Algebra 1: 1.0a Integers and Combine Like Terms Homework Assignment

Simplify.

1. $-3 + (-6)$

2. $4 + (-8)$

3. $(-32) + 15$

4. $(-4) - (-5)$

5. $6 - 10$

6. $-14 - 15$

7. $-3 - (-2)$

8. $-5 + 7$

9. $-2 - 2$

10. $(-2)(8)$

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

12. $(12)(-11)$

13. $-30 \div (-5)$

14. $\dfrac{(-9)}{(-18)}$

15. $\dfrac{225}{(-5)}$

Use substitution for simplify the following expressions:

Given $a = 2 \quad b = -4 \quad c = 8 \quad d = -9$
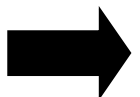
16. $a - b$

17. $d - c$

18. $a + b$

19. $b + c$

20. $b - c$

21. $c + b$

22. The temperature at 5:00 A.M. is –38°F. The temperature rises 20° by 11:00 A.M. What is the temperature at 11:00 A.M.?

23. A football team has possession of the ball on their own 15-yard line. The next play results in a loss of 7 yards. The play after that results in a gain of 3 yards. On what yard line is the ball on after the two plays?

24. Suppose you are opening a checking account with a beginning deposit of $124.53. A week later, you make a withdrawal of $57.49. After another week, you make a deposit of $103.49. What is your new balance?

Simplify the following:

25. $3x + 6y - 9x - 9 + 5y$

26. $-4c - 9b + 5a + 3c - a$

27. $-5x - 5y + 49y - 14 + 3x$

28. $92a + 107b - 19 + 5a - 108b + 7$

Algebra 1: 1.0b Order of Operations Assignment (not in textbook)

Simplify each expression.

1. $\dfrac{100-15}{9+8}$

2. $\dfrac{3(4+12)}{2(7-3)}$

3. $12\left(\dfrac{6+30}{9-3}\right)$

4. $14 + (3)(-4)$

5. $8 + 3(4 + 3)$
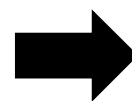
6. $3 - 4\left[13 - 2(6 - 3)\right]$

7. $-8(5 + 30 \div 5)$

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

9. $14 + 6\left(2^3\right) - 8 \div 2^2$

10. Which of the following expressions are equivalent to 10? (there may be more than one answer)

a) $(-8) + 6(8 - 5)$ b) $3 + 6(5 + 4) \div 3 - 7$ c) $7\left[(-4)(-3) \div 2\right] - 2[5 - (-8) + (6 \div 2)]$

11. Create a problem using all the operations (grouping symbols, exponents, multiplication, division, addition, and subtraction) that is equivalent to 100.   (Your problem should look like the ones on the other page!) Be creative, but mathematically accurate.

Review 1.0a-1.0b Integers/Combine Like Terms and Order of Operations Assignment

Simplify.

1. 3 + (−16)

2. -4 + (−8)

3. (−32) + 150

4. (−14) − (−5)

5. -6 − 107

6. − 141 − 155

7. − 13 − (−2)

8. −5 + 17

9. −12 − 2

10. (−2)(-7)

11. (6)(−9)

12. (-12)(10)

13. −35 ÷ (−5)

14. $\dfrac{90}{(-180)}$

15. $\dfrac{225}{(-25)}$

Use substitution for simplify the following expressions:

Given $a = 3 \quad b = -2 \quad c = 6 \quad d = -4$

16. $a - b$

17. $d - c$

18. $a + b$
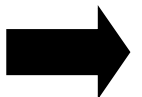
Use substitution for simplify the following expressions:

Given $a = 3$ $b = -2$ $c = 6$ $d = -4$

19. $b + c$ **20.** $b - c$ **21.** $c + b$

Simplify each expression.

22. $\dfrac{10-15}{9+1}$ **23.** $\dfrac{-2(4+12)}{2(7-3)}$ **24.** $-3\left(\dfrac{6+30}{9-3}\right)$

25. $17 + (-3)(-4)$ **26.** $18 + 6(4 + 2)$ **27.** $9 - 4[10 - 2(9 - 3)]$

28. $-5(-5 + 30 \div 5)$ **29.** $4(3^2) - 3(4)$ **30.** $10 + 7(2^3) - 16 \div 2^2$

Algebra 1: 1.1 Solving One-Step Equations Assignment (not in textbook)

Solve each equation and then check your solution.   SHOW ALL WORK FOR CREDIT!!

