Name _____ Date _____

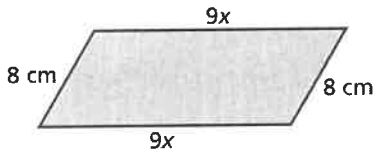
3.1 Practice A

Identify the terms and like terms in the expression.

1. $-4y + 7 + 9y - 3$
2. $3n^2 - 1.4n + 5n^2 - 6.4$
3. $\frac{1}{2}b^3 - b^3 + 2b$

Simplify the expression.

4. $-15m + 9m$
5. $8k - 2(4 - 3k)$
6. $3.2 - 9x + 7.1 - 3x$
7. $25 - 6x - 12 - 2x$
8. $19a - 7 - 3a + 12a$
9. $\frac{5}{2}(6x - 7) + \frac{4}{3}(2 + 9x)$
10. $\frac{1}{8}h + 7 - \frac{3}{4}h$
11. $\frac{2}{3}y + 5 - 3 - \frac{11}{12}y$
12. Write an expression in simplest form that represents the perimeter of the polygon.



13. Each runner is carrying an 8 ounce bottle of water, a 2.1 ounce energy bar, and a 3 ounce energy drink. Write an expression in simplest form that represents the weight carried by y runners. Interpret the expression.
14. John weighs 65 kilograms, Sam weighs $22x$ kilograms, and Mark weighs $13x$ kilograms. Write an expression in simplest form for their combined weight.
15. Are the expressions $8a^2 - 4b + 7a^2$ and $5(3a^2 - 2b) + 6b$ equivalent? Explain your reasoning.

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3.2 Practice A

Find the sum.

1. $(p - 3) + (p - 7)$
2. $(3n - 1) + (4 - n)$
3. $(-3r + 8) + (5r - 1)$
4. $6(x - 3) + (2x - 9)$
5. $(3c + 2) + 4(1.3c - 5)$
6. $10(2.1q - 2) + (7.5q + 18)$
7. $(-6y - 2) + 5(3 + 2.5y)$
8. $\frac{1}{2}(6x - 10) + \frac{1}{3}(6 + 9x)$

9. After a week of rain, tadpoles appeared in your pond. After t minutes, you have $(7t + 5)$ tadpoles and your friend has $(8t - 3)$ tadpoles.

   a. Write an expression that represents the number of tadpoles you and your friend caught together.

   b. Who has more tadpoles after 9 minutes?

Find the difference.

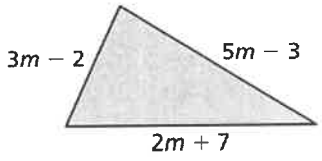
10. $(k + 3) - (3k - 5)$
11. $(-6d + 2) - (7 + 2d)$
12. $(10j - 7) - (-9j + 2)$
13. $(3x + 8) - 6(2.5x - 3)$
14. $(7 - 3t) - 5(-1.6t + 5)$
15. $\frac{1}{2}(12w + 8) - \frac{1}{5}(10w - 5)$

16. The admission to a local fair is \$10 for each adult and \$6 for each child. Each rides costs \$1.50 for an adult and \$1 for a child.

   a. Write an expression that represents how much more an adult will spend at the fair.

   b. An adult and a child each go on 7 rides. How much more did the adult spend?

17. Write an expression that represents the perimeter of the triangle.



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Extension 3.2 Practice

Factor the expression using the GCF.

1. $8 - 22$

2. $25 + 30$

3. $6y + 3$

4. $2t - 10$

5. $16p - 8$

6. $21s + 15$

7. $32v + 24w$

8. $9b + 24c$

9. $12y - 42z$

Factor out the coefficient of the variable.

10. $\frac{1}{2}m + \frac{1}{2}$

11. $\frac{2}{3}j - \frac{2}{9}$

12. $1.2k + 2.4$

13. $1.5a - 4.5$

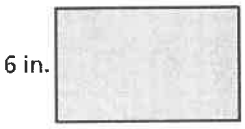
14. $3f + 5$

15. $\frac{3}{10}x - \frac{3}{5}$

16. Factor $-\frac{1}{3}$ out of $-\frac{1}{3}x - 12$.

17. Factor $-\frac{1}{6}$ out of $-\frac{1}{3}x + \frac{5}{6}y$.

18. The area of the rectangle is $(18x - 12)$ square inches. Write an expression that represents the length of the rectangle (in inches).



19. A concession stand sells hamburgers. The revenue from the hamburgers is $(30x + 45)$ dollars.

a. The price of a hamburger is \$5. Write an expression that represents the number of hamburgers sold.

b. The revenue from drinks is $(63x + 84)$ dollars. The price of a drink is \$3. Write an expression that represents the number of drinks sold.

c. Write and simplify an expression that represents how many more drinks were sold.

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3.3 Practice A

Solve the equation. Check your solution.

