Name: ______________________ Date: ______________

Lesson 8.3 Solving Simple Inequalities

Complete with $=$, $>$, or $<$.

1. 16 ☐ −20

2. 87 ☐ 78

3. $35 \cdot 6$ ☐ $6 \cdot 35$

4. $60 \div 20$ ☐ $20 \div 60$

5. −5 ☐ −1

6. −12 ☐ 9

Use substitution to determine four solutions of each inequality.
Then represent the solutions of each inequality on a number line.

Example

$y > 7$

When $y =$ 8, $y > 7$ is true.

When $y =$ 9, $y > 7$ is true.

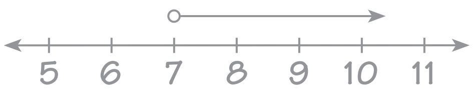
When $y =$ 15, $y > 7$ is true.

When $y =$ 98, $y > 7$ is true.

To find possible solutions of the inequality $y > 7$, you need to find the values of y that make $y > 7$ true.

The inequality $y > 7$ is true for any value of y that is greater than 7.

The solutions can be represented on a number line as shown:



The empty circle at the end of the arrow above the number line indicates that 7 is NOT a solution of the inequality $y > 7$.

Name: ______________________ Date: ______________

7. $g > 13$

When $g =$ ______, $g > 13$ is true.

When $g =$ ______, $g > 13$ is true.

When $g =$ ______, $g > 13$ is true.

When $g =$ ______, $g > 13$ is true.

The inequality $g > 13$ is true for any value of g that is ______________ 13.

The solutions can be represented on a number line as shown:

8. $m < 28$

When $m =$ ______, $m < 28$ is true.

When $m =$ ______, $m < 28$ is true.

When $m =$ ______, $m < 28$ is true.

When $m =$ ______, $m < 28$ is true.

The inequality $m < 28$ is true for any value of m that is ______________ 28.

The solutions can be represented on a number line as shown:

Name: ______________________ Date: ______________

9. $p < 45$

10. $s > 28$

11. $a > -57$

12. $g < -93$

13. $f > -86$

14. $m < -105$

Name: ______________________ Date: ______________

Use substitution to determine four solutions of each inequality. Then represent the solutions of each inequality on a number line.

Example

$e \geq 15$

When e = 15, $e \geq 15$ is true.

When e = 16, $e \geq 15$ is true.

When e = 23, $e \geq 15$ is true.

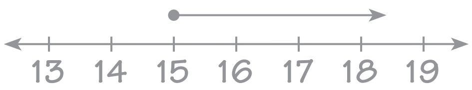
When e = 84, $e \geq 15$ is true.

To find possible solutions of the inequality $e \geq 15$, you need to find the values of e that make $e \geq 15$ true.

The inequality $e \geq 15$ is true for any value of e that

is *greater than or equal to* 15.

The solutions can be represented on a number line as shown:



The shaded circle at the end of the arrow above the number line indicates that 15 is a solution of the inequality $e \geq 15$.

Name: ______________________________ Date: ____________________

15. $d \geq 9$

When d = ________, $d \geq 9$ is true.

When d = ________, $d \geq 9$ is true.

When d = ________, $d \geq 9$ is true.

When d = ________, $d \geq 9$ is true.

The inequality $d \geq 9$ is true for any value of d that is ____________________ 9.

The solutions can be represented on a number line as shown:

16. $z \leq 21$

When z = ________, $z \leq 21$ is true.

When z = ________, $z \leq 21$ is true.

When z = ________, $z \leq 21$ is true.

When z = ________, $z \leq 21$ is true.

The inequality $z \leq 21$ is true for any value of z that is ____________________ 21.