1: $y + 7 = 8$

2: $-3t = 51$

3: $98 = b + 34$

4: $12w = 4$

5: $w + 14 = -8$

6: $\dfrac{h}{3} = -2$

7: $b - (-11) = 10$

8: $-\dfrac{1}{4}u = 2$

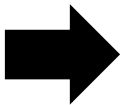9: $11 = -16 + y$

10: $\dfrac{j}{3} = \dfrac{2}{5}$

11: $4 + x = \dfrac{6}{3}$

12:   $0.5b = 5$

13: $k - \dfrac{2}{3} = \dfrac{11}{3}$

14: $-12 = -\dfrac{3}{2}k$

15: Find the error in the following work and correct it. Justify your answer using words.

$$x + 2 = 8$$
$$\div 2 \quad \div 2$$
_____
$$x = 4$$

16: The following equation is more complex than the one-step equations we have seen in class. Brainstorm the steps you would take to solve this equation for x. Do **not** actually solve the equation. Your answer should be a few sentences.

$$2x - 5 = 24$$

Algebra 1: 1-2 Solving Two-Step Equations Assignment (textbook section 1.1)

Solve the following equations. Verify that your solution makes the equation true.

1) $5a + 2 = 7$

2) $9 = 5 + 4t$
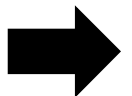
3) $-t + 2 = 12$

4) $5.8n + 3.7 = 29.8$

5) $67 = -3y + 16$

6) $-d + 7 = 3$

7) $\dfrac{m}{9} + 7 = 3$

8) $-9 = -\dfrac{h}{12} + 5$

9) $-21 = \dfrac{n}{3} + 2$

Show ALL work for credit!

10) $\dfrac{x-3}{7} = 12$

11) $\dfrac{x+4}{3} = -8$

12) $\dfrac{x+6}{4} = -8$

Justify each step.

13) $2x - 5 = -20$ _____Given_____

$2x = -15$ _____

$x = -\dfrac{15}{2}$ _____

14)   _____Given_____

$\dfrac{x}{3} - 7 = 11$ _____

$\dfrac{x}{3} = 18$ _____

$x = 54$

15)   _____Given_____

$\dfrac{9x}{4} = -9$

$9x = -36$ _____

$x = -4$ _____

16) Explain the error and solve the problem correctly.

$\dfrac{x}{2} - 7 = 9$

$x - 7 = 18$

$x = 25$

Algebra 1:

1.3 Justifications & Equivalent Equations Assignment (textbook section 1.1)

Name the property that each equation illustrates.

1) $83 + 6 = 6 + 83$

2) $8 + x = x + 8$

3) $12 + 4y + 9y = 12 + 13y$

4) $15(x + y) = 15x + 15y$

5) $(8 \cdot 7)6 = 8(7 \cdot 6)$

6) $2 \bullet 3 + 7 = 6 + 7$

7) $3(a + 2b) = 3a + 6b$

8) $7x + 2y = 2y + 7x$

9) $7 + (8 + 15) = (7 + 8) + 15$

10) If $-3 = x$ then $x = -3$

Use the given property to create an equation with the same solution set.

11) Commutative property

$4 + 6r + 12 = 14r - 8$

12) Distributive property

$2(x + 3) + 18 = 4x - 10$

13) Division property
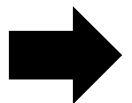
$30 - 6x = 27 + 3x$

14) Without solving, which equations are equivalent?

 I. $6 + 10t - 4 = 8 + 3t$ II. $3t + 7t + 2 = 8 + 5t - 2t$ III. $10t + 10 = 8 + 3t$

Explain using properties how you know.

Justify each step by stating the property of equality used.

