

Unit 1 Check Sheet

Name _____ Per _____

Solving Equations and Inequalities

(Print)

- Check sheet must be turned in to receive Homework & Quiz points.
- All quiz corrections must be done for test score to replace quiz scores.
- No check sheet = No Points.
- Write quiz scores as fractions
- Lost Quizzes count as a 0.
- Quiz ratio is total points scored on quizzes and pre-test out of total possible
- Order (from top to bottom)
 - Check sheet,
 - **Quiz 1, 2, Pre-Test**
 - **Quiz corrections**

Section	HMK
1.1 Distributive Property Worksheet 1.1 #1-43	
1.2 Solving Multi-Step Equations (variables on one side) Math XL 1.2 or Worksheet 1.2 #1-26	
1.3 Solving Multi-Step Equations (variables on both sides of the equation) Math XL 1.3 or Worksheet 1.3 #1-26 Quiz 1	
1.4 Literal Equations and Formulas Worksheet 1.4 #1-20	
1.5 Ratios, Rates and Conversions Conversion Chart Worksheet 1.5 #1-28	
1.6 Solving Proportion Worksheet 1.6 #1-24	
1.7 Solving Multi-Step Inequalities Math XL 1.7 or Worksheet 1.7 #1-13 Quiz 2	
Review Review Worksheet #1-30 Pre-Test	
Unit Test	

Quiz 1: _____
Score/Possible

Quiz 2: _____
Score/Possible

Pre-Test: _____
Score/Possible

Total Quiz Ratio: _____
Total Score/Total Possible

1.1 Practice

Form K

The Distributive Property

Use the Distributive Property to simplify each expression.

1. $7(z - 4)$

2. $3(2 + w)$

3. $(2h - 4)11$

4. $(6y - 3)5$

5. $17(2b + 3)$

6. $12(4 - 8p)$

7. $7(11 - n)$

8. $(1 - 11j)4$

Write each fraction as a sum or difference.

9. $\frac{2x+3}{3}$

10. $\frac{11n-14}{9}$

11. $\frac{5t-12}{10}$

12. $\frac{24k-18}{6}$

Simplify each expression.

13. $-1(p + 6)$

14. $-(-9 - 4y)$

15. $-(a - 15)$

16. $-(-z - 12)$

Use mental math to find each product.

17. 2.1×6

18. 12×6.8

19. 49×7

20. 14×11

21. You buy 125 tickets to an amusement park that each cost \$19.50. What is the total cost of the 125 tickets? Use mental math.
22. There are 12 sections in the stadium. Each section of the stadium can seat 1500 people. What is the total seating capacity of the stadium? Use mental math.

Practice (continued)

Form K

The Distributive Property

Simplify each expression by combining like terms.

23. $9y + 11y$

24. $23b - 19b$

25. $35t - 42t$

26. $-4p + 2p$

27. $-10x^2 - 14x^2$

28. $-5k^2 + 6k^2$

29. $7w^2 - 14w^2$

30. $6a - 7 + 4 - a$

Write a word phrase for each expression. Then simplify each expression.

31. $3(c + 5)$

32. $-7(n - 1)$

33. The profit a company receives is given by the expression $0.15(855p - 315)$ where p is the number of products sold. Rewrite this expression using the Distributive Property. What is the profit for 25 products sold and 150 products sold? Use mental math.

Simplify each expression.

34. $7xy - xy + 3xy$

35. $25pq + 13pq - 6 - 35pq + 4$

36. $5m^2n - 3mn^2 - 7m^2n$

37. $3(-6fg - 4)$

38. $-vw^2 + vw - v^2w - 3vw^2 + 2v^2w$

39. $x + \frac{x}{4} - \frac{3x}{4}$

40. Reasoning Demonstrate why $\frac{15x-5}{5} \neq 3x-5$. Show your work.

Simplify each expression.

41. $3(x + 4) + 2(5x + 2)$

42. $3(2n - 7) + 7(4 - 2n)$

43. $5(5 + t) - 3(t - 6)$

1.2 Practice

Form K

Solving Multi-Step Equations**Solve each equation. Check your answer.**

1. $20 + g + g = 14$

2. $7 + 4x - 9 = -6$

3. $-12 = -5 - 6n + 11$

4. $t + 10 - 4t = -11$

5. $8 = 8p + 13 - 3p$

6. $4y - 16 + 8y = -4$

Write an equation to model each situation. Then solve the equation.

