

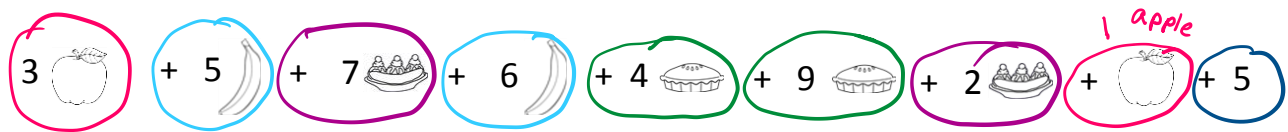
## Combining Like Terms

Learning how to dribble a basketball is a skill people learn before they play a game of basketball. Combining like terms is a skill that gets used in solving complex equations.

TERM: a chunk separated by a + or a - in an expression  $(3x) + (5y) - (8z) + (12)$  <sup>4 terms</sup>

COEFFICIENT: the number in front of the variable in a term  $(3)x + (5)y - (8)z + 12$

CONSTANT: a number that doesn't have a variable attached  $3x + 5y - 8z + (12)$



4 apples + 11 bananas + 13 apple pies + 9 banana splits + 5 "mystery fruits"

$$\begin{aligned}
 & 3 \text{ apple} + 5 \text{ banana} + 7 \text{ apple pie} + 6 \text{ banana} + 4 \text{ apple pie} + 9 \text{ apple pie} + 2 \text{ apple pie} + 1 \text{ apple} + 5 \\
 & 3a + 5b + 7b^2 + 6b + 4a^2 + 9a^2 + 2b^2 + 1a + 5 \\
 & 4a + 11b + 13a^2 + 9b^2 + 5
 \end{aligned}$$

Example 1: Simplify the expression by combining like terms.

$$4a + 1a + 7a - 2a$$

$$4 + 1 + 7 - 2 = 10$$

$$10a$$

Example 2: Simplify the expression by combining like terms.

$$4x + 7y + 4x^2 - 3y - x$$

$$3x + 4y + 4x^2$$

**Practice Set**

- a) How many terms are in the expression?  $3x + 2y + 4x^2 - 5y^2 + 7$
- b) Simplify by combining like terms:  $5x - x + 8x - 2x$
- c) Simplify by combining like terms:  $6a^2 + 9b^2 - 4a^2 + 3a + 6b^2 - a + b$
- d) Simplify by combining like terms:  $10m + 9n + 8m^2 + 7n^2 - 6n - 5m + 4m^2 - 3n^2 + 2 - p$

**Problem Set**

- (30) 1. Dennis ran the mile in 5 minutes 24 seconds. Express his time in minutes as a decimal number.
- (18, 25) 2. What is the area of a triangle with vertices located at  $(-4, 2)$ ,  $(8, 2)$ , and  $(0, -7)$ ?
- (38) 3. Use numbers, variables, and symbols to write the expression.  
*the difference of five times a number and sixteen*
- (13) 4. Jaxon saw 3 alligator lizards and 9 western fence lizards while working in the yard. What is the ratio of western fence lizards to alligator lizards that Jaxon saw?

**For problems 5 and 6, see the table and dot plots on the back of the answer sheet.**

- (28) 5. Suzanne surveyed her class about the number of stuffed animals they own. The results of her survey are shown in the table. Which dot plot accurately displays the results of the survey?
- ★(5, 30) 6. What is the mean number of stuffed animals owned by Suzanne’s classmates? What is the median number? Round to the nearest tenth if necessary. Hint: Think about how many students are in Suzanne’s class.
- (23) 7. Simplify:  $(8 - 4)^2 \div 2 + 3^3 \div 9 - (5 + 6)$

**For problems 8 and 9, refer to the graph on the answer sheet.**

- (18) 8. What is the slope of the graphed line?
- (25) 9. What is the y-intercept of the graphed line?
- (27) 10. Twelve is 15% of what number?
- (40) 11. In the expression  $3x + 2y + 4x^2 - 5y^2 + 7$ , what is the constant?
- (40) 12. In the expression  $3x + 2y + 4x^2 - 5y^2 + 7$ , the number 3 is a
  - a. variable
  - b. coefficient
  - c. constant
  - d. term

- ★ (11) 13. If  $x = 10$  and  $y = 5$ , then what is the value of  $\frac{30 + y^3 - (y^2 + x)}{3}$ ?