15) $5t + 16 = 51$ Given

 5t = 35   _____

 t = 7   _____

16) $\dfrac{4b + 8}{-2} = 10$ Given

 $4b + 8 = -20$ _____

 $4b = -28$ _____

 $b = -7$ _____

17) Use the given equation and create an equivalent equation based on the property stated:.

a. Given $12 + 3x = 18$, Commutative Property of Addition

b. Given $12 + 3x = 18$, Subtraction Property Of Equality

c. Given $3(x - 9) = 18$, Distributive Property

d. Given $12 = x$, Symmetric Property

e. Given $12 + (3 + x) = 18$, Associative Property of Addition

f. Given $3x = 18$, Division Property of Equality

18) The solution to problem #17 is $x = 4$. Below is the starting problem and five equivalent equations. Substitute the solution for x at each stage to verify the equation is true. The original problem has been completed for you.

a. $12 + 3x = 6x$
$12 + 3(4) = 6(4)$
$12 + 12 = 24$
$24 = 24$ ✓

b. $6x = 3x + 12$

c. $6x + 3 = 3x + 15$

d. $2x + 1 = x + 5$

e. $10x + 5 = 5x + 25$

f. $10x = 5x + 20$

Algebra 1:

Name: _____ Period: _____

1.4 Solving Multi-Step Equations Assignment (textbook section 1.1)

Solve each equation using the most efficient strategy possible. Verify that each answer makes the equation true.
SHOW ALL WORK FOR FULL CREDIT!

1. $2(h+2) = 24$

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

3. $-14r+8r+2 = 38$

4. $14x+2-3x = 13$

5. $-2(y+14) = -7$
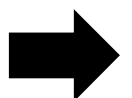
6. $20 = 3(t-3)+4$

7. $4(x-4) = 36$

8. $15t - 5(t+1) = 15$

9. $10 = \dfrac{5(k-2)}{-4}$

10. $0 = 10(y-4)+13$

11. $6-6n+10 = -14$

12. $10 = \dfrac{5(k-2)}{-4}+5$

Show ALL work for credit!

13. $3y - 8 - 7y = 12$ 14. $41 = 8n + 5 - 2n$

15.   Solve the following equations for y:

a) $-\dfrac{1}{2}(2y - 4) = -10$ b) $-\dfrac{1}{2}(3x + 7) = 7$

Algebra 1: 1.5a Modeling with Expressions Assignment (textbook section 2.1)

Identify the terms and the coefficients of each expression.

	Terms	**Coefficients**

1) $-20 + 5p - 7z$ _____   _____

2) $8x - 20y - 10$ _____   _____

3) $5 + 6a + 11b$ _____   _____

4) $13m - 2n$ _____   _____

5) The number of bees that visit a plant is 500 times the number of years the plant is alive, where t represents the number of years the plant is alive. What does the entire expression $500t$ represent?

6) Lorenzo buys 3 shirts at s dollars apiece and 2 pairs of pants at p dollars a pair. The expression $3s + 2p$ represents this scenario. What do each term in this expression represent?

3s:

2p:

The entire expression $3s + 2p$ represents:

7) Erin is buying produce at a store. She buys c cucumbers at $0.99 each and a apples at $0.79 each. The expression $0.99c + 0.79a$ represents this scenario. What do each of the terms represent?

0.99c:

0.79a:

The entire expression $0.99c + 0.79a$ represents:

8) The price of a sandwich is $1.50 more than the price of a smoothie, which is d dollars. What does the entire expression $d + 1.5$ represent?

9) Chris buys p pairs of pants and 4 more shirts than pairs of pants. Shirts cost $18 each and pair of pants cost $25 each. What does each term in the expression $25p + 18(p + 4)$ represent? What does the entire expression represent?

Write an algebraic expression to model the given context. Give your answer in simplest form.

10) The original price p of an item with a discount of 20%

11) The principal amount p originally deposited in a bank account plus 0.3% interest.

12) The cost of buying c cans of tuna at $1.45 each.

13) The number of Liters remaining in a 100 Liter tank that is draining at a rate of 4 Liters per minute for m minutes.

Match each statement with the algebraic expression that models it.