7. A plumber finished three jobs on Tuesday. The first two only cost the owner the \$45 trip fee because they took very little time to complete. For the third job, the plumber charged the trip fee plus 6 times his hourly rate. If the plumber received a total of \$303 for the day, what is the hourly rate?

8. Three times a number plus 12 minus 5 times the same number is 22. What is the number?

Solve each equation. Check your answer.

9. $4(-2d - 3) = 12$

10. $5(5t - 2) = -35$

11. $-2(a + 6) = -22$

12. $60 = 6(6 - 2n)$

13. $-14 = -4(9x - 1)$

14. $-(5z + 12) = 18$

Practice (continued)

Form K

Solving Multi-Step Equations

- 15.** Eli took the fleet of 8 vans for oil changes. All of the vans needed windshield wipers which cost \$24 per van. The total bill was \$432. Write an equation to find out what each oil change cost. Solve the equation.

Solve each equation. Choose the method you prefer. Check your answer.

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

17. $5r - \frac{1}{5} = \frac{4}{5}$

18. $\frac{w}{9} - 6 = \frac{7}{9}$

19. $1.75t - 4.5 = 7.75$

20. $6z + 0.36 = 24.72$

21. $7.85 - 2.15c = 20.75$

- 22. Writing** Describe the first step you would take in solving $12 = 7 - 3x + 5x$. Explain.

- 23. Writing** Describe how you would solve $-8 = \frac{1}{9}(-9t + 27)$.

Solve each equation. Round to the nearest hundredth if necessary.

24. $11 + \frac{4x}{-5} = \frac{2}{3}$

25. $\frac{5}{7}(k + 5) = -7$

- 26. Reasoning** Can you solve the equation $\frac{3}{4}(6x + 9) = 14$ by using the Division Property of Equality? Explain.

1.3 Practice

Form K

Solving Equations With Variables on Both Sides**Solve each equation. Check your answer.**

1. $4y + 15 = 6y - 11$

2. $5p + 6 = 4p - 8$

3. $13k + 5 = k - 7$

4. $6q - 1 = -q + 20$

5. $25h + 40 = -15h - 80$

6. $-2m + 13 = 2m - 3$

Write and solve an equation for each situation. Check your solution.

7. Suzanne is going to rent a car while she is out of town. One car rental company offers a flat rate of \$35 per day plus \$0.10 per mile. Another car rental company offers the same car for \$25 per day plus \$0.25 per mile. She will need the car for 5 days. How many miles would she need to drive for the first rental company to be the better deal?

8. Jeremy is looking at two different lawncare companies to weed and mulch his flower beds. Greenscape Lawncare offers to charge \$100 for the mulch plus \$12 per hr for the labor. D & J Landscape offers to charge \$23 per hr for the job including the mulch. What is the minimum number of hours the job could be for D & J Landscape to have the better deal?

Solve each equation. Check your answer.

9. $4(h + 2) = 3(h - 2)$

10. $-(3b - 15) = 6(2b + 5)$

11. $5x + 7 + 3x = -8 + 3x$

12. $18 - 6a = 4a - 4(a + 3)$

Practice (continued)

Form K

Solving Equations With Variables on Both Sides

Solve each equation. If the equation is an *identity*, write *identity*. If it has no solution, write *no solution*. If there is a solution, write that solution.

13. $6(4z + 2) = 3(8z + 4)$

14. $-8t - 3t + 2 = -5t - 6t$

15. $-(8m + 4) = 4m - 2(6m + 2)$

16. $-5(x + 7) = -5x + 35$

17. $5.5 - 3b = 2b - 6.25$

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

19. $-5(5.25 + 3.1x) = -6.2(2.5x + 1.9)$

20. $\frac{2}{3}h - 9 = 6 - \frac{2}{3}h$

21. $0.2f + 0.6(f + 20) = -8 + 0.4f$

22. $-2(-w + 11) = -13 + 2w - 9$

22. Six times the sum of a number and 3 is 12 less than 12 times the number. Write and solve an equation to find the number.

23. A triangle with equal sides and a square have the same perimeters. The length of a side of the triangle is $2x + 2$. The length of a side of the square is $x + 8$. Write and solve an equation to find x .