The solutions can be represented on a number line as shown:

Name: ____________________ Date: ____________

17. $n \le 17$

18. $u \ge 49$

19. $w \ge -63$

20. $k \le -85$

21. $p \ge -78$

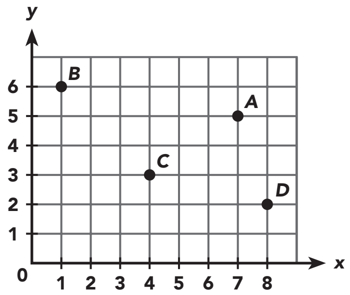
22. $y \le -112$

13. **a)** $\frac{r}{2}$ meters

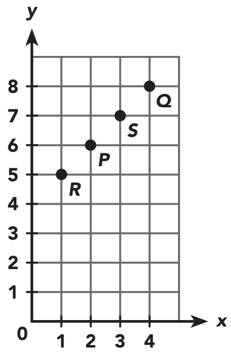
b) $t = \frac{r}{2}$

c) Independent: r
Dependent: t

14.



15.

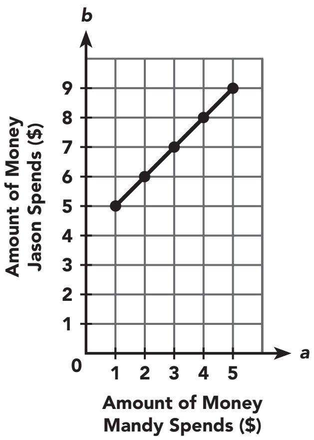


16. **a)** $b = a + 4$

b)

Amount of Money Mandy Spends (a dollars)	1	2	3	4	5
Amount of Money Jason Spends (b dollars)	5	6	7	8	9

c) **Amount of Money Spent During Lunch Time**

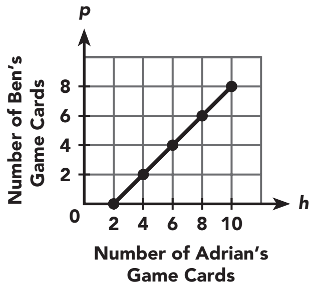


17. **a)** $p = h - 2$

b)

Number of Adrian's Game Cards (h)	2	4	6	8	10
Number of Ben's Game Cards (p)	0	2	4	6	8

c) **Number of Game Cards**

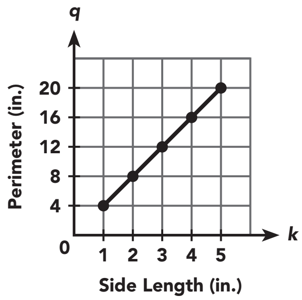


18. **a)** $q = 4k$

b)

Side Length of the Square (k inches)	1	2	3	4	5
Perimeter of the Square (q inches)	4	8	12	16	20

c) **Perimeter of a Square**



Lesson 8.3

1. $16 \boxed{>} -20$

2. $87 \boxed{>} 78$

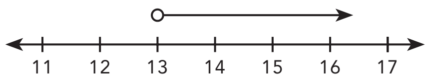
3. $35 \cdot 6 \boxed{=} 6 \cdot 35$

4. $60 \div 20 \boxed{>} 20 \div 60$

5. $-5 \boxed{<} -1$

6. $-12 \boxed{<} 9$

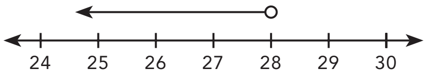
7. Answers vary. Sample:
When $g = \underline{14}$, $g > 13$ is true.
When $g = \underline{15}$, $g > 13$ is true.
When $g = \underline{20}$, $g > 13$ is true.
When $g = \underline{78}$, $g > 13$ is true.
The inequality $g > 13$ is true for any value of g that is <u>greater than</u> 13.



8. Answers vary. Sample:

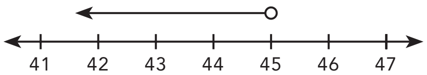
When $m = 27$, $m < 28$ is true.
When $m = 26$, $m < 28$ is true.
When $m = 20$, $m < 28$ is true.
When $m = 12$, $m < 28$ is true.