(4, 35) 14. Solve:  $x + 4\frac{1}{2} = 9\frac{7}{8}$

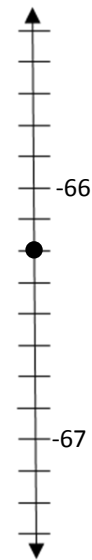
(21) 15.  $6\frac{3}{8} \div 2\frac{1}{4}$

- (9, 20) 16. What is the opposite of the number represented by the dot on the number line?

- (14) 17. *How many stuffed animals does Suzanne have?* Is this a statistical question? Explain why or why not.

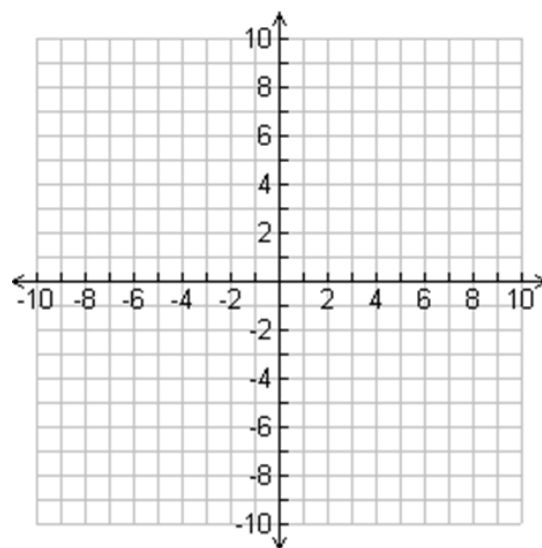
- (29) 18. Write an equation that represents the relationship between  $x$  and  $y$  in the table below.

$x$	$y$
6	13
7	14
8	15
9	16



Practice Set

- a) \_\_\_\_\_
- b) \_\_\_\_\_
- c)  $6a^2 + 9b^2 - 4a^2 + 3a + 6b^2 - a + b$   
\_\_\_\_\_
- d)  $10m + 9n + 8m^2 + 7n^2 - 6n - 5m + 4m^2 - 3n^2 + 2 - p$   
\_\_\_\_\_



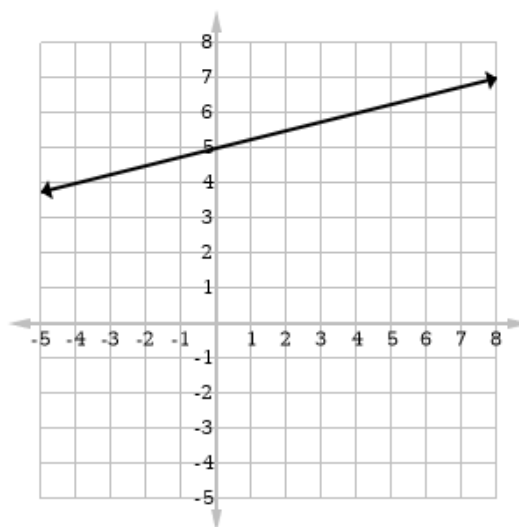
Problem Set

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_
- 4. \_\_\_\_\_
- 5. \_\_\_\_\_
- 6. mean: \_\_\_\_\_ median: \_\_\_\_\_
- 7. \_\_\_\_\_
- 8. \_\_\_\_\_
- 9. \_\_\_\_\_
- 10. \_\_\_\_\_
- 11. \_\_\_\_\_
- 12. \_\_\_\_\_