26. **Open-Ended** Give one example of an equation with variables on both sides that is an identity and one equation with variables on both sides that has no solution. Justify your examples by solving the equations.

1.4 Practice

Form K

Literal Equations and Formulas

Solve each equation for y . Then find the value of y for each value of x .

1. $y + 5x = 6$; $x = -1, 0, 1$

2. $8x - 4y = -12$; $x = -3, -1, 1$

3. $-3y = 2x - 9$; $x = -3, 0, 3$

4. $5x = -y + 6$; $x = 1, 2, 3$

5. $6y = -3x + 12$; $x = -4, -2, 0$

6. $-5y + 10x = 5$; $x = -2, 0, 2$

Solve each equation for p .

7. $xp + yp = z$

8. $n = \frac{p-k}{j}$

9. $a = b + cp$

10. $\frac{p+3}{m} = -1$

Solve each problem. Round to the nearest tenth, if necessary. Use 3.14 for π .11. What is the width of a rectangle with length 25 in. and area 375 in.²?

12. What is the radius of a circle with circumference 5 cm?

13. A triangle has base 15 ft and area 60 ft². What is the height?

Practice (continued)

Form K

Literal Equations and Formulas

Solve each problem. Round to the nearest tenth, if necessary.

- 14.** In baseball, a player's batting average is calculated by using the formula

Average = $\frac{\text{Hits}}{\text{At Bats}}$. Find the number of times a player has batted if he has 24 hits and a batting average of approximately 0.320.

- 15.** Dan drove 512 miles in 8 hours. What was his average speed for the trip?

Solve each equation for the given variable.

- 16.** $-2z - xy = x + 7$ for x
- 17.** $\frac{a}{b} - 8 = \frac{c}{d}$ for a
- 18.** $6qr + 7rs - 2st = -9$ for r
- 19.** $p = \left(\frac{m+n}{-5}\right)$ for n
- 20.** A large box shaped like a rectangular prism needs to be painted.
- Write a formula for the area A to paint in terms of length l , width w , and height h .
 - Rewrite the formula to find l in terms of A , h , and w .
 - If h is 36 in., w is 28 in. and A is 6112 in.², what is the length of the prism?

1.5 Practice*Form K***Ratios, Rates, and Conversions****Convert the given amount to the given unit.**

1. 12 in.; cm
 2. 528 cm; yd
 3. 9 hr; min
 4. 12 meters; cm
 5. 8 liters; qt
 6. 7 days; hours
 7. 10 pounds; grams
 8. 45 ft; yd
 9. 10 meters; ft
10. A plumber needs to replace 20 feet of copper piping. When he gets to the supply store, the lengths are given in meters. How many meters of piping does he need to purchase?
11. An athletic director is laying out a rectangular soccer field to be 60 m wide and 95 m long. What are the dimensions of the field to the nearest whole yard?

Complete each statement.

12. 9 gal/s = _____ qt/min
13. 5.5 days = _____ min
14. 50 yd = _____ m
15. 10 mi/hr = _____ m/min
16. 25 mi/gal = _____ km/L
17. 5 m/s = _____ ft/s

Practice (continued)

Form K

Ratios, Rates, and Conversions

18. Which weighs more, 5 ounces or 150 grams?
19. Which is longer, 5 miles or 10 kilometers?
20. Which is the better buy, 3 pounds for \$8.31 or 5 pounds for \$12.95? Explain.
21. A cyclist is riding 18 miles per hour.
- What conversion factors should be used to convert 18 mi/hr to ft/sec?
 - How many feet per second is the cyclist riding?

Determine if each rate is a unit rate.

22. 3 liters per 60 seconds 23. 55 miles per hour 24. \$15 per hour

Find each unit rate.

25. 5 pounds of apples cost \$9.95.
26. The tub filled with 12 gallons of water in 5 minutes.
27. Rocky earned \$102 in 8 hours.
28. **Writing** Suppose you want to convert miles per hour to feet per second. What conversion factors would you choose to use? How did you determine which units should go in the numerators and the denominators of the conversion factors?

1.6 Practice

Form K

Solving Proportions**Solve each proportion using the Multiplication Property of Equality.**

1. $\frac{3}{4} = \frac{a}{12}$

2. $\frac{1}{3} = \frac{m}{21}$

3. $\frac{x}{5} = \frac{2}{3}$

4. $\frac{f}{24} = \frac{3}{8}$

5. $\frac{9}{7} = \frac{z}{126}$

6. $\frac{3}{10} = \frac{b}{14}$

Solve each proportion using the Cross Products Property.