The inequality $m < 28$ is true for any value of m that is less than 28.



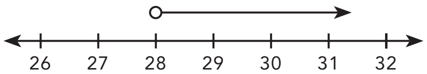
9. Answers vary. Possible values of p are 44, 43, 40, and 19.

The inequality $p < 45$ is true for any value of p that is less than 45.



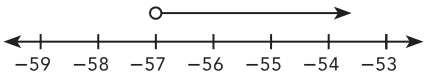
10. Answers vary. Possible values of s are 29, 30, 38, and 51.

The inequality $s > 28$ is true for any value of s that is greater than 28.



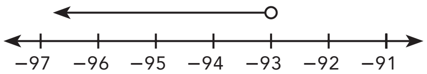
11. Answers vary. Possible values of a are -56, -55, -40, and 1.

The inequality $a > -57$ is true for any value of a that is greater than -57.



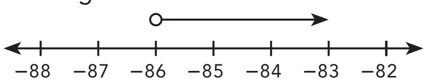
12. Answers vary. Possible values of g are -94, -95, -100, and -179.

The inequality $g < -93$ is true for any value of g that is less than -93.



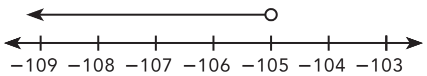
13. Answers vary. Possible values of f are -85, -83, -60, and 86.

The inequality $f > -86$ is true for any value of f that is greater than -86.



14. Answers vary. Possible values of m are -106, -107, -109, and -120.

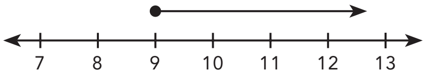
The inequality $m < -105$ is true for any value of m that is less than -105.



15. Answers vary. Sample:

When $d = 9$, $d \geq 9$ is true.
When $d = 10$, $d \geq 9$ is true.
When $d = 17$, $d \geq 9$ is true.
When $d = 28$, $d \geq 9$ is true.

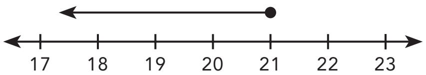
The inequality $d \geq 9$ is true for any value of d that is greater than or equal to 9.



16. Answers vary. Sample:

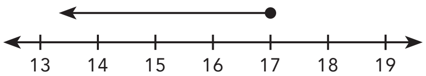
When $z = 21$, $z \leq 21$ is true.
When $z = 20$, $z \leq 21$ is true.
When $z = 13$, $z \leq 21$ is true.
When $z = 4$, $z \leq 21$ is true.

The inequality $z \leq 21$ is true for any value of z that is less than or equal to 21.



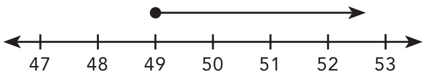
17. Answers vary. Possible values of n are 17, 16, 9, and 0.

The inequality $n \leq 17$ is true for any value of n that is less than or equal to 17.



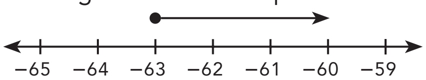
18. Answers vary. Possible values of u are 49, 50, 89, and 100.

The inequality $u \geq 49$ is true for any value of u that is greater than or equal to 49.



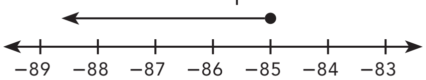
19. Answers vary. Possible values of w are -63, -62, -5, and 4.

The inequality $w \geq -63$ is true for any value of w that is greater than or equal to -63.



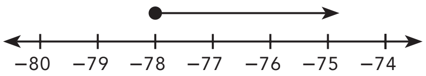
20. Answers vary. Possible values of k are -85, -86, -95, and -103.

The inequality $k \leq -85$ is true for any value of k that is less than or equal to -85.



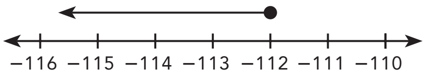
21. Answers vary. Possible values of p are -78, -77, -10, and 5.