Problem 7

$$(8 - 4)^2 \div 2 + 3^3 \div 9 - (5 + 6)$$

Problems 8 and 9



Problem 13

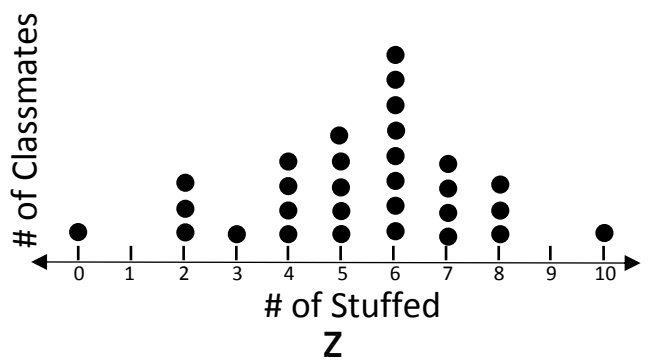
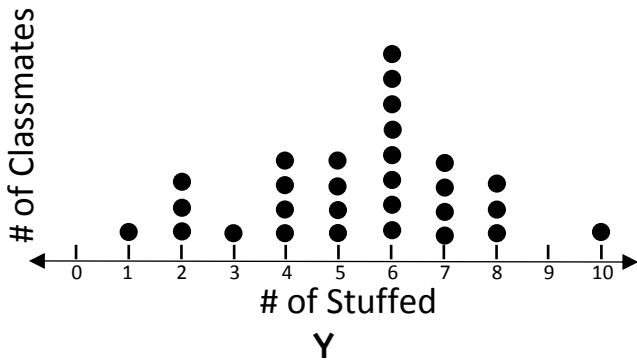
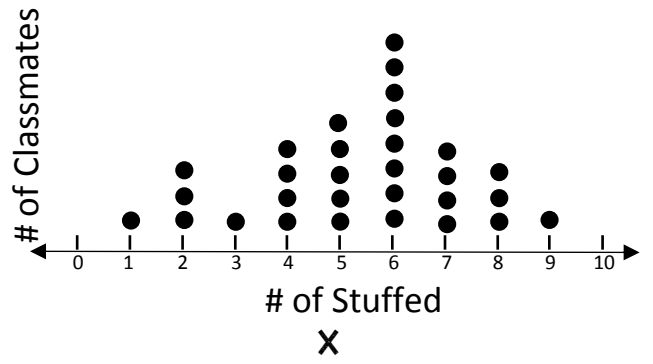
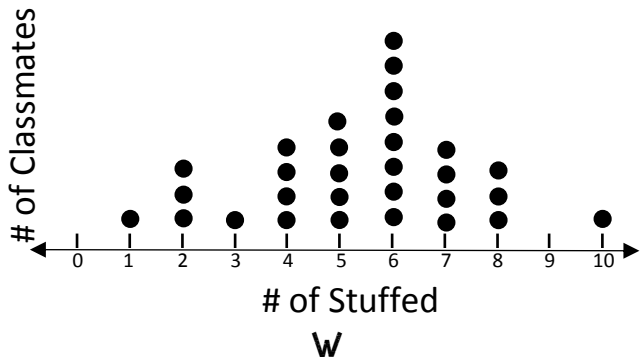
$$\frac{\frac{30}{x} + y^3 - (y^2 + x)}{3}$$

14.  $x + 4\frac{1}{2} = 9\frac{7}{8}$

- 15. \_\_\_\_\_
- 16. \_\_\_\_\_
- 17. Use the back of this page or a separate sheet of paper for your response.
- 18. \_\_\_\_\_

