | Whole # | Integer | Rational # | Irrational # | Real |
| 42) | $8.\bar{2}$ | Whole # | Integer | Rational # | Irrational # | Real |
| 43) | $\sqrt[3]{27}$ | Whole # | Integer | Rational # | Irrational # | Real |
| 44) | $\sqrt{10}$ | Whole # | Integer | Rational # | Irrational # | Real |
| 45) | 10.5 | Whole # | Integer | Rational # | Irrational # | Real |
| 46) | -50 | Whole # | Integer | Rational # | Irrational # | Real |

Write the fraction equivalent to each of the following decimal numbers.

- 47) $-0.\bar{8} =$ _____ 48) $0.\bar{24} =$ _____ 49) $7.\overline{541} =$ _____

Homework is continued on the next page.



Multiple Choice: Circle the letter beside the correct answer.

50) Simplify: $\frac{|3^2 - 6^2|}{-3}$

- A. 15 B. 9 C. -9 D. -15

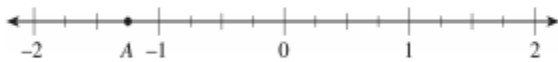
51) When $x = 2$ and $y = 3$, which expression has the *smallest* value?

- A. $(x - y)$ B. $x \cdot y$
 C. $x + y$ D. $x \div y$

52) The quotient of two negative integers is always:

- A. zero B. one
 C. negative D. positive

53) Which of the following *best* represents the location of point A on the number line shown below?



- A. $-2\frac{3}{4}$ B. $-2\frac{1}{4}$ C. $-1\frac{1}{2}$ D. $-1\frac{1}{4}$

54) Which expression shows 3 less than 20?

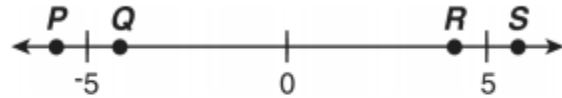
- A. $20 + 3$ B. $20 - 3$
 C. 20×3 D. $20 \div 3$

55) Which of the following is equivalent to the expression below?

$$17(83 - 16)$$

- A. $17(83) - 16$
 B. $(17 - 16)(83)$
 C. $17(83) - 17(16)$
 D. $(17 - 83)(17 - 16)$

56) Look at the number line.



57) What point shows the location of -6 on the number line?

- A. Point P B. Point Q
 C. Point R D. Point S

58) Which expression represents the product of n and 25?

- A. $25n$ B. $25 - n$
 C. $25 + n$ D. $25 \div n$

59) If $x = 4$ and $y = -1$, what is the value of the expression below?

$$\sqrt{2x - 8y}$$

- A. 0 B. $\sqrt{5}$ C. $\sqrt{14}$ D. 4

60) What is the value of the expression below?

$$\sqrt{36} + 13 \times 2$$

- A. 32 B. 38 C. 62 D. 98

61) A group of hikers climbed from Salt Flats (elevation -55 feet) to Talon Bluff (elevation 620 feet). What is the difference in elevation between Talon Bluff and Salt Flats?

- A. 565 feet B. 575 feet
 C. 665 feet D. 675 feet

62) Which of the following is *not* an irrational number?

- A. π B. $\sqrt{3}$ C. $\sqrt{8}$ D. $2\sqrt{4}$