7. $\frac{2}{5} = \frac{k}{18}$

8. $\frac{4}{n} = \frac{6}{7}$

9. $\frac{q}{-15} = \frac{1}{3}$

10. $\frac{4}{d} = \frac{-1}{4}$

11. $\frac{-13}{15} = \frac{k}{-5}$

12. $\frac{-14}{h} = \frac{-2}{5}$

13. On a scale drawing of a park, the length of a trail is 12 cm from the playground to the pond and 15 cm from the pond to the parking lot. If the actual length of the trail from the pond to the parking lot is 60 m, what is the actual length of the trail between the playground and the pond?

14. Jennifer is ordering cake for her wedding reception. If one cake will feed 18 people, how many cakes does she need to order for 150 people?

Practice (continued)

Form K

Solving Proportions

15. Julie is drawing a map of the town. She knows that City Hall is 3 miles down Main St. from the fire station. If the scale for the map is 0.25 in.: 0.5 miles, how long should Main St. be between City Hall and the fire station on the map?

Solve each proportion using any method.

16. $\frac{2}{j+3} = \frac{4}{5}$

17. $\frac{p+1}{6} = \frac{6}{11}$

18. $\frac{-4}{5} = \frac{3}{z-5}$

19. $\frac{15-b}{6} = \frac{-2}{3}$

20. A furniture factory makes 5 recliners for every 2 couches. If the factory makes a total of 154 recliners and couches in a day, how many recliners were made?
21. On the football team, two out of every seven players are seniors. If the team has 84 players, how many of the players are not seniors?

Solve each proportion.

22. $\frac{5}{n-12} = \frac{-1}{n}$

23. $\frac{4v-2}{8v} = \frac{2}{3}$

24. **Writing** Describe two different ways to solve $\frac{5}{6} = \frac{x}{24}$. Demonstrate both methods.

1.7 Practice

Form K

Solving Multi-Step Inequalities**Solve each inequality. Check your solutions. The first step is started for you.**

1. $3m + 12 < 24$

$3m + 12 \boxed{} 12 < 24 \boxed{} 12$

2. $4w - 3 \geq 33$

$4w - 3 \boxed{} 3 \geq 33 \boxed{} 3$

3. $-2 + 2p \leq -14$

$-2 \boxed{} 2 + 2p \leq -14 \boxed{} 2$

4. $12 > 60 - 6t$

$12 \boxed{} 60 > 60 \boxed{} 60 - 6t$

Solve each inequality.

5. $4(k + 2) - 3k \leq 12$

6. $3(2c - 2) - 2c > 0$

7. $12(j + 1) + 3j < 57$

8. $22 \geq 5(y - 2) - 3y$

Practice (continued)

Form K

Solving Multi-Step Inequalities

Solve each inequality, if possible. If the inequality has no solution, write *no solution*. If the solutions are all real numbers, write *all real numbers*.

9. $8w - 5 > 2(4w - 3)$

10. $-3r + 15 \geq 4(r - 2)$

11. A grandmother devises an inequality to help her remember the ages of her two grandchildren. She knows her grandson is two years older than her granddaughter and that together, they are at least 12 years old. What are the youngest that her grandson and granddaughter could be?

Let a be the age of the granddaughter. Let $a + \boxed{}$ be the age of the grandson.

12. A family decides to rent a boat for the day. The boat's rental rate is \$500 for the first two hours and \$50 for each additional half hour. Suppose the family budgeted \$700 to rent the boat. What is the maximum number of additional half hours for which they can rent the boat?

Let t = the additional time in half hours.

$$\boxed{} t + \$500 \boxed{} \$700$$

13. Suppose a friend is having difficulty solving $-2(q - 5) > -3(q + 1)$. Explain how to solve the inequality, showing all the necessary steps and identifying the properties you would use.

Math 1 Unit 1 Review**Simplify the expressions:**

1. $3x - 2y - 7x + y$

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

3. $-(4x - 15)$

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

Solve the equations:

5. $7(n - 3) = -35$

6. $5n + 6 - 8n = 15 - 6n - 3$

7. $9(4 - x) = 54$

8. $22 - 3n - 5 = 7n + 5 - 4n$

9. Solve the formula for F

$$C = \frac{5}{9}(F - 32)$$

10. Solve the formula for l

$$P = 2l + 2w$$

Write the following rates in miles per hour. Round to the nearest tenth.

