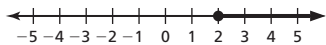


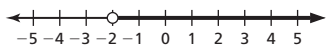
4. $u < 1$;



5. $c \geq 2$;



6. $p > -2$;



7. a. $m + 12.25 \leq 15$

b. $m \leq 2.75$

2.3 Explorations

1. a. 0; 3; 6; 9; 12; 15; no; no; no; yes; yes; yes; right graph; $x > 2$

b. i. $x < 2$

ii. $x \leq 1$

iii. $x < 4$

iv. $x \leq 2$

Dividing each side of an inequality by the same positive number produces an equivalent inequality.

2. a. 15; 12; 9; 6; 3; 0; -3; yes; yes; yes; no; no; no; no; left graph; $x < -2$

b. i. $x > -2$

ii. $x \geq -1$

iii. $x > -4$

iv. $x \geq -2$

When dividing each side of an inequality by the same negative number, the direction of the inequality must be reversed to produce an equivalent inequality.

3. Divide each side of the inequality by the same number. If the number is positive, this produces an equivalent inequality. If the number is negative, the inequality must be reversed to be equivalent.

4. a. $x < -3$

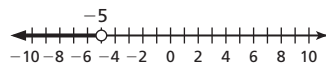
b. $x \geq 3$

c. $x < -2$

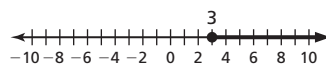
d. $x \geq 0$

2.3 Extra Practice

1. $x < -5$;



2. $f \geq 3$;



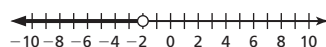
3. $f \geq -2$;



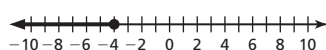
4. $m \leq 4$;



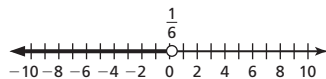
5. $x < -2$;



6. $y \leq -4$;



7. $x < \frac{1}{6}$;



8. $x \leq \frac{5}{2}$;



9. $r + \frac{1}{2}r \leq 36, r \leq 24$

2.4 Explorations

1. a. $x \leq 2$; Subtract x and 3 from each side; B

b. $x < -2$; Subtract x and 3 from each side; Divide each side by -3 ; A

c. $3 \geq x$; Divide each side by 9; E

d. $-2 < x$; Add $6x$ to each side; Divide each side by 8; C

e. $x > 3$; Add $3x$ and 9 to each side; D

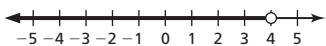
f. $x \geq -4$; Add $9x$ to each side; Divide each side by -2 ; R

2. Simplify each side, if possible, then use inverse operations to isolate the variable. Reverse the inequality symbol if multiplying or dividing by a negative number.

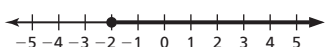
3. Sample answer: $3x + 4 < 1, -2x - 10 > -8$

2.4 Extra Practice

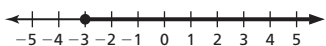
1. $x < 4$;



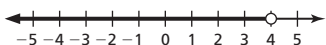
2. $a \geq -2$;



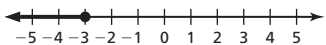
3. $b \geq -3$;



4. $c < 4$;



5. $d \leq -3$;



6. $n > \frac{3}{2}$

7. all real numbers

8. $p \geq 3$

9. no solution

10. no solution

11. $k = -3$

12. $k = -2$

2.5 Explorations

1. a. $x \geq -6$ and $x < 3$

b. $x > -5$ and $x \leq 4$

c. $x \geq -4$ and $x \leq 5$

d. $x > -3$ and $x < 6$

e. and; Both inequalities need to be true for values that are in the interval.

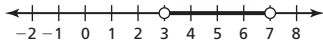
2. a. $x \leq -6$ or $x > 3$

b. $x < -5$ or $x \geq 4$

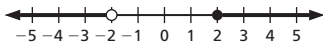
- c. $x \leq -4$ or $x \geq 5$
 d. $x < -3$ or $x > 6$
 e. or; Either inequality needs to be true for values that are in the interval.
3. Write 2 inequalities joined by “and” or “or.”

2.5 Extra Practice

1. $3 < u < 7$;



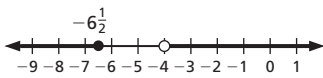
2. $d < -2$ or $d \geq 2$;



3. $-2.4 \leq s \leq 4.2$;



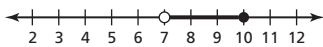
4. $c > -4$ or $c \leq -6\frac{1}{2}$;



5. $-1.5 \leq c < 5.3$;



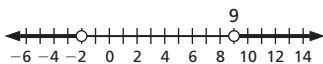
6. $7 < x \leq 10$;



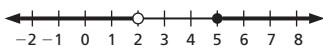
7. $-3 \leq g \leq 2$;



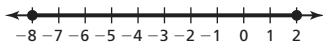
8. $z < -2$ or $z > 9$;



9. $t < 2$ or $t \geq 5$;



10. $-8 \leq x \leq 2$;

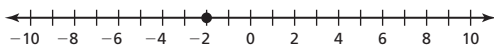


11. $20 \leq h \leq 80$

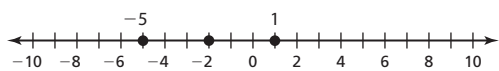
2.6 Explorations

1. a. The inequality is true if the distance between $x + 2$ and 0 is 3 or less; $x + 2 \leq 3$; $x + 2 \geq -3$
 b. $-5 \leq x \leq 1$
 c. Write a compound inequality representing the distance between the absolute value expression and 0.

2. a.



b.



They are solutions of the absolute value inequality.

- c. Plot the distances to determine the endpoints of the solution.

3. a. $-5 \leq x \leq 1$

b. They are the same.

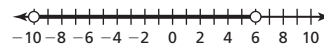
c. Have the spreadsheet calculate the value of the absolute value expression for many values of x , and find the ones that give the expected solution.

4. Solving algebraic equations, graphically on a number line, or by trial and error with a spreadsheet

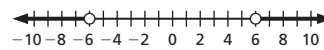
5. *Sample answers:* The algebraic method is nice to use because it is the quickest method. The graphical method is nice to use because it helps to visualize absolute value. The numerical method is not favorable because setting up the spreadsheet is time-consuming.

2.6 Extra Practice

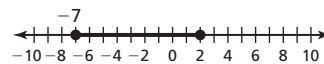
1. $-10 < y < 6$;



2. $q < -6$ or $q > 6$;



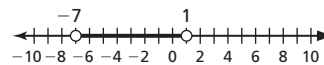
3. $-7 \leq a \leq 2$;



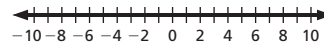
4. $-1 \leq y \leq 7$;



5. $-7 < r < 1$;

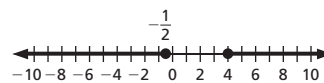


6. all real numbers;

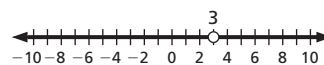


7. no solution

8. $x \leq -\frac{1}{2}$ or $x \geq 4$;



9. $k < 3$ or $k > 3$;



10. $|s - 25,000| \leq 1800$, $23,200 \leq s \leq 26,800$