

# Measures of Center and Spread

## Algebra 1 • Section 10.1

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Score: \_\_\_\_\_ / 12

### Quick Review and Helpful Hints

Work carefully from the structure of the expression or model. Write the setup first, perform one valid algebra move at a time, and check whether the answer fits the question.

▷ **Example:** Solve  $2x + 7 = 19$ .

**Work:** Subtract 7 to get  $2x = 12$ , then divide by 2.

★ **Answer:**  $x = 6$

### ◆ Practice Problems

Solve each problem. Show enough work that another student could follow your thinking.

1. Simplify  $3(x + 4) - 2x$ . \_\_\_\_\_

6. Evaluate  $f(3)$  for  $f(x) = 2x - 1$ . \_\_\_\_\_

2. Evaluate  $2a^2 - 5$  when  $a = 4$ . \_\_\_\_\_

7. Factor  $x^2 + 7x + 12$ . \_\_\_\_\_

3. Solve  $5x - 7 = 18$ . \_\_\_\_\_

8. Solve  $x^2 - 16 = 0$ . \_\_\_\_\_

4. Solve  $3x + 2 < 14$ . \_\_\_\_\_

9. Simplify  $3(x + 4) - 2x$ . \_\_\_\_\_

5. Find the slope through  $(1, 4)$  and  $(5, 12)$ . \_\_\_\_\_

10. Evaluate  $2a^2 - 5$  when  $a = 4$ . \_\_\_\_\_

### ◆ Word Problems

11. A plan charges \$12 plus \$4 per month. Write the cost for  $m$  months. \_\_\_\_\_

12. A line has slope 3 and passes through  $(2, 10)$ . Find its equation. \_\_\_\_\_



## Answer Keys

1.  $x + 12$

2.  $27$

3.  $x = 5$

4.  $x < 4$

5.  $2$

6.  $5$

7.  $(x + 3)(x + 4)$

8.  $x = \pm 4$

9.  $4m + 12$

10.  $y = 3x + 4$

11.  $x + 12$

12.  $27$

### Step-by-Step Explanations

1. Hand the 3 to everything in the parentheses first:  $3x + 12$ . Now the  $x$ -terms can meet up:  $3x - 2x$  leaves just  $x + 12$ .

2. Swap in 4 wherever you see  $a$ . Square before you multiply, so  $2(16) = 32$ , and  $32 - 5$  lands you at 27.

3. Undo the steps in reverse: clear the  $-7$  by adding 7 to both sides ( $5x = 25$ ), then split that into 5 equal parts.

4. Treat it like an equation: peel off the  $+2$ , then divide by 3. Since 3 is positive, the  $<$  stays pointing the same way.

5. Slope just compares how much  $y$  climbs to how far  $x$  travels:  $y$  goes up 8 while  $x$  goes over 4, and  $8/4 = 2$ .

6. The 3 inside  $f(3)$  is telling you what  $x$  is. Drop it into the rule:  $2(3) - 1$  gives 5.

7. You need two numbers that multiply to 12 but add to 7. Run through the pairs and 3 and 4 fit both jobs.

8. Get to  $x^2 = 16$ , then ask what squares to 16. Don't forget the negative side —  $(-4)^2$  works just as well as  $4^2$ .

9. The \$12 is a one-time charge that never changes, while \$4 repeats every month — so  $4m$  for the months, plus that fixed 12.

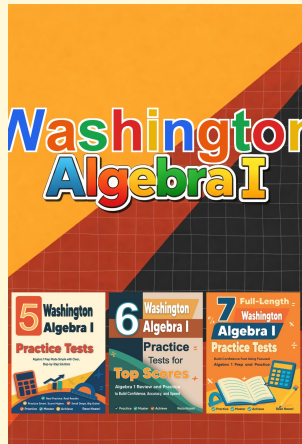
10. Start from  $y = mx + b$  with  $m = 3$ . The point  $(2, 10)$  must fit, so  $10 = 3(2) + b$  tells you  $b = 4$ .

11. Hand the 3 to everything in the parentheses first:  $3x + 12$ . Now the  $x$ -terms can meet up:  $3x - 2x$  leaves just  $x + 12$ .

12. Swap in 4 wherever you see  $a$ . Square before you multiply, so  $2(16) = 32$ , and  $32 - 5$  lands you at 27.



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