The inequality $p \geq -78$ is true for any value of p that is greater than or equal to -78.



22. Answers vary. Possible values of y are -112, -113, -120, and -200.

The inequality $y \leq -112$ is true for any value of y that is less than or equal to -112.



Lesson 8.4

1.
$$\underline{y} + \underline{9} = \underline{32}$$
$$\underline{y} + \underline{9} - \underline{9} = \underline{32} - \underline{9}$$
$$\underline{y} = \underline{23}$$

Jeremy collected $\$\underline{23}$ at first.

2.
$$\underline{b} - \underline{12} = \underline{53}$$
$$\underline{b} - \underline{12} + \underline{12} = \underline{53} + \underline{12}$$
$$\underline{b} = \underline{65}$$

Wayne had $\underline{65}$ comic books at first.

3. $g - 72 = 36$; 108 muffins

4. $k + 24 = 92$; 68 pages

5.
$$\underline{5w} = \underline{60}$$
$$\underline{5w} \div \underline{5} = \underline{60} \div \underline{5}$$
$$\underline{w} = 12$$

Dawn sold $\underline{12}$ sandwiches.

6. $3n = 72$; 24 dimes

7.
$$\underline{\frac{w}{8}} = \underline{6}$$
$$\underline{\frac{w}{8}} \cdot \underline{8} = \underline{6} \cdot \underline{8}$$
$$\underline{w} = \underline{48}$$

Lester had $\underline{48}$ marbles at first.

8. $\frac{m}{6} = 4$; 24 tiles

9. **a)** $w \geq 15$
b) 15

10. **a)** $s < 500$
b) 499 words

11. **a)** $m > 15$
b) 16 members

12. **a)** $a \leq 19$
b) 19 grammar books

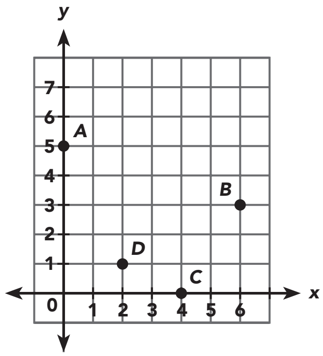
13. **a)** $v \leq 7{,}500$
b) 7,500 people

Chapter 9

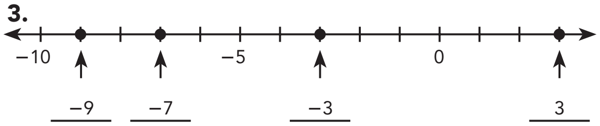
Lesson 9.1

1. P (2, 5), Q (5, 4), R (1, 3), S (4, 2)

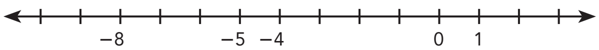
2.



3.

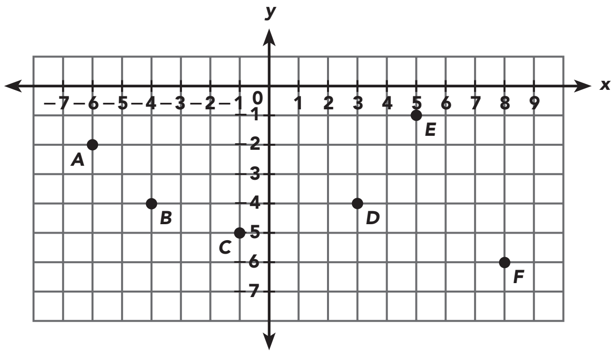


4.



5. M (0, −4), N (7, −5), P (8, 8), Q (0, 8), R (−5, 6), S (0, 3), T (−2, 0), U (−6, −3), V (−2, −6), W (2, −6)

6. Quadrant III: A, B, C,
Quadrant IV: D, E, F



7. (8, −1)

8. (6, 4)

9. (−3, −3)

10. (−6, 2)