1. $x + 3 = 10$

2. $b - 6 = -14$

3. $5 = n + 9$

4. $y - 2.1 = 7.5$

5. $-6.4 = x + 4.3$

6. $k - \frac{1}{3} = \frac{5}{6}$

7. $10.5 + p = -8.32$

8. $3\frac{3}{4} = r + \frac{1}{8}$

9. $m + 1.06 = 5$

10. $-\frac{7}{12} = 1\frac{5}{6} + d$

11. $t - \frac{2}{7} = \frac{1}{2}$

12. $-10.2 + c = -8.14$

Write the word sentence as an equation. Then solve.

13. 5 more than a number y is -2.

14. The sum of 8 and a number h is 12.

15. -13 is 4 less than a number n.

In Exercises 16–20, write an equation. Then solve.

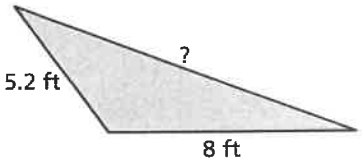
16. You earn \$9 per hour babysitting. This is \$2 more than what you earned per hour last year. What did you earn per hour last year?

17. Your mother asked you to turn the oven down to 325°F. This is 75°F less than it was. What was the original temperature?

18. The difference between the heights of your chair and your desk is $-10\frac{1}{4}$ inches. The height of your desk is $29\frac{3}{4}$ inches. What is the height of your chair?

19. Your Two-Day-Pass to a theme park is \$76.50. This is \$31.41 less than your uncle's Two-Day-Pass. What is the price of your uncle's pass?

20. The perimeter of a triangle is 25 feet. What is the length of the unknown side?



21. Find the value of $3x + 2$ when $7 + x = 5$.

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3.4 Practice A

Solve the equation. Check your solution.

1. $4b = 24$
2. $-7n = 35$
3. $\frac{y}{-3} = 33$
4. $\frac{p}{5} = -32$
5. $-3t = -4.2$
6. $1.5q = -8.4$
7. $\frac{1}{5}d = -3$
8. $14 = 3y$
9. $\frac{g}{2.1} = -6.8$
10. $-\frac{3}{5}a = 2$
11. $\frac{k}{-9} = -\frac{1}{3}$
12. $\frac{5}{8}j = -10$

Write the word sentence as an equation. Then solve.

13. A number multiplied by $\frac{1}{2}$ is $-\frac{5}{12}$.
14. The quotient of a number and 0.2 is -2.6.

In Exercises 15–19, write an equation. Then solve.

15. You earn \$7.50 per hour at a fast food restaurant. You earned \$123.75 last week. How many hours did you work last week?
16. Your family took a road trip on Saturday. You were in the car for 4.5 hours and averaged 70 miles per hour. How many miles did you travel?
17. The area of a rectangle is $\frac{1}{2}$ square inch. The length of the rectangle is $\frac{3}{8}$ inch. What is the width of the rectangle?
18. You are in a room with other students and are asked to get in groups of 3. When finished, there are 21 groups of 3. How many students are in the room?
19. The perimeter of a square is 26.46 inches. What is the side length of the square?
20. Write a multiplication equation that has a solution of $\frac{2}{7}$.
21. Write a division equation that has a solution of -20.

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3.5 Practice A

Solve the equation. Check your solution.

1. $3k - 2 = 10$

2. $5p + 2 = -10$

3. $-4x + 3 = -11$

4. $12 = 2d + 3.2$

5. $-1 - 5h = 14$

6. $1.25r - 7 = 2.5$

7. $-4k + 3.6 = 7.8$

8. $6 + 2n = 3$

9. $4y - 16.3 = 53.1$

10. $\frac{1}{2}b + \frac{9}{4} = \frac{7}{4}$

11. $\frac{5}{6} + 3j = -\frac{2}{3}$

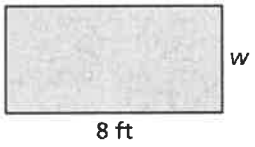
12. $-\frac{9}{10}p - 3 = \frac{3}{5}$

In Exercises 13–15, write an equation. Then solve.

13. It costs \$4 to enter the fair. Each ride costs \$2.50. You have \$21.50. How many rides can you go on?

14. The cable company charges a monthly fee of \$45. Each movie rental is \$1.99. You owe \$68.88. How many movies did you rent?

15. The perimeter of the rectangle is 24 feet. What is the width of the rectangle?



Solve the equation. Check your solution.

16. $7c - 2c = 45$

17. $3(k - 5) = -16$

18. $-2(m + 1) = 10$

19. The senior class has 412 students. They are assigned to different homerooms. There are 28 students in the smallest homeroom and the remaining 12 homerooms have the same number of students. How many students are in each of the remaining 12 homerooms?

20. You purchased paint for the rooms in your house. You have 1.5 cans of paint left. You painted 4 rooms and each room required 2 cans of paint. You spilled $\frac{1}{2}$ of a can of paint. How many cans of paint did you purchase?

a. Solve the problem by working backwards.

b. Solve the equation $\frac{x - 2}{4} = 2$. How does the answer compare to part (a)?

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