Problems 5 and 6

# of Stuffed Animals	# of Classmates
0	0
1	1
2	3
3	1
4	4
5	5
6	8
7	4
8	3
9	0
10	1



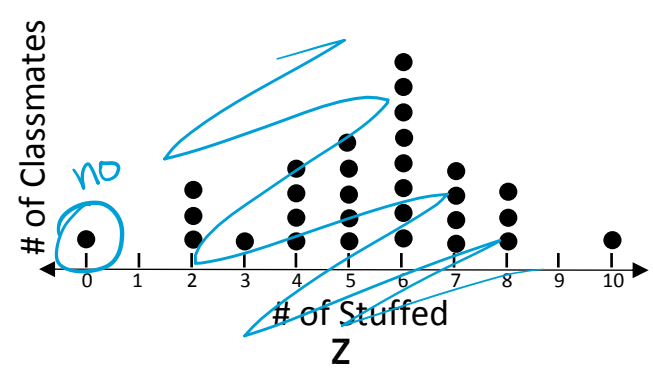
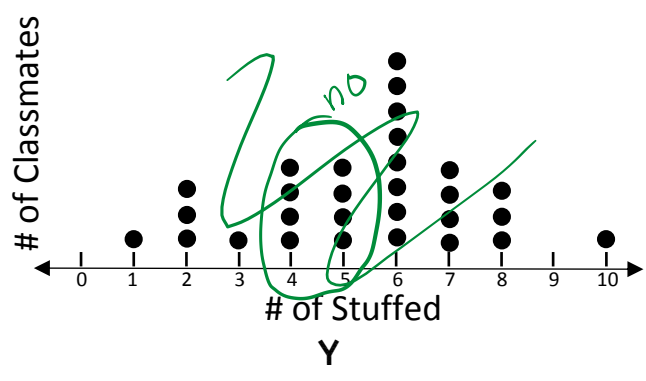
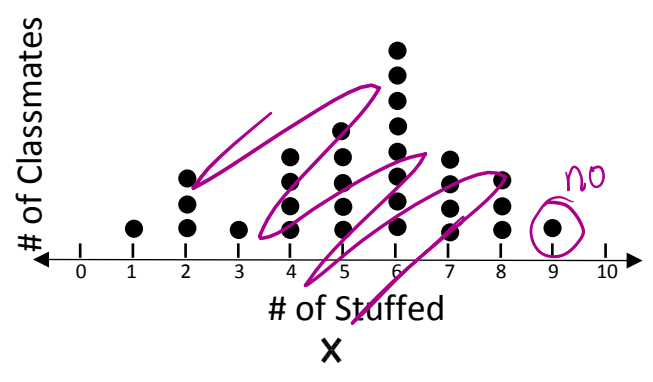
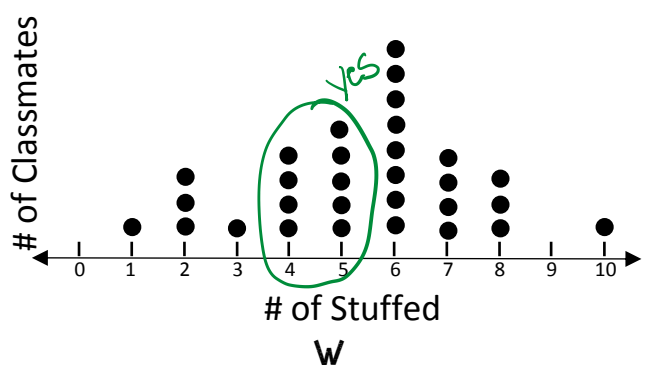


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0	0
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3	1
4	4
5	5
6	8
7	4
8	3
9	0
10	1

$\frac{3}{3} = 31$   
 $6 \overline{) 17} \begin{array}{r} 2 \\ 12 \\ \hline 5 \end{array}$   
 $2 \frac{5}{6}$   
 0, 1, 2, 2, 2, 3, 4, 4, 4, 4, 5, 5, 5, 5, 5, 6, 6, 6, 6, 6, 6, 6, 6, 6, 7, 7, 7, 7, 8, 8, 8, 10  
 median is 5.5  
 $5.36 \approx 5.4$   
 $30 \overline{) 161.00} \begin{array}{r} 5 \\ 150 \\ \hline 110 \\ 90 \\ \hline 200 \\ 180 \\ \hline 20 \end{array}$   
 $\begin{array}{r} 4 \\ + \\ 6 \\ 3 \\ 16 \\ 25 \\ 48 \\ 28 \\ 24 \\ + 10 \\ \hline 161 \end{array}$

30 students



17. The question "How many stuffed animals does Suzanne have?" is not a statistical question. It is not a statistical question because there is a single answer to the question instead of having various answers.