11. 7.8 miles/minute

12. $13,200 \frac{\text{feet}}{\text{hour}}$

13. Find the rate for each of the following persons. Round to the nearest tenth. Who travels the fastest?

_____ a. Robert: 325 miles in 5 hours

_____ b. Samantha: 101 miles in $1\frac{1}{2}$ hours

_____ c. Luisa: 255 miles in $3\frac{1}{2}$ hours

_____ d. Pierre: 285 miles in 4 hours

_____ e. Cha: 210 miles in 3 hours

Solve the proportions:

14. $\frac{15}{x} = \frac{5}{13}$

15. $\frac{y}{12} = -\frac{4}{3}$

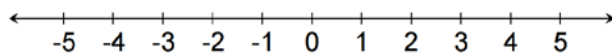
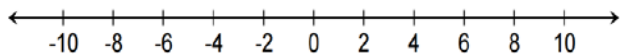
16. $\frac{x+8}{5} = \frac{x-12}{7}$

17. $\frac{y-1}{3} = \frac{y+9}{11}$

Solve and graph the inequalities:

18. $5x + 3 \leq 7x - 9$

19. $16 - x < 19$



Simplify the expression:

20. $5y^2z - 2yz^2 + 3y^2z$

21. $7n^2m + 3m^2n - 5n^2m$

Solve:

22. $\frac{x}{5} - \frac{5}{6} = -\frac{37}{30}$

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

24. Justify in words each step of the following solution:

$2.5 + 0.3x - 3.2 = 1.4$

$0.3x - 0.7 = 1.4$

$0.3x = 2.1$

$x = 7$

25. Four friends went skiing at China Peak. Each friend purchased a lift ticket. Three of them rented ski equipment for \$35 each. The cost for gas for the trip was \$45. The total cost of their ski trip including a lift ticket for each person was \$390.

Write an equation to represent the total cost of the ski trip for the four friends. Then solve the equation to determine how much each friend paid for their lift ticket.

Convert the following rates (round to the nearest tenth):

26. $80 \frac{\text{feet}}{\text{second}} = \underline{\hspace{2cm}} \frac{\text{miles}}{\text{hour}}$ (1 mi = 5280 ft)

27. $5 \frac{\text{feet}}{\text{second}} = \underline{\hspace{2cm}} \frac{\text{meters}}{\text{minute}}$ (1 m \approx 3.28 ft)

28. A choral group with 16 singers is buying tickets to see a play when they are in New York. They can buy tickets in groups of four at an off-Broadway ticket office for \$55. Or they can buy tickets online in groups of three for \$39. Solve mathematically and find the cost of one ticket in each scenario. Explain which source you would use to purchase tickets and why?

29. A store is having a sale of half-liter bottles of soda: 5 bottles for \$3.95. Set up a proportion and use it to find the cost for 8 bottles of soda.

30. The formula for the area of a trapezoid is $\frac{1}{2}h(b_1 + b_2)$, where h is the height of the trapezoid and b_1 and b_2 are the bases.

a) Solve the formula for h

b) If the area of the trapezoid is 96 cm^2 and the bases are 10 cm and 14 cm respectively. What is the height of the trapezoid?

Units of Measurement

English (US) System

Length

12 inches = 1 foot
3 feet = 1 yard
1760 yards = 1 mile
5280 feet = 1 mile

Volume

1 cup = 8 ounces
2 cups = 1 pint
2 pints = 1 quart
4 quarts = 1 gallon

Weight

16 ounces = 1 pound (lb)
2000 lbs = 1 ton

Metric System

Length

1000 meters = 1 kilometer
100 centimeters = 1 meter
10 millimeters = 1 centimeter

Volume

1000 milliliters = 1 liter

Weight

1000 grams = 1 kilogram

Converting Between Systems

Length

1 meters = 3.28 feet
1 kilometer = 0.62 miles
1 inch = 2.54 centimeters
1 mile = 1.6 kilometers

Volume

1 gallon = 3.79 liters

Weight

1 kilogram = 2.2 pounds
1 ounce = 28.3 grams

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