_____ 14) $x + 0.02x = 1.02x$

A. the price of a winter coat and a 20% discount

_____ 15) $x - 0.20x = 0.80x$

B. the base salary of an employee and a 2% salary increase

C. the cost of groceries and a 2% discount with coupons

_____ 16) $x + 0.20x = 1.20x$

D. the number of students attending school last year and a 20% increase from last year

_____ 17) $x - 0.02x = 0.98x$

Algebra 1

1.5b Creating and Solving Equations Assignment (textbook section 2.2)

Write an equation for each description.

1) A number increased by 10 is 114.

3) Ten times the sum of half a number and 6 is 8.

2) The difference between a number and 12 is 20.

4) Two-thirds a number plus 4 is 7.

5) Tammy wants to raise $175 for a school fundraiser. She has raised $120 so far. How much more does she need to
   reach her goal?

6) Hector is visiting a cousin who lives 350 miles away. He has driven 90 miles. How many more miles does he need
   to drive to reach his cousin's home?

7) The length of a rectangle is twice its width. The perimeter of the rectangle is 126 feet.

Define a variable and write an equation to model each situation. Then solve your equation and interpret the answer.

8) You have shelled 6.5 lb of pecans, and you can shell pecans at a rate of 1.5 lb per hour. How many more hours
   will it take you to shell a total of 11 lb of pecans?

   Variable: _____ Solution & Interpretation:

   Equation: _____
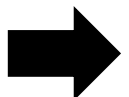
9) To mail a first class letter, the U.S. Postal Service charges $0.49 for the first ounce and $0.21 for each additional ounce. It costs $1.12 to mail your letter. How many ounces does your letter weigh?

Define a Variable: _____   Equation: _____
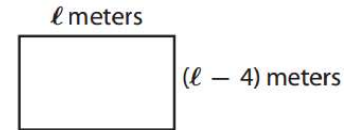
   Solution & Interpretation:

10) In one baseball season, Peter hit twice the number of home runs Alice hit plus 6. Altogether, they hit 18 home runs. How many home runs did each player hit that season?

Define a Variable: _____   Equation: _____

   Solution & Interpretation:

11) The perimeter of a parallelogram is 72 meters. The width of the parallelogram is 4 meters less than its length. Find the length and the width of the parallelogram.

ℓ meters

$(\ell - 4)$ meters

Define a Variable: _____   Equation: _____

   Solution & Interpretation:

12) One month, Ruby worked 6 hours more than Isaac, and Sarah worked 4 times as many hours as Ruby. Together they worked 126 hours. Find the number of hours each person worked.

Define a Variable: _____   Equation: _____

   Solution & Interpretation:

Algebra 1: 1.6 Solving Equations with Variables on Both Sides Assignment (textbook section 2.2)

Solve each equation using the most efficient strategy possible. Verify that each answer makes the equation true. SHOW ALL WORK FOR FULL CREDIT!

1) $7 - 2n = n - 14$

6) $5(x + 3) = 2x + 6$

2) $2(4 - 2r) = -2(r + 5)$

7) $6.1h = 9.3 - 3.2h$
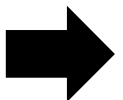
3) $5y - 3 = 2y + 12$

8) $6y + 12 = 3(4y + 3)$

4) $2(7 + 3p) = -p$

9) $6b + 14 = -7 - b$

5) $6k - 25 = 7 - 2k$

Show ALL work for credit!

Identify a variable, then write and solve an equation for each situation. Check your solution.

10) Julio needs to rent a moving truck for several days. Haul-it charges a rate of $40 per day and MOO-vin charges a $60 one-time fee plus $20 per day. For what number of days is the cost for both companies the same?

Define a Variable: _____   Equation: _____

Solution & Interpretation:

11) An online service charges nonmembers $4 to rent each video game. If you pay a one-time membership fee of $21, you can rent games for $2.50 each. For what number of video game rentals is the cost the same for members and non-members?

Define a Variable: _____   Equation: _____

Solution & Interpretation:

12) The Key Club is selling candles to raise money. It costs $100 to rent a booth at the bonfire from which to sell the candles. If the candles cost $1 each and are sold for $5 each, how many candles must be sold to equal the expenses?

Define a Variable: _____   Equation: _____

Solution & Interpretation: