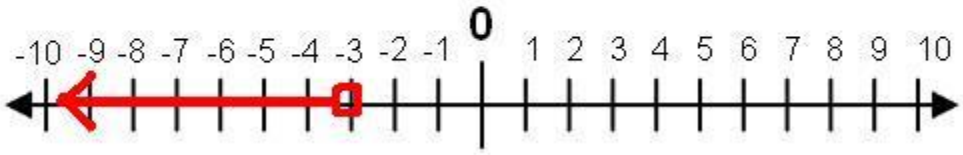
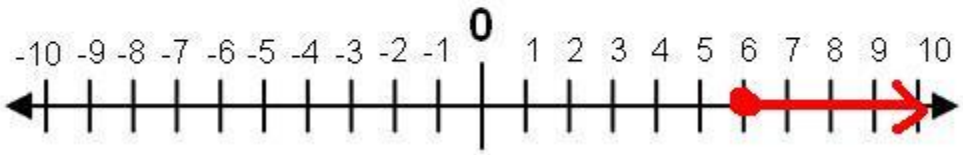
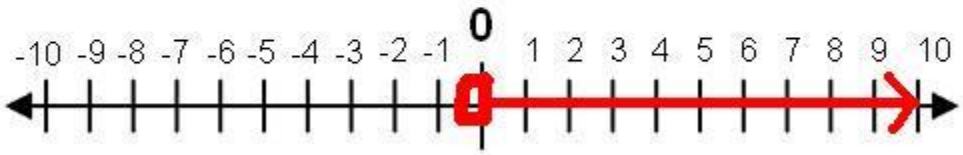
Chapter 6
Lesson 6.1

1. 1. Inequality notation: The answer is expressed as an algebraic inequality.
   2. Set notation: The inequality is rewritten using set notation brackets { }.
   3. Interval notation: This notation uses brackets to denote the range of values in an inequality.
   4. As a graphed sentence on a number line.
2. 

3. 

4. 

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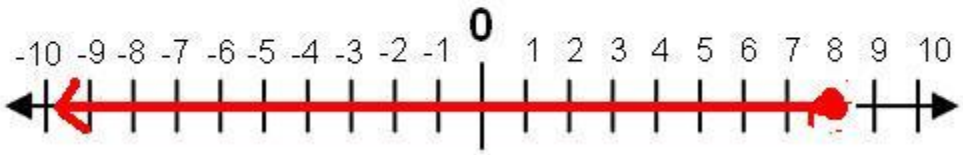
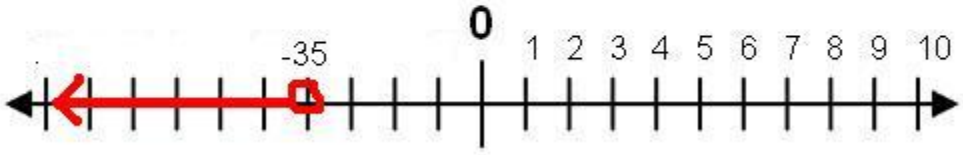
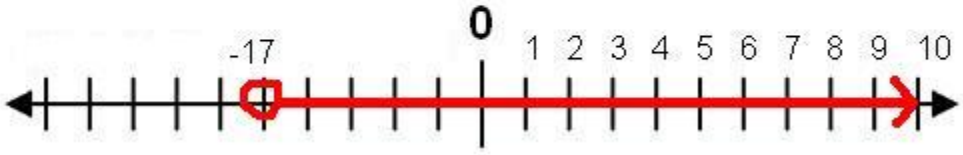

0
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1
1 2 3 4 5 6 7 8 9 10

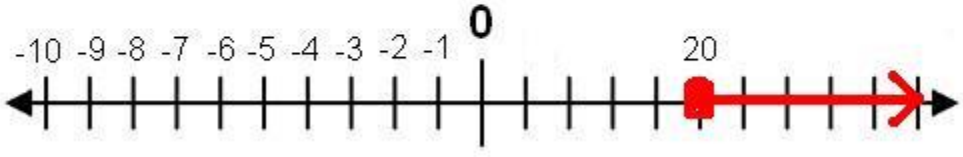
6.


0
-35
1 2 3 4 5 6 7 8 9 10

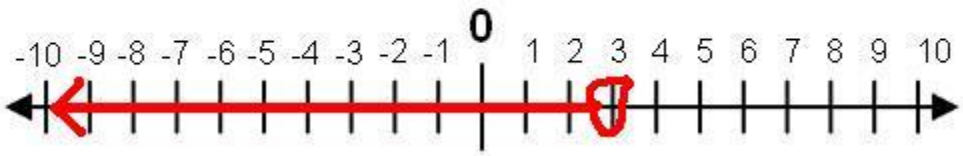
7.


0
-17
1 2 3 4 5 6 7 8 9 10

8.


0
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1
20

9.



10. $x \leq -12$

11. $x > 520$

12. $x < 6.5$

13. $x \geq 85$

14. $x > 30$

15. $x < -10$

16. $x \leq -10$

17. $x \geq 1$

18. $x \geq 48$

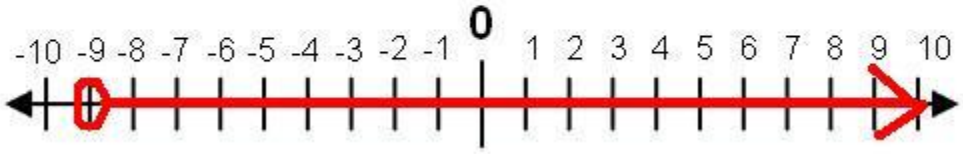
19. $x < 3$

20. $x > 1{,}800$

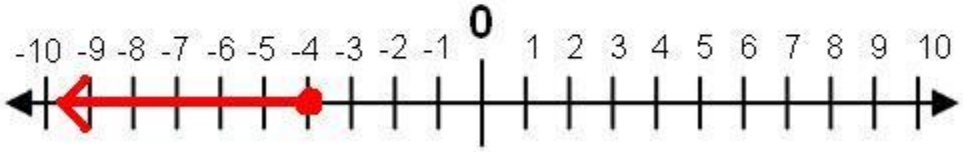
21. $x \leq 6$

22. $x \leq 16$

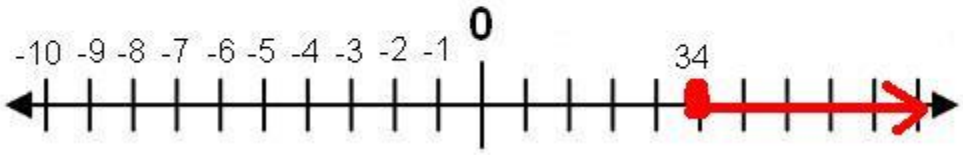
23. $x - 1 > -10$
$+1 \quad +1$
$x > -9$



24. $x - 1 \leq -5$
$+1 \quad +1$
$x \leq -4$



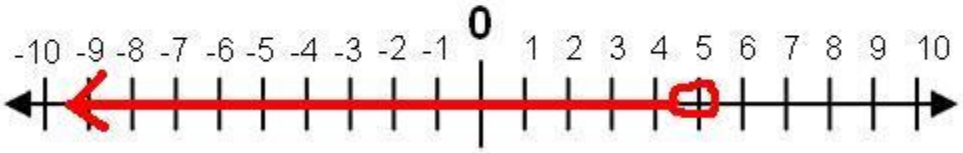
25. $-20 + a \geq 14$
$+ 20 \quad +20$
$a \geq 34$



26. $x + 2 < 7$

$-2 \quad -2$

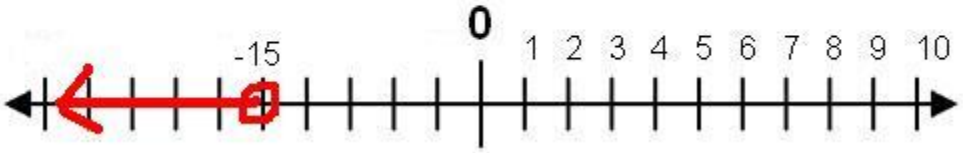
$x < 5$



27. $x + 8 \leq -7$

$-8 \quad -8$

$x < -15$

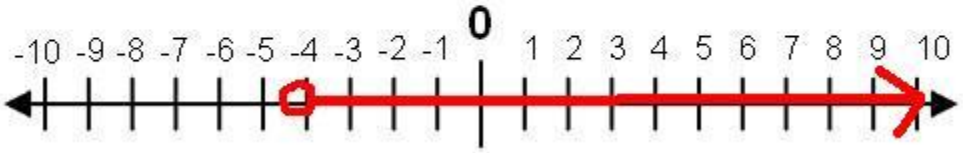


28. $5 + t > \frac{3}{4}$

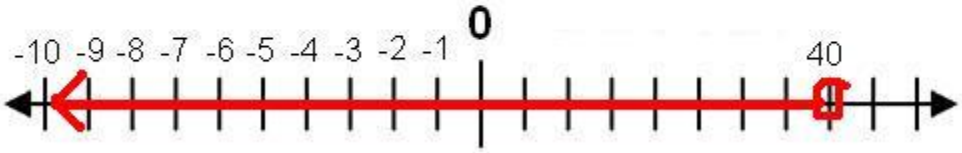
$t > \frac{3}{4} - 5$

$t > \frac{3}{4} - \frac{20}{4}$

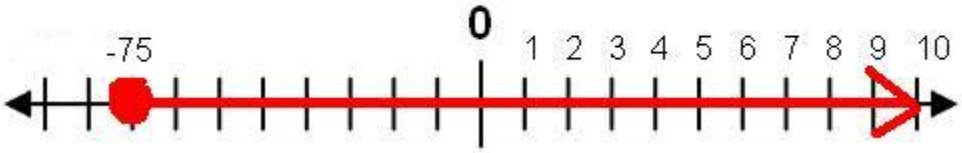
$t > -\frac{17}{4}$



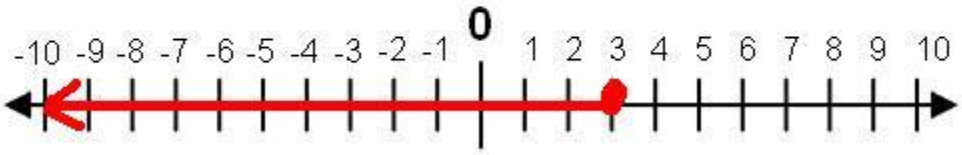
29. $x - 5 < 35$
$+5 \quad +5$
$x < 40$



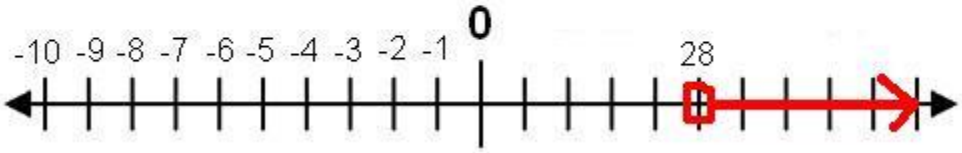
30. $15 + g \geq -60$
$-15 \quad -15$
$g \geq -75$



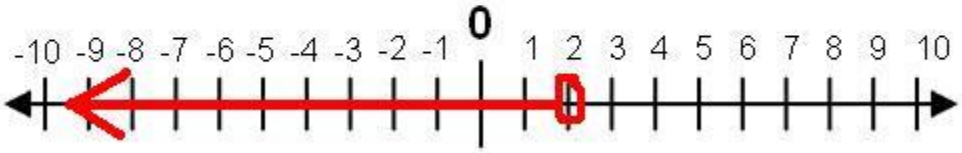
31. $x - 2 \leq 1$
$+2 \quad +2$
$x \leq 3$



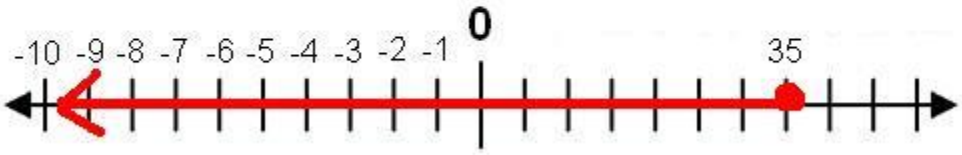
32. $x - 8 > 20$
$+8 \quad +8$
$x > 28$



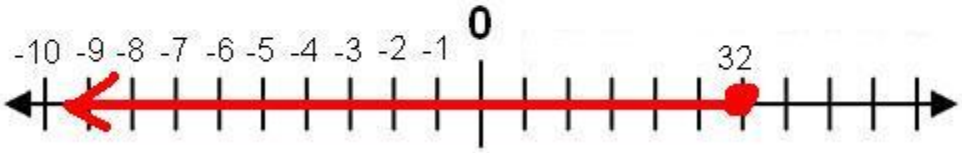
33. $11 + q < 13$
$-11 \quad -11$
$q < 2$



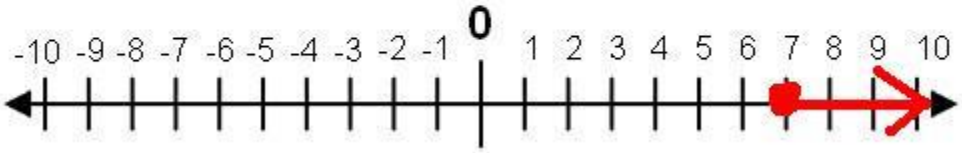
34. $x + 65 < 100$
$-65 \quad -65$
$x < 35$



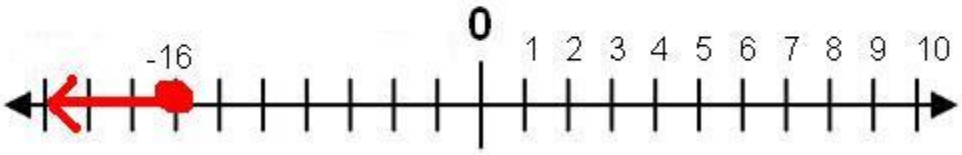
35. $x - 32 \leq 0$
$+32 \quad +32$
$x \leq 32$



36. $x + 68 \geq 75$
$-68 \quad -68$
$x \geq 7$



37. $16 + y \leq 0$
$-16 \quad -16$
$y \leq -16$



38. Two points on the line are (3, –6) and (–2, –2).

The slope of the line is $m = \frac{-2-(-6)}{-2-3} = \frac{8}{-5} = -\frac{8}{5}$

$y - y_1 = m(x - x_1)$

$y + 6 = -\frac{8}{5}(x - 3)$

$y + 6 = -\frac{8}{5}x + \frac{24}{5}$

$y = -\frac{8}{5}x - \frac{6}{5}$

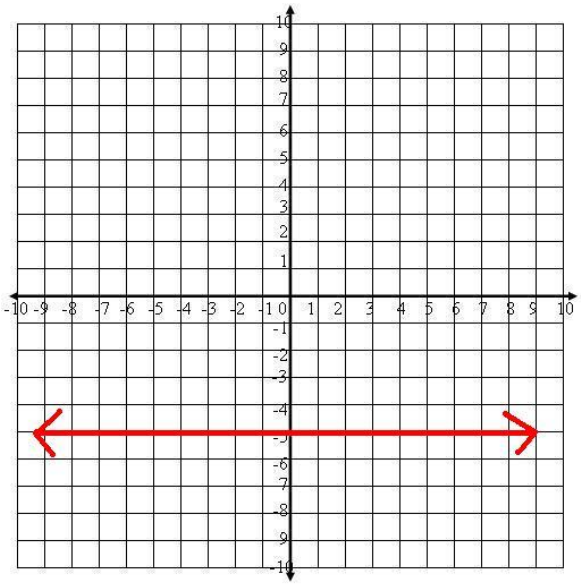
39. $|2 - 11 \times 3| + 1$

$|-27| + 1$

$27 + 1$

28

40. w



41. $y = kx$, where k is the constant of variability

$$\frac{y}{x} = \frac{y}{x}$$

$$\frac{\frac{4}{5}}{-1} = \frac{y}{\frac{16}{3}}$$

$$-y = \left(\frac{4}{5}\right)\left(\frac{16}{3}\right)$$

$$-y = \frac{64}{15}$$

$$y = -\frac{64}{15}$$

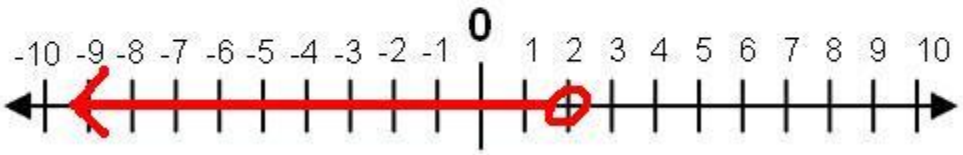
42. $-2x + 7y = 63$

$$7y = 2x + 63$$

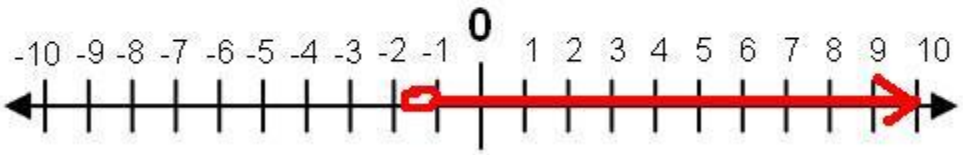
$$y = \frac{2}{7}x + 9$$

Lesson 6.2

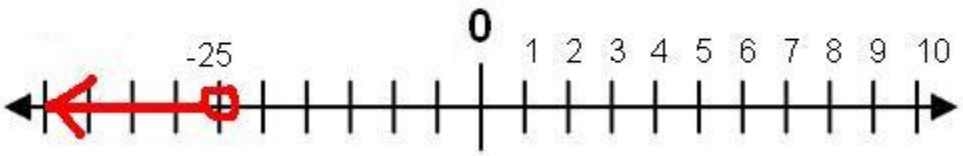
1. One would change the inequality sign when dividing or multiplying by a negative number.
2. $3x < 6$
   $x < 2$



3. $\frac{x}{5} > -\frac{3}{10}$
   $x > \frac{-15}{10}$
   $x > -\frac{3}{2}$

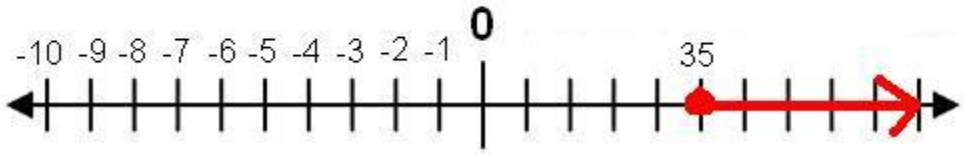


4. $-10x > 250$
   $x < -25$



5. $\frac{x}{-7} \geq -5$

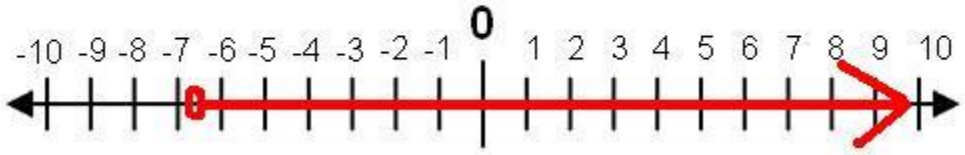
$x \geq 35$



6. $9x > -\frac{3}{4}$

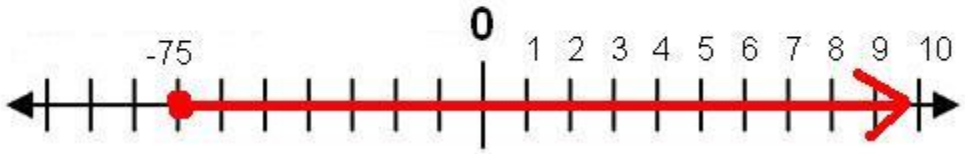
$x > -\frac{3}{4}(9)$

$x > -\frac{27}{4}$



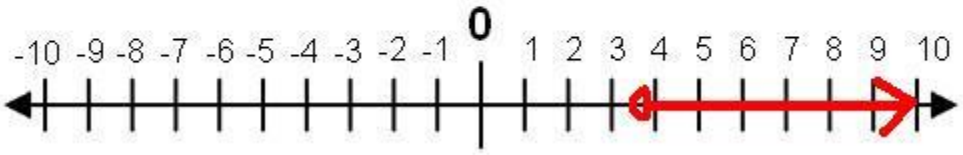
7. $\frac{x}{-15} \leq 5$

$x \geq -75$



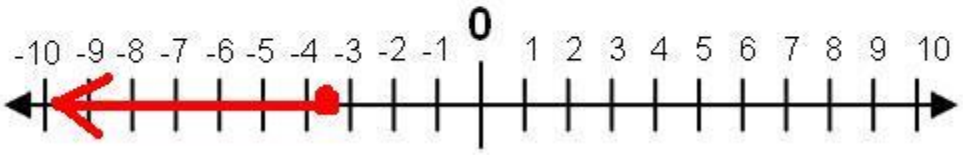
8. $620x > 2400$

$x > \frac{115}{31}$



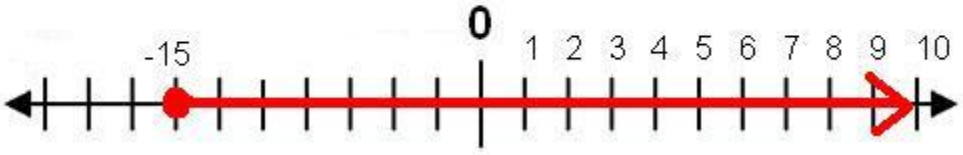
9. $\frac{x}{20} \leq \frac{-7}{40}$

$x \leq -\frac{7}{2}$



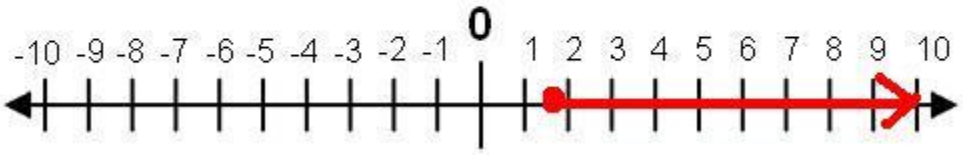
10. $-0.5x \leq 7.5$

$x \geq -15$



11. $75x \geq 125$

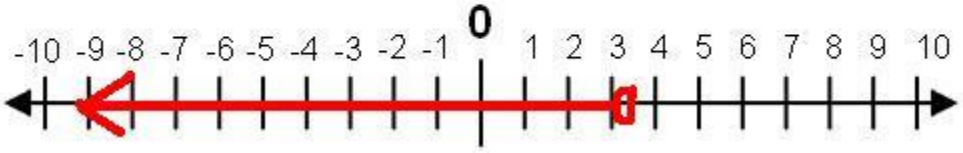
$x \geq \frac{5}{3}$



12. $\frac{x}{-3} > -\frac{10}{9}$

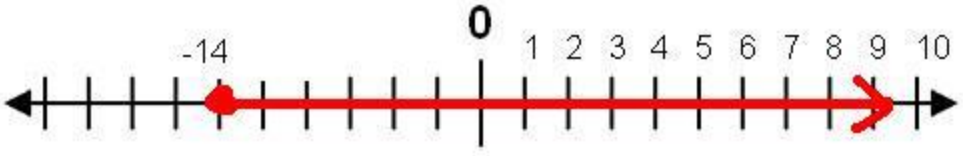
$x < \frac{30}{9}$

$x < \frac{10}{3}$



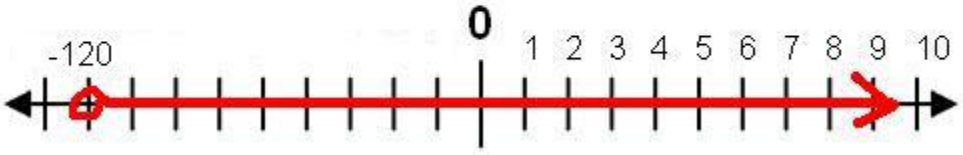
13. $\frac{k}{-14} \leq 1$

$k \geq -14$



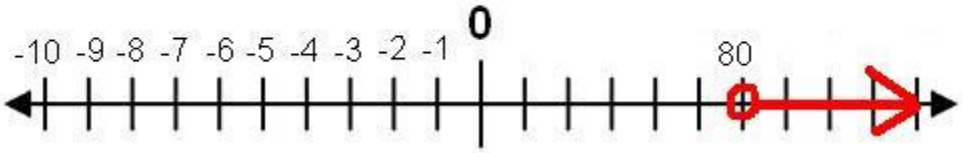
14. $\frac{x}{-15} < 8$

$x > -120$



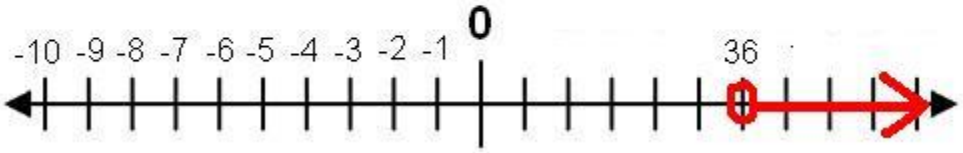
15. $\frac{x}{2} > 40$

$x > 80$



16. $\frac{x}{-3} \leq -12$

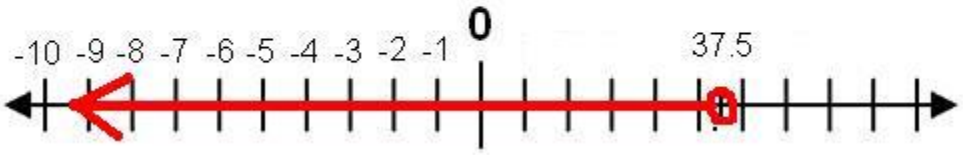
$x > 36$



17. $\frac{x}{25} < \frac{3}{2}$

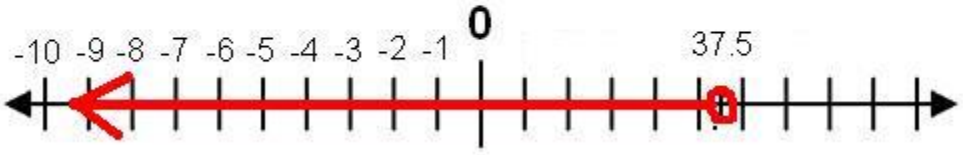
$x < \frac{3}{2}(25)$

$x < \frac{75}{2}$



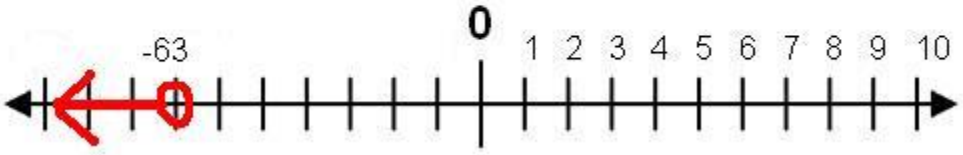
18. $\frac{x}{-7} \geq 9$

$x < -63$

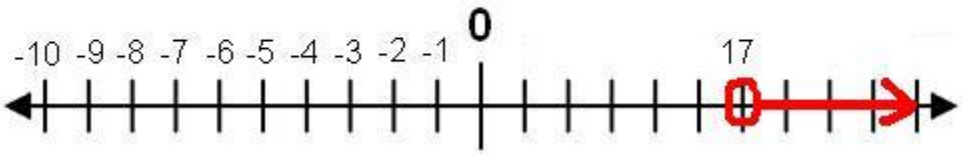


19. $4x < 24$

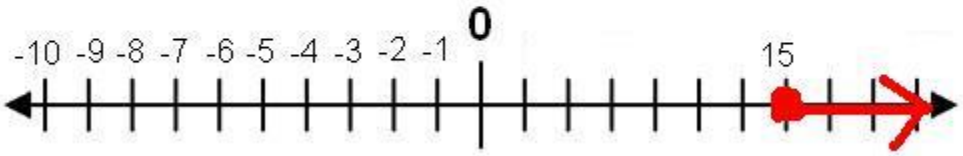
$x < 6$



20. $238 < 14d$
$17 < d$



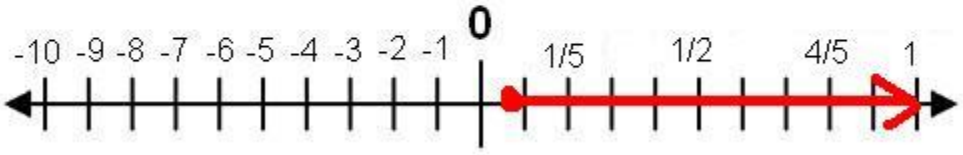
21. $-19m < -285$
$m \geq 15$



22. $-9x \leq -\frac{3}{5}$

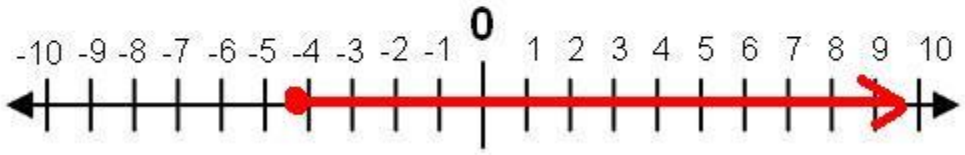
$x \geq -\frac{3}{5}\left(-\frac{1}{9}\right)$

$x \geq \frac{1}{15}$



23. $-5x \leq 21$

$x \geq -\frac{21}{5}$



24. $lw = A$

$16l > 180$

$l > 11.25$

25. $0.90x \leq 45$

$x < 50$

26. $2x \geq 22$

$x \geq 44$

$[44, \infty)$

27. c = the number of cookies Anna had to make

$c - 36 \leq 24$

$c \leq 60$

$\{c | \, c \leq 60\}$

28. $31.85 + d \geq 97.12$, where d = the deposit

$d \geq 65.27$

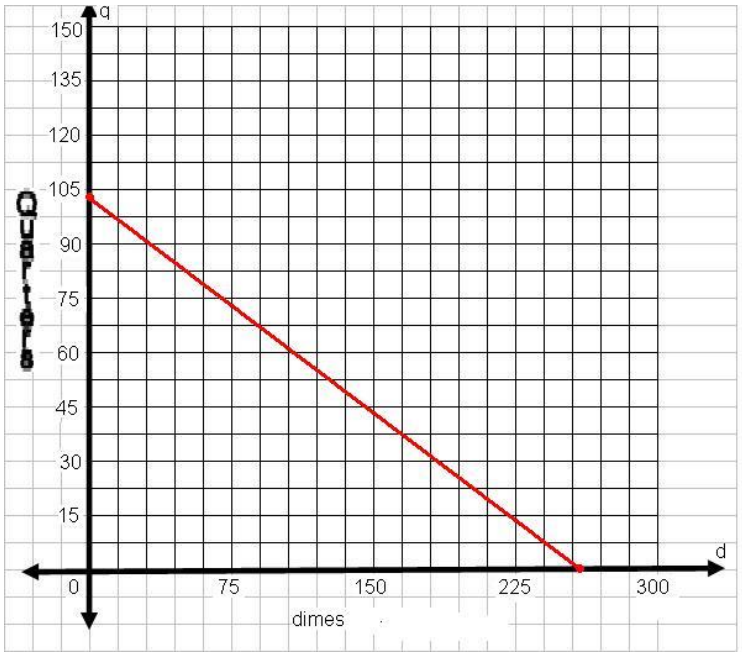
29. $v = -|2 - (-19) + 6| = -|21 + 6| = -(27) = -27$

30. a. Let d = the number of dimes and q = the number of quarters. Then

$0.10d + 0.25q = 26.00$

$0.25q = -0.10d + 26.00$

$$q = -\frac{2}{5}d + 104$$



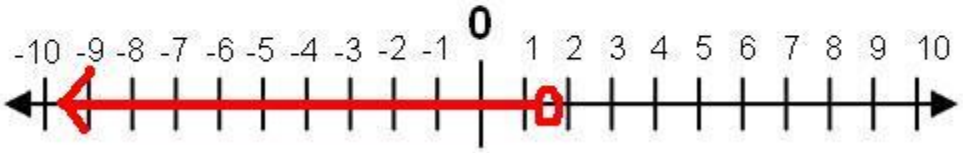
b. $26.00 - 13.50 = 12.50$

$$\frac{12.50}{0.1} = 125$$

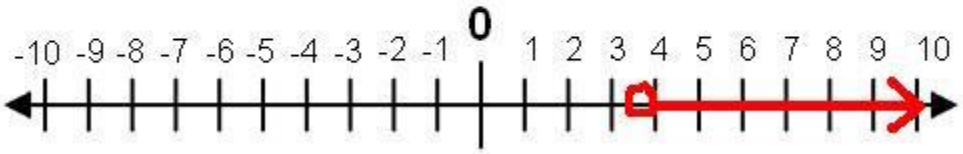
There would be 125 dimes.

Lesson 6.3

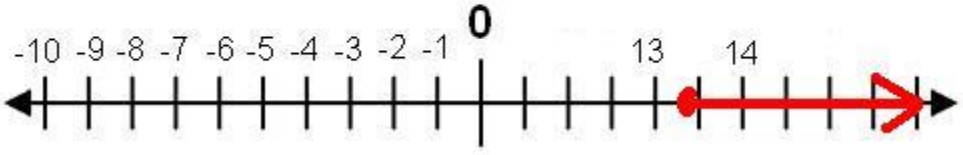
1. $6x - 5 < 10$
   $6x < 15$
   $x < \frac{5}{3}$ OR $1.\overline{6}$



2. $-9x < -5x - 15$
   $+5x \quad +5x$
   $-4x < -15$
   $x > \frac{15}{4}$ OR 3.75



3. $\frac{-9x}{5} \leq 24$
   $x \geq 24\left(-\frac{5}{9}\right)$
   $x \geq -\frac{40}{3}$ OR $13.\overline{3}$



4. $\frac{9x}{5} - 7 \geq -3x + 12$

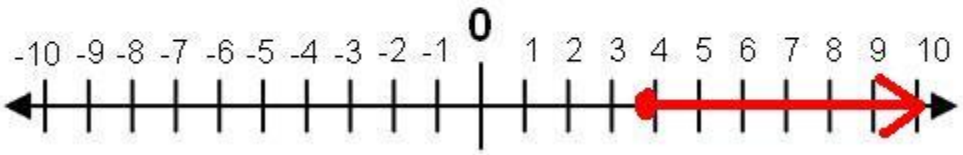
$+7 \qquad\qquad +7$

$5\left(\frac{9x}{5}\right) \geq 5(-3x + 19)$

$9x \geq -15x + 19$

$24x \geq 95$

$x \geq \frac{95}{24}$ OR $3\frac{23}{24}$



5. $\frac{5x-1}{4} > -2x - 10$

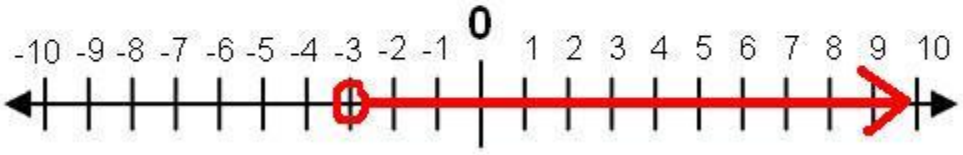
$5x - 1 > 4(-2x - 10)$

$5x - 1 > -8x - 40$

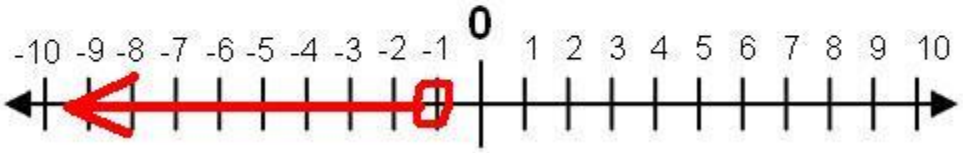
$13x - 1 > -40$

$13x > -39$

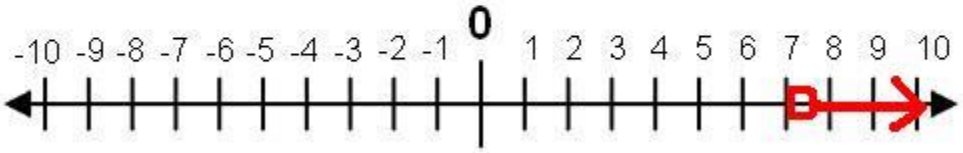
$x > -3$



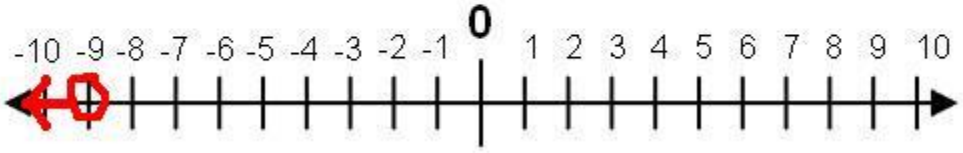
6. $4x + 3 < -1$
   $4x < -4$
   $x < -1$



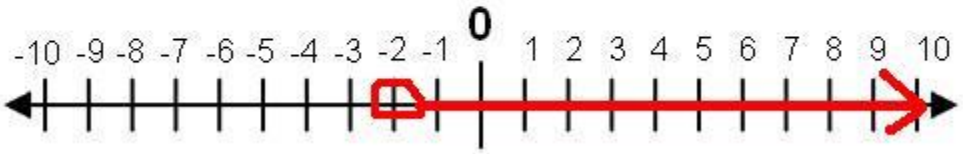
7. $2x < 7x - 36$
   $-5x < -36$
   $x > \frac{36}{5}$ OR $7\frac{1}{5}$



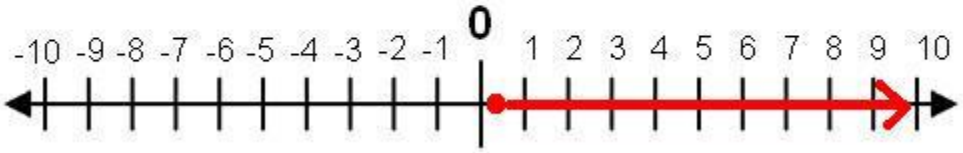
8. $5x > 8x + 27$
   $-3x > 27$
   $x < -9$



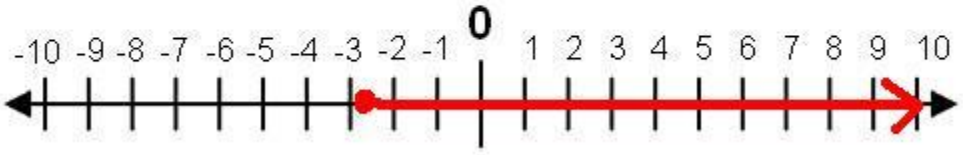
9. $5 - x < 9 + x$
   $5 < 9 + 2x$
   $-4 < 2x$
   $-2 < x$
   OR
   $x > -2$



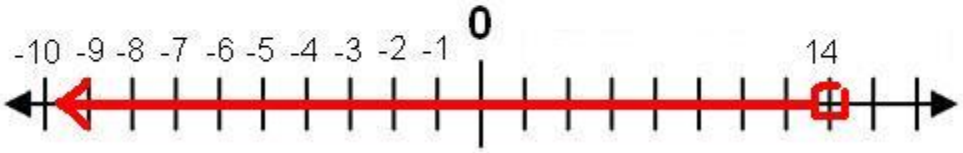
10. $4 - 6x \leq 4x + 6$
    $4 \leq 10x + 6$
    $-2 \leq 10x$
    $-\frac{1}{5} \leq x$
    OR
    $x \geq -\frac{1}{5}$



11. $5(4x + 3) \geq 9(x - 2) - x$
$20x + 15 \geq 9x - 18 - x$
$20x + 15 \geq 8x - 18$
$12x + 15 \geq -18$
$12x \geq -33$
$x \geq -\frac{33}{12}$ OR $-2\frac{3}{4}$



12. $2(2x - 1) + 3 < 5(x + 3) - 2x$
$4x - 2 + 3 < 5x + 15 - 2x$
$4x + 1 < 3x + 15$
$x + 1 < 15$
$x < 14$



13. $8x - 5(4x + 1) \geq -1 + 2(4x - 3)$

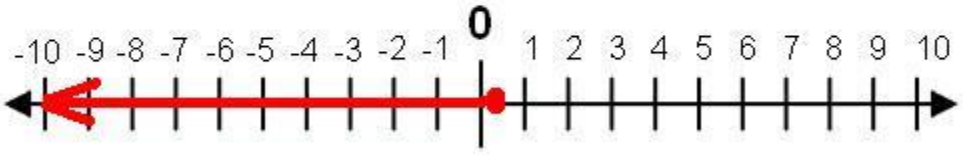
$8x - 20x - 5 \geq -1 + 8x - 6$

$-12x - 5 \geq 8x - 7$

$-20x - 5 \geq -7$

$-20x \geq -2$

$x \leq \frac{1}{10}$



14. $2(7x - 2) - 3(x + 2) < 4x - (3x + 4)$

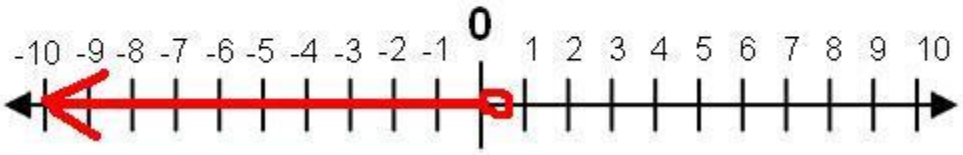
$14x - 4 - 3x - 6 < 4x - 3x - 4$

$11x - 10 < x - 4$

$10x - 10 < -4$

$10x < 6$

$x < \frac{3}{5}$



15. $\frac{2}{3}x-\frac{1}{2}(4x-1)\geq x+2(x-3)$

$\frac{2}{3}x-2x+\frac{1}{2}\geq x+2x-6$

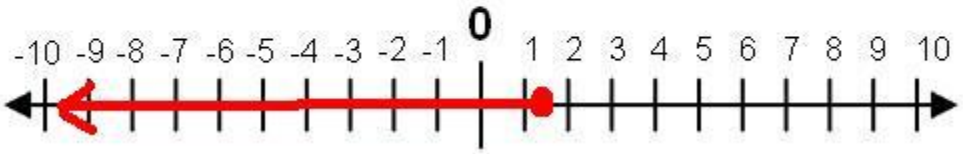
$-\frac{4}{3}x+\frac{1}{2}\geq 3x-6$

$-\frac{16}{3}x+\frac{1}{2}\geq -6$

$-\frac{16}{3}x\geq -\frac{13}{2}$

$x\leq\left(-\frac{13}{2}\right)\left(-\frac{3}{16}\right)$

$x\leq\frac{39}{32}$ OR $1\frac{7}{32}$



16. Let x = the number of visits to the zoo.

$22.75x > 71$

$x>\frac{71}{22.75}\approx 3.1208$

A visitor can visit at most 3 times before exceeding the yearly pass price.

17. Let x = the score needed for the last test.

$\frac{82+95+86+88+x}{5}\geq 90$

$\frac{351+x}{5}\geq 90$

$351+x\geq 450$

$x\geq 99$

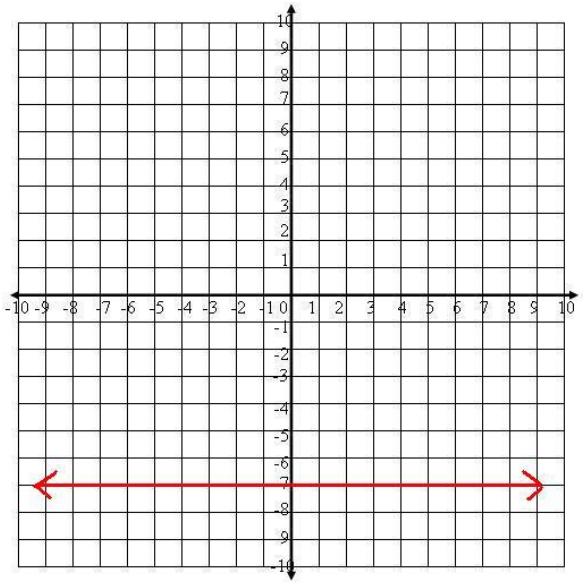
He must score a 99 on the final test to have an average of at least 90.

18. Let t = the number of ties he buys.
$50t \leq 200$
$t \leq 4$
At most, he can buy 4 ties.

19. Let b = the number of boxes of cookies.
$4.50b \geq 650$
$b \geq 144.4\ldots$
The troup must sell at least 145 boxes of cookies.

20. $10 \geq -5f$
$-2 \leq f$

21.



22. The value $\sqrt{5}$ is a real, irrational number.

23. a) Make a Table – Example: *Josie takes up jogging. On the first week she jogs for 10 minutes per day, on the second week she jogs for 12 minutes per day. Each week, she wants to increase her jogging time by 2 minutes per day. If she jogs six days per week each week, what will be her total jogging time on the sixth week?*
b) Look for a Pattern – Example: *You arrange tennis balls in triangular shapes as shown. How many balls will there be in a triangle that has 8 layers?*
c) Guess and Check – Example: *Nadia takes a ribbon that is 48 inches long and cuts it in two pieces. One piece is three times as long as the other. How long is each piece?*
d) Work Backward – Example: *Anne has a certain amount of money in her bank account on Friday morning. During the day she writes a check for $24.50, makes an ATM withdrawal of $80 and deposits a check for $235. At the end of the day she sees that her balance is $451.25. How much money did she have in the bank at the beginning of the day?*

e) Use a Formula – Example: *An architect is designing a room that is going to be twice as long as it is wide. The total square footage of the room is going to be* 722 *square feet. What are the dimensions in feet of the room?*
f) Read a Graph – Example: *Christine took one hour to read 22 pages of* "Harry Potter and the Order of the Phoenix." *She has 100 pages left to read in order to finish the book. Assuming that she reads at a constant rate of pages per hour, how much time should she expect to spend reading in order to finish the book?*
g) Make a Graph – Example: *A cell phone company is offering its costumers the following deal. You can buy a new cell phone for $60 and pay a monthly flat rate of $40 per month for unlimited calls. How much money will this deal cost you after 9 months?*
h) Use a Linear Model – Example: *A cylinder is filled with water to a height of 73 centimeters. The water is drained through a hole in the bottom of the cylinder and measurements are taken at two second intervals. The table below shows the height of the water level in the cylinder at different times.*
i) Dimensional Analysis – Example: *How many grams are in 5 pounds?*

24. $A = \pi r^2$

$196\pi = \pi r^2$

$196 = r^2$

$14 \text{ inches} = r$

25. $\frac{6}{a} = \frac{-22}{a+4}$

$-22a = 6(a + 4)$

$-22a = 6a + 24$

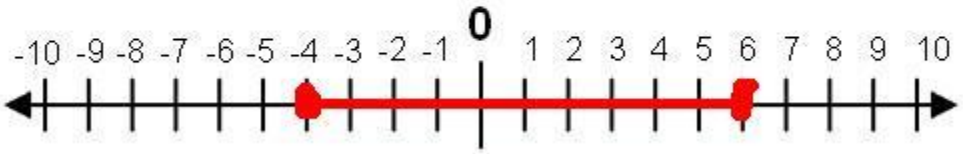
$-28a = 24$

$a = \frac{24}{-28} = -\frac{6}{7}$

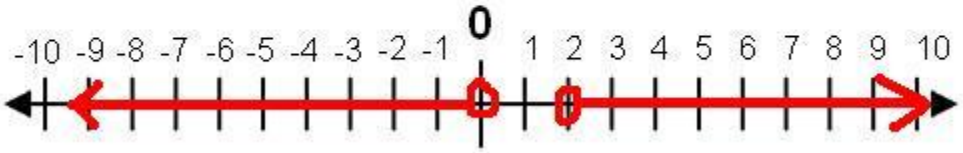
Lesson 6.4

1. The solution set to a compound inequality joined by the work “and” will have two endpoints and all the numbers between the points shaded.
2. The difference with “or” inequalities is the shading would be on the outside of the points instead of between them.
3. 1. Separate the inequality into two distinct inequalities.
   2. Determine if there should be an “and” or an “or” between them.
   3. Solve each individual inequality.
   4. Graph the solutions which satisfy both inequalities.
4. $-40 \leq x < 60$
5. $x < -2$ or $x \geq 5$
6. $-8 < x < 0$
7. $x \leq -2$ or $x > 1.5$
8. $-25 < x < 25$
9. $x \leq -1$ or $x \geq 4$
10. $x < -2$ or $x > 1$

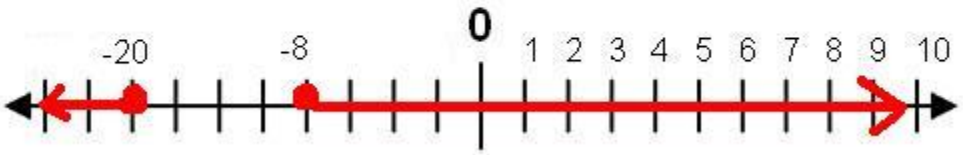
11.



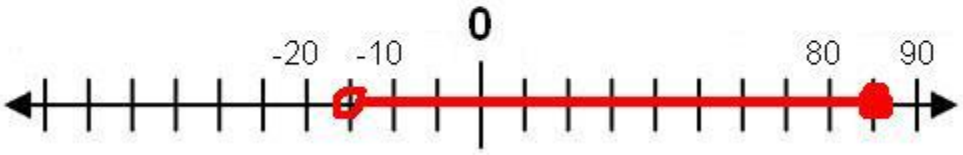
12.



13.



14.

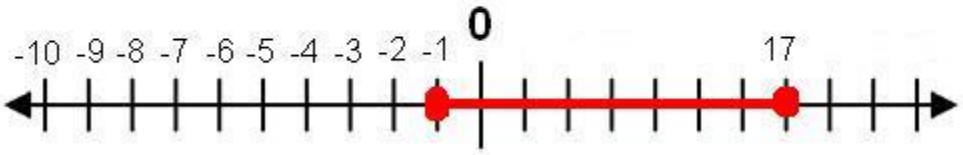


15. $-5 \leq x - 4 \leq 13$

$-5 \leq x - 4$ AND $x - 4 \leq 13$

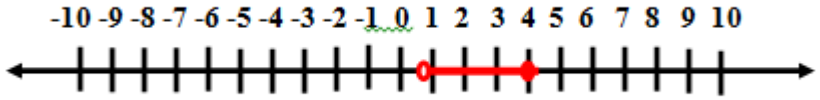
$-1 \leq x$ AND $x \leq 17$

$-1 \leq x \leq 17$



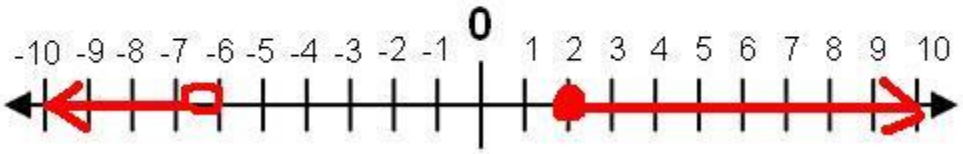
16. $-2 < 4x - 5 \leq 11$

$-2 < 4x - 5$	AND	$4x - 5 \leq 11$
$3 < 4x$	AND	$4x \leq 16$
$0.75 < x$		$x < 4$
		$0.75 < x \leq 4$



17. $\frac{x-2}{6} \leq 2x - 4$ OR $\frac{x-2}{6} > x + 5$

$x - 2 \leq 12x - 24$	OR	$x - 2 > 6x + 30$
$-11x \leq -22$	OR	$-5x > 32$
$x \geq 2$	OR	$x < -\frac{32}{5}$



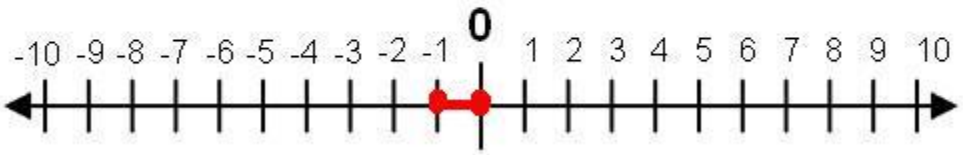
18. $1 \leq 3x + 4 \leq 4$

$1 \leq 3x + 4$ AND $3x + 4 \leq 4$

$-3 \leq 3x$ AND $3x \leq 0$

$-1 \leq x$ AND $x \leq 0$

$-1 \leq x \leq 0$



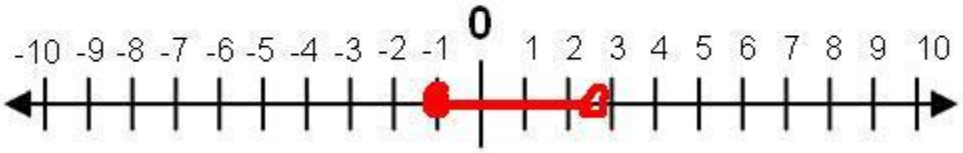
19. $-12 < 2 - 5x \leq 7$

$-12 < 2 - 5x$ AND $2 - 5x \leq 7$

$-14 < -5x$ AND $-5x \leq 5$

$\frac{14}{5} > x$ AND $x \geq -1$

$-1 \leq x < 2\frac{4}{5}$



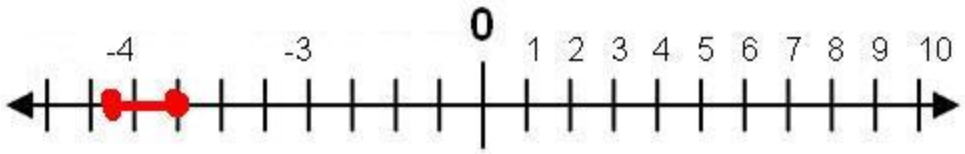
20. $\frac{3}{4} \le 2x+9 \le \frac{3}{2}$

$\frac{3}{4} \le 2x+9$ AND $2x+9 \le \frac{3}{2}$

$-\frac{33}{4} \le 2x$ AND $2x \le -\frac{15}{2}$

$-\frac{33}{8} \le x$ AND $-\frac{15}{4} \le x$

$-4\frac{1}{8} \le x \le -3\frac{3}{4}$



21.

$-2 < \frac{2x-1}{3} < -1$

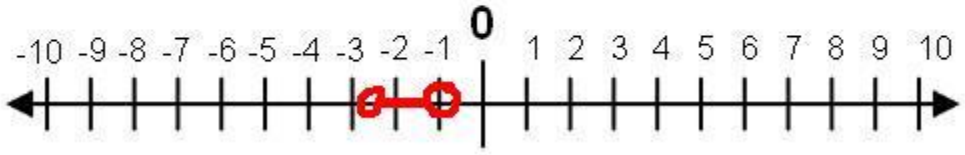
$-2 < \frac{2x-1}{3}$ AND $\frac{2x-1}{3} < -1$

$-6 < 2x - 1$ AND $2x - 1 < -3$

$-5 < 2x$ AND $2x < -2$

$-\frac{5}{2} < x$ AND $x < -1$

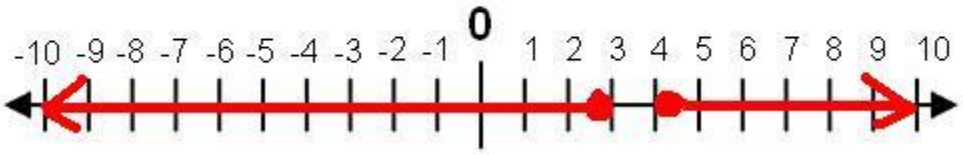
$-\frac{5}{2} < x < -1$



22. $3x + 2 \leq 10$ OR $3x + 2 \geq 15$

$3x \leq 8$ OR $3x \geq 13$

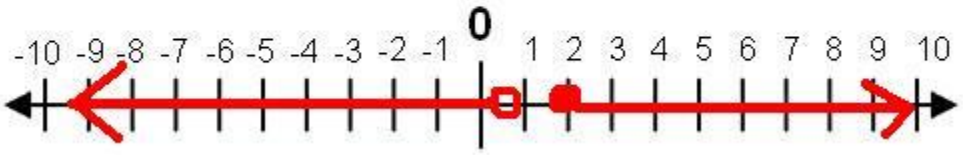
$x \leq \frac{8}{3}$ OR $x \geq \frac{13}{3}$



23. $4x - 1 \geq 7$ OR $\frac{9x}{2} < 3$

$4x \geq 8$ OR $9x < 6$

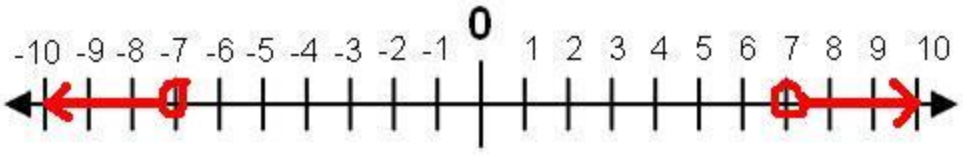
$x \geq 2$ OR $x < \frac{2}{3}$



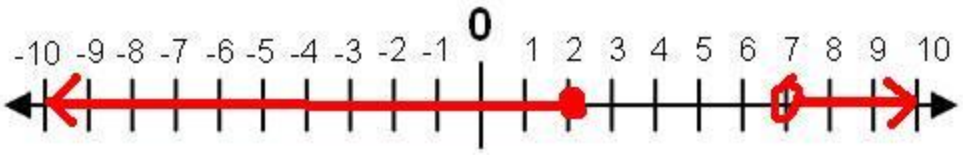
24. $3 - x < -4$ OR $3 - x > 10$

$-x < -7$ OR $-x > 7$

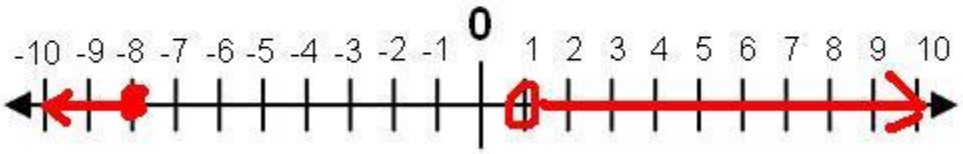
$x > 7$ OR $x < -7$



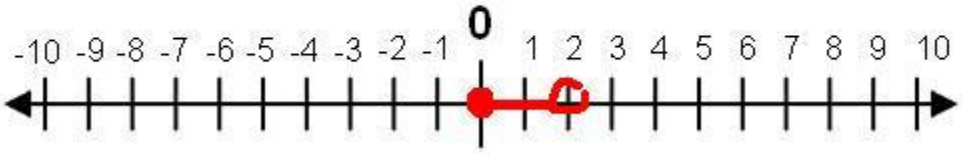
25. $2x - 7 \leq -3$ OR $2x - 3 > 11$
$2x \leq 4$ OR $2x > 14$
$x \leq 2$ OR $x > 7$



26. $-6d > 48$ OR $10 + d > 11$
$d < -8$ OR $d > 1$



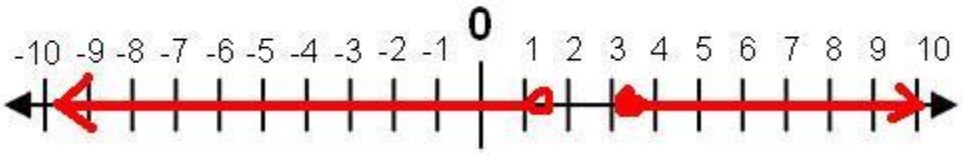
27. $6 + b < 8$ OR $b + 6 \geq 6$
$b < 2$ OR $b \geq 0$



28. $4x + 3 < 9$ OR $-5x + 4 \leq -12$

$4x < 6$ OR $-5x \leq -16$

$x < \frac{3}{2}$ OR $x \geq \frac{16}{5}$



29. $50 \leq -32t + 80 \leq 60$

$50 \leq -32t + 80$ AND $-32t + 80 \leq 60$

$-30 \leq -32t$ AND $-32t \leq -20$

$0.9375 \geq t$ AND $t \geq 0.625$

$0.625 \leq t \leq 0.9375$

The ball will have a velocity of between 50 and 60 ft/sec from 0.625 seconds and 0.9375 seconds.

30. $16 \leq \frac{40t}{15} \leq 18$

$16 \leq \frac{40t}{15}$ AND $\frac{40t}{15} \leq 18$

$240 \leq 40t$ AND $40t \leq 270$

$6 \leq t$ AND $t \leq 6.75$

William can drive for 6 to 6.75 hours.

31. $80 \leq \frac{92+78+85+x}{4} < 90$

$80 \leq \frac{92+78+85+x}{4}$ AND $\frac{92+78+85+x}{4} < 90$

$320 \leq 255 + x$ AND $255 + x < 360$

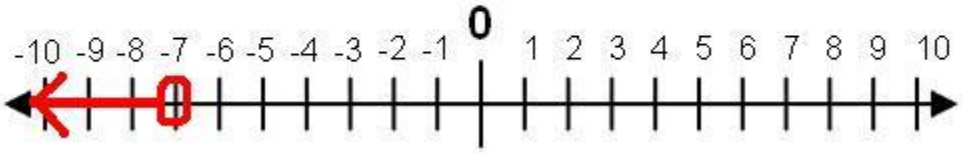
$65 \leq x$ AND $x < 105$

Stacey can make between a 65 and 105 to get a B.

32. $\frac{x+3}{2} < -4$

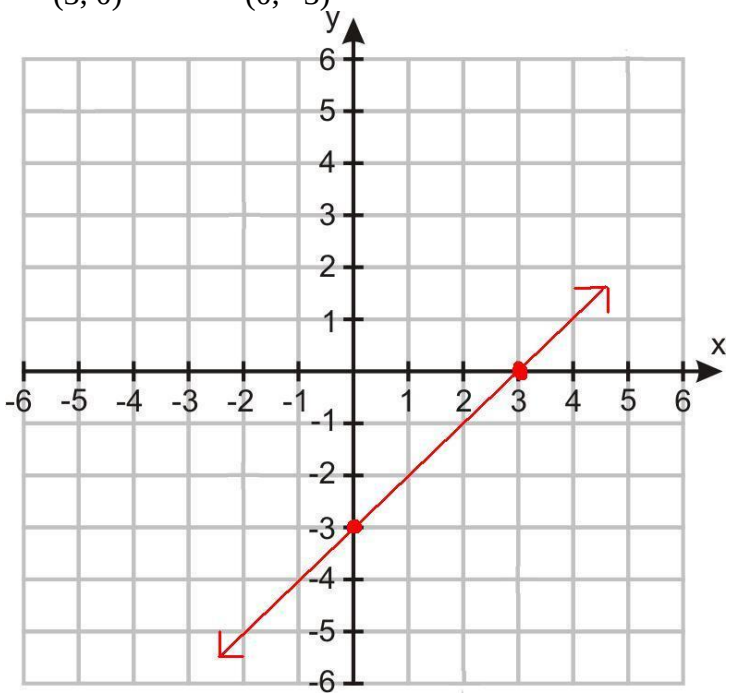
$x + 3 < -4$

$x < -7$



33. $2x - 2y = 6$

$2x = 6$	$-2y = 6$
$x = 3$	$y = -3$
$(3, 0)$	$(0, -3)$



34. $y+1=\frac{2}{5}(x-5)$

$y+1=\frac{2}{5}x-2$

$y=\frac{2}{5}x-3$

Slope = $\frac{2}{5}$; y-intercept = –3

35. $\frac{3 \text{ feet}}{1 \text{ foot}}=\frac{16 \text{ feet}}{x \text{ feet}}$

$3x = 16$

$x = 5.333$ feet

36. $1.99x > 16.99$

$x > 8.538$

George will pay less than Sheri when she watches 9 movies or more.

37. $-2\frac{1}{5}\div 1\frac{3}{4}=-\frac{11}{5}\div\frac{7}{4}=-\frac{11}{5}\left(\frac{4}{7}\right)=-\frac{44}{35}$ OR $-1\frac{9}{35}$

38. The slope of the line represented by y = 5x – 2 is 5. Therefore the slope of the new line must also be 5.

$y - y_1 = m(x - x_1)$

$y - 1 = 5(x - 1)$

$y - 1 = 5x - 5$

$y = 5x - 4$

Lesson 6.5

1. $|250| = 250$

2. $|-12| = 12$

3. $\left|-\frac{2}{5}\right| = \frac{2}{5}$

4. $\left|\frac{1}{10}\right| = \frac{1}{10}$

5. $|12 - (-11)| = |23| = 23$

6. $|5 - 22| = |-17| = 17$

7. $|-9 - (-18)| = |9| = 9$

8. $|-2 - 3| = |-5| = 5$

9. $\left|\frac{2}{3} - (-11)\right| = \left|\frac{2}{3} + \frac{33}{3}\right| = \left|\frac{35}{3}\right| = \frac{35}{3}$ OR $11\frac{2}{3}$

10. $|-10.5 - (-9.75)| = |-0.75| = 0.75$

11. $|36 - 14| = |22| = 22$

12. $|x - 5| = 10$

$x - 5 = 10$	OR	$x - 5 = -10$
$x = 15$	OR	$x = -5$

13. $|5r - 6| = 9$

$5r - 6 = 9$	OR	$5r - 6 = -9$
$5r = 15$	OR	$5r = -3$
$r = 3$	OR	$r = -\frac{3}{5}$

14. $1 = \frac{|6 + 5z|}{5}$

$5 = 6 + 5z$	OR	$-5 = 6 + 5z$
$-1 = 5z$	OR	$-11 = 5z$
$z = -\frac{1}{5}$	OR	$z = -\frac{11}{5}$

15. $|8x| = 32$

$8x = 32$	OR	$8x = -32$
$x = 4$	OR	$x = -4$

16. $\left|\frac{m}{8}\right| = 1$

$\frac{m}{8} = 1$	OR	$\frac{m}{8} = -1$
$m = 8$	OR	$m = -8$

17. $|x + 2| = 6$

$x + 2 = 6$	OR	$x + 2 = -6$
$x = 4$	OR	$x = -8$

18. $|5x - 2| = 3$

$5x - 2 = 3$	OR	$5x - 2 = -3$
$5x = 5$	OR	$5x = -1$
$x = 1$	OR	$x = -\frac{1}{5}$

19. $51 = |1 - 5b|$

$51 = 1 - 5b$	OR	$-51 = 1 - 5b$
$50 = -5b$	OR	$-52 = -5b$
$-10 = b$	OR	$b = \frac{52}{5}$

20. $8 = 3 + |10y + 5|$

$5 = |10y + 5|$

$10y + 5 = 5$	OR	$10y + 5 = -5$
$10y = 0$	OR	$10y = -10$
$y = 0$	OR	$y = -1$

21. $|4x - 1| = 19$

$4x - 1 = 19$	OR	$4x - 1 = -19$
$4x = 18$	OR	$4x = -20$
$x = \frac{9}{2}$	OR	$x = -5$

22. $8|x + 6| = -48$

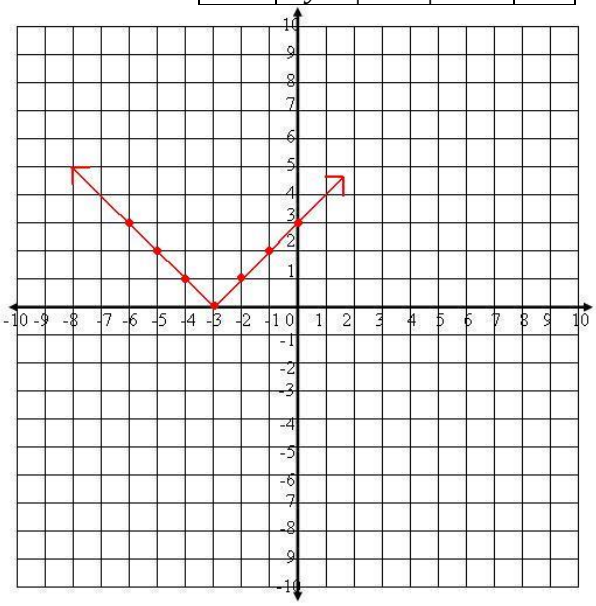
$|x + 6| = -6$

NO SOLUTION because absolute value cannot equal a negative value.

23. The vertex and the fact that it is symmetrical.
24. Several x-values that would be appropriate are (-5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5).

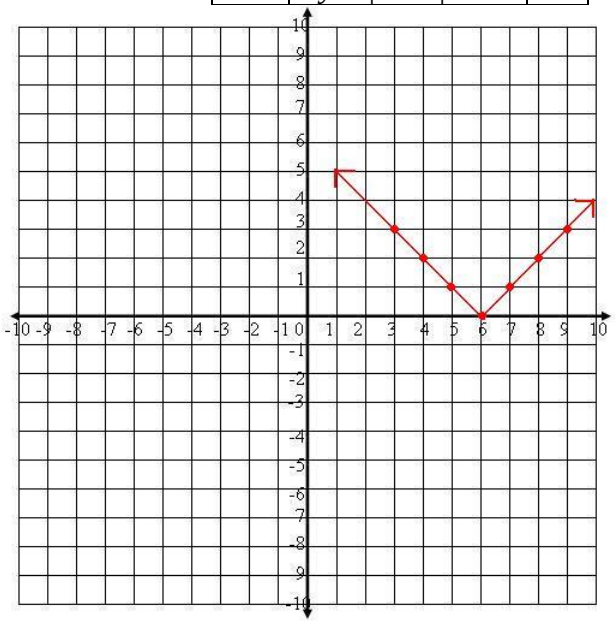
25.

x	$y = \|x + 3\|$	y
–6	$y = \|–6 + 3\| = 3$	3
–5	$y = \|–5 + 3\| = 2$	2
–4	$y = \|–4 + 3\| = 1$	1
–3	$y = \|–3 + 3\| = 0$	0
–2	$y = \|–2 + 3\| = 1$	1
–1	$y = \|–1 + 3\| = 2$	2
0	$y = \|0 + 3\| = 3$	3



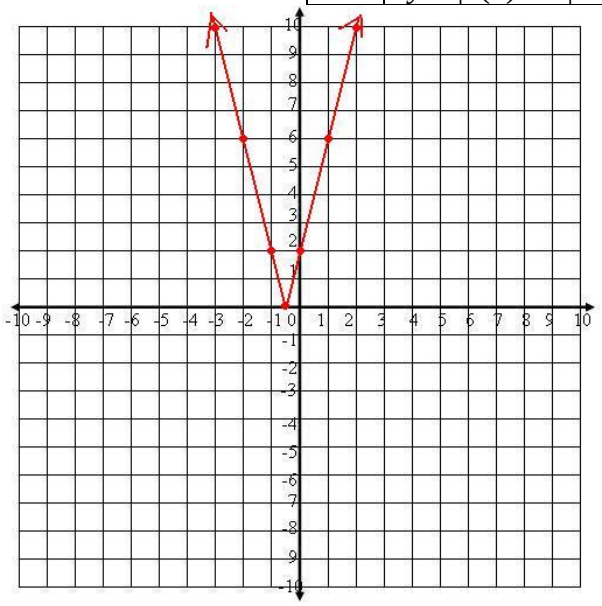
26.

x	$y = \lvert x - 6 \rvert$	y
3	$y = \lvert 3 - 6 \rvert = 3$	3
4	$y = \lvert 4 - 6 \rvert = 2$	2
5	$y = \lvert 5 - 6 \rvert = 1$	1
6	$y = \lvert 6 - 6 \rvert = 0$	0
7	$y = \lvert 7 - 6 \rvert = 1$	1
8	$y = \lvert 8 - 6 \rvert = 2$	2
9	$y = \lvert 9 - 6 \rvert = 3$	3



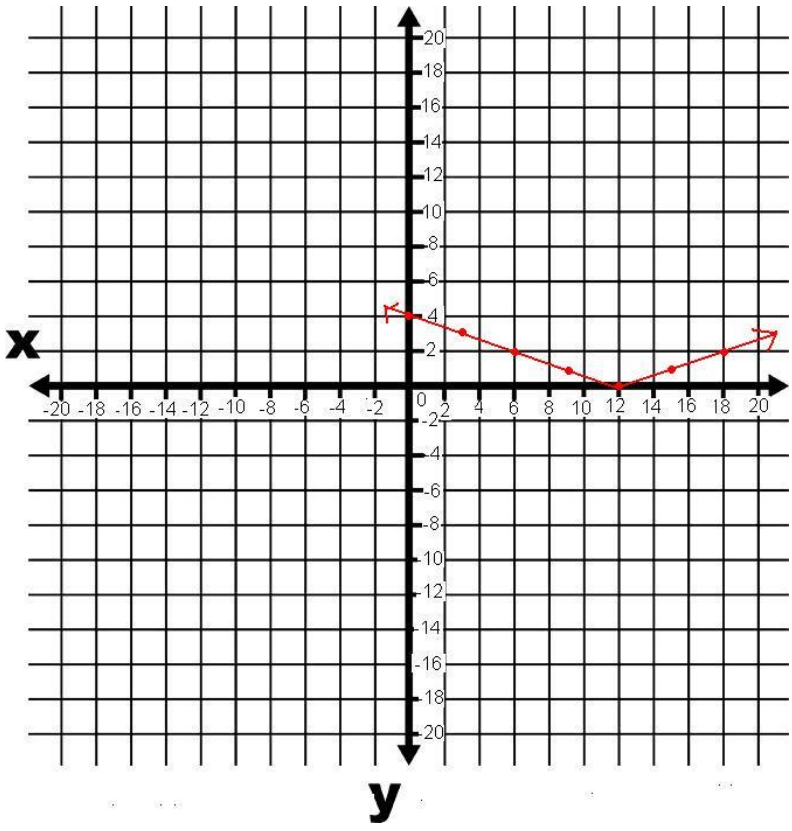
27.

x	$y = \|4x + 2\|$	y
–3	$y = \|4(–3) + 2\| = 10$	10
–2	$y = \|4(–2) + 2\| = 6$	6
–1	$y = \|4(–1) + 2\| = 2$	2
0	$y = \|4(0) + 2\| = 2$	2
1	$y = \|4(1) + 2\| = 6$	6
2	$y = \|4(2) + 2\| = 10$	10



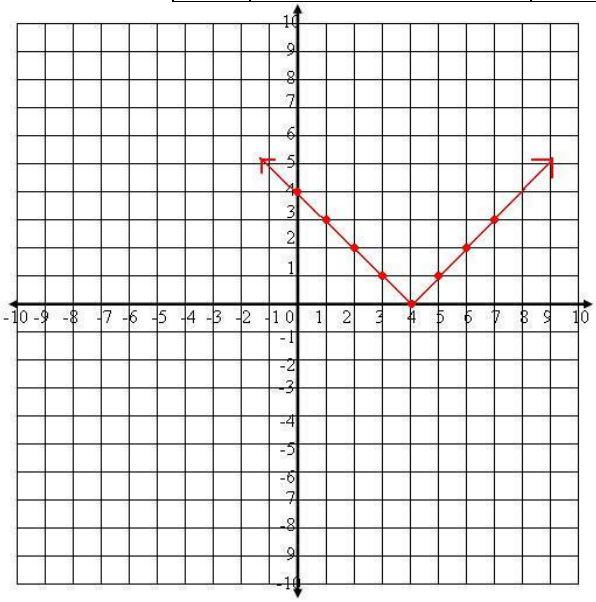
28.

x	$y=\left\lvert\frac{x}{3}-4\right\rvert$	y
18	$y=\left\lvert\frac{18}{3}-4\right\rvert=2$	2
15	$y=\left\lvert\frac{15}{3}-4\right\rvert=1$	1
12	$y=\left\lvert\frac{12}{3}-4\right\rvert=0$	0
9	$y=\left\lvert\frac{9}{3}-4\right\rvert=1$	1
6	$y=\left\lvert\frac{6}{3}-4\right\rvert=2$	2
3	$y=\left\lvert\frac{3}{3}-4\right\rvert=3$	3
0	$y=\left\lvert\frac{0}{3}-4\right\rvert=4$	4



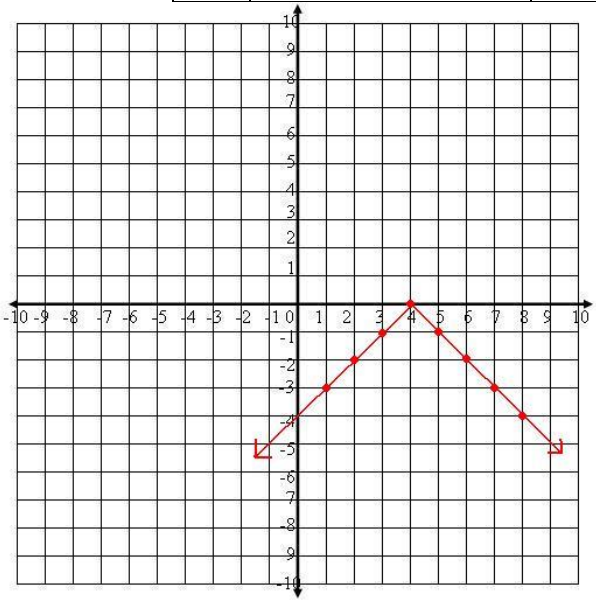
29.

x	$y = \lvert x - 4 \rvert$	y
7	$y = \lvert 7 - 4 \rvert = 3$	3
6	$y = \lvert 6 - 4 \rvert = 2$	2
5	$y = \lvert 5 - 4 \rvert = 1$	1
4	$y = \lvert 4 - 4 \rvert = 0$	0
3	$y = \lvert 3 - 4 \rvert = 1$	1
2	$y = \lvert 2 - 4 \rvert = 2$	2
1	$y = \lvert 1 - 4 \rvert = 3$	3
0	$y = \lvert 0 - 4 \rvert = 4$	4



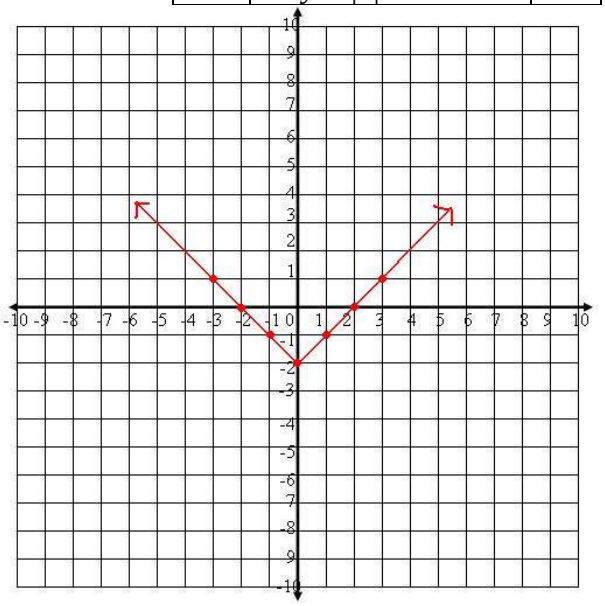
30.

x	$y = -\lvert x - 2\rvert$	y
1	$y = -\lvert 1 - 4\rvert = -3$	–3
2	$y = -\lvert 2 - 4\rvert = -2$	–2
3	$y = -\lvert 3 - 4\rvert = -1$	–1
4	$y = -\lvert 4 - 4\rvert = 0$	0
5	$y = -\lvert 5 - 4\rvert = -1$	–1
6	$y = -\lvert 6 - 4\rvert = -2$	–2
7	$y = -\lvert 7 - 4\rvert = -3$	–3
8	$y = -\lvert 8 - 4\rvert = -4$	–4



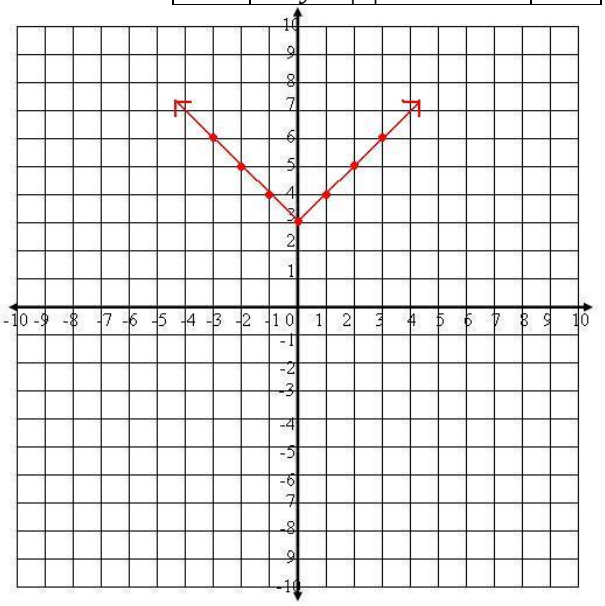
31.

x	$y = \|x\| - 2$	y
–3	$y = \|-3\| - 2 = 1$	1
–2	$y = \|-2\| - 2 = 0$	0
–1	$y = \|-1\| - 2 = -1$	–1
0	$y = \|0\| - 2 = -2$	–2
1	$y = \|1\| - 2 = -1$	–1
2	$y = \|2\| - 2 = 0$	0
3	$y = \|3\| - 2 = 1$	1



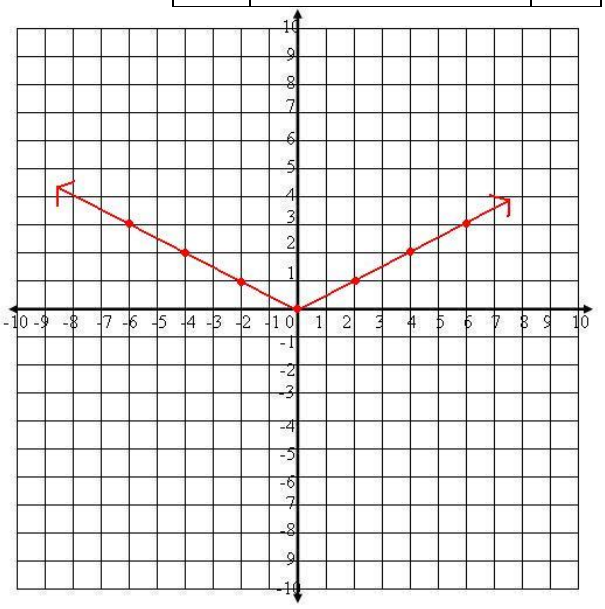
32.

x	$y = \|x\| + 3$	y
–3	$y = \|–3\| + 3 = 6$	6
–2	$y = \|–2\| + 3 = 5$	5
–1	$y = \|–1\| + 3 = 4$	4
0	$y = \|0\| + 3 = 3$	3
1	$y = \|1\| + 3 = 4$	4
2	$y = \|2\| + 3 = 5$	5
3	$y = \|3\| + 3 = 6$	6



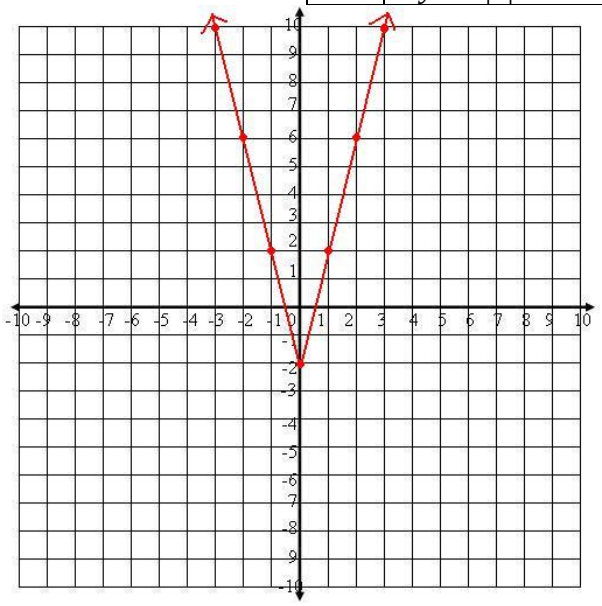
33.

x	$y=\frac{1}{2}\lvert x\rvert$	y
–6	$y=\frac{1}{2}\lvert -6\rvert=3$	3
–4	$y=\frac{1}{2}\lvert -4\rvert=2$	2
–2	$y=\frac{1}{2}\lvert -2\rvert=1$	1
0	$y=\frac{1}{2}\lvert 0\rvert=0$	0
2	$y=\frac{1}{2}\lvert 2\rvert=1$	1
4	$y=\frac{1}{2}\lvert 4\rvert=2$	2
6	$y=\frac{1}{2}\lvert 6\rvert=3$	3



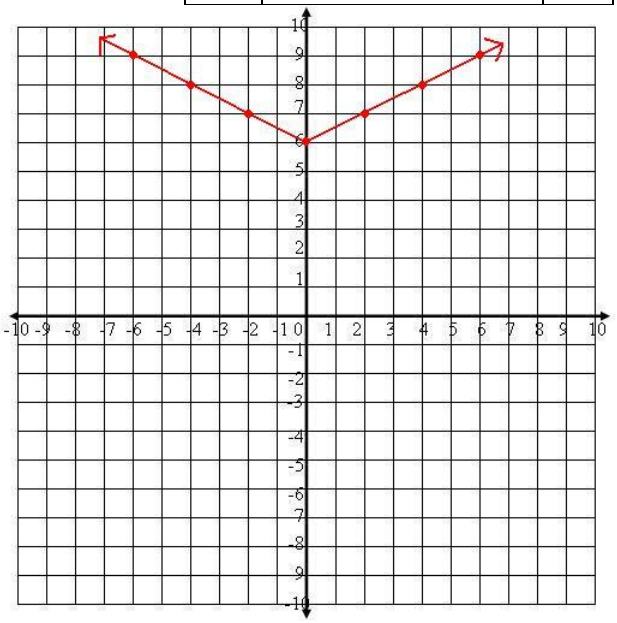
34.

x	$y = 4\|x\| - 2$	y
–3	$y = 4\|-3\| - 2 = 10$	10
–2	$y = 4\|-2\| - 2 = 6$	6
–1	$y = 4\|-1\| - 2 = 2$	2
0	$y = 4\|0\| - 2 = -2$	–2
1	$y = 4\|1\| - 2 = 2$	2
2	$y = 4\|2\| - 2 = 6$	6
3	$y = 4\|3\| - 2 = 10$	10



35.

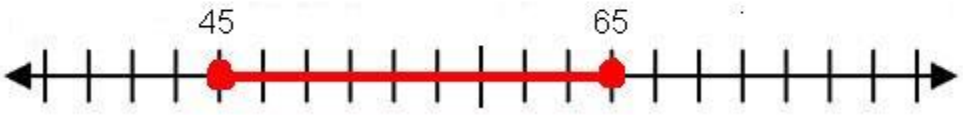
x	$y = \left\lvert \frac{1}{2}x \right\rvert + 6$	y
–6	$y = \left\lvert \frac{1}{2}(-6) \right\rvert + 6 = 9$	9
–4	$y = \left\lvert \frac{1}{2}(-4) \right\rvert + 6 = 8$	8
–2	$y = \left\lvert \frac{1}{2}(-2) \right\rvert + 6 = 7$	7
0	$y = \left\lvert \frac{1}{2}(0) \right\rvert + 6 = 6$	6
2	$y = \left\lvert \frac{1}{2}(2) \right\rvert + 6 = 7$	7
4	$y = \left\lvert \frac{1}{2}(4) \right\rvert + 6 = 8$	8
6	$y = \left\lvert \frac{1}{2}(6) \right\rvert + 6 = 9$	9



36. The shortest ruler that will pass is $12-\frac{1}{32}=11\frac{31}{32}$ inches. The longest ruler that will pass is $12+\frac{1}{32}=12\frac{1}{32}$.

37. $6t - 14 < 2t + 7$
$4t < 21$
$t < \frac{21}{4}$

38. Let s = the speed of the truck.
Then $45 \leq s \leq 65$.



39. Let x = the amount for gas.
Then $181 + 25 + x \leq 276$
$206 + x \leq 276$
$x \leq 70$
Lloyd can afford \$70 for gas.

40. $\sqrt{12}\times\sqrt{3}=\sqrt{36}=6$

41. $\frac{3.4 \text{ ounces}}{8 \text{ hushpuppies}} = \frac{x \text{ ounces}}{56 \text{ hushpuppies}}$

$8x = 190.4$
$x = 23.8$ ounces

42. The additive inverse of 124 is –124.

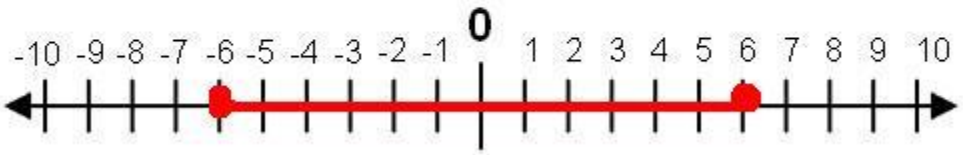
43. The multiplicative inverse of 14 is $\frac{1}{14}$.

44. Addition Property of Equality – allows you to apply the same operation to each side of the equation, or "what you do to one side of an equation you can do to the other." (page 86)

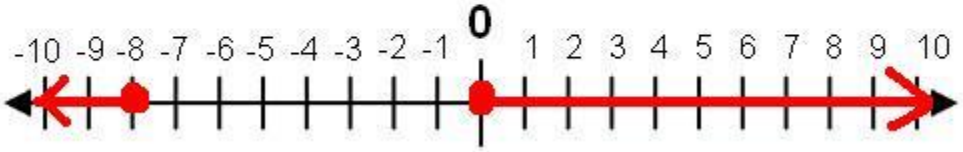
Lesson 6.6

1. $|a + 1| \leq 4$ breaks down into $a + 1 \leq 4$ OR $a + 4 \geq -4$.

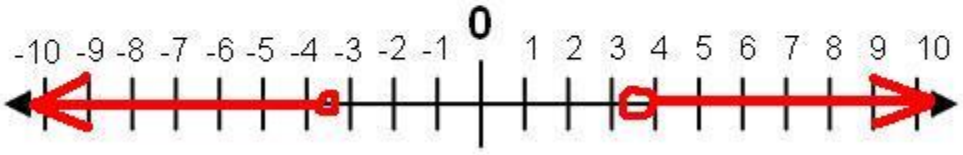
2. $|x| \leq 6$
   $x \leq 6$ OR $x \geq -6$



3. $4 \leq |a + 4|$ can be re-written as $|a + 4| \geq 4$
   $a + 4 \geq 4$ OR $a + 4 \leq -4$
   $a \geq 0$ OR $a \leq -8$



4. $|x| > 3.5$
   $x > 3.5$ OR $x < -3.5$

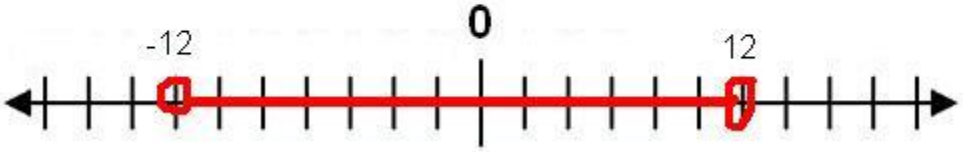


5. $6 > |10b + 6|$ can be re-written as $|10b + 6| < 6$

$10b + 6 < 6$	OR	$10b + 6 > 6$
$10b < 0$	OR	$10b > 0$
$b < 0$	OR	$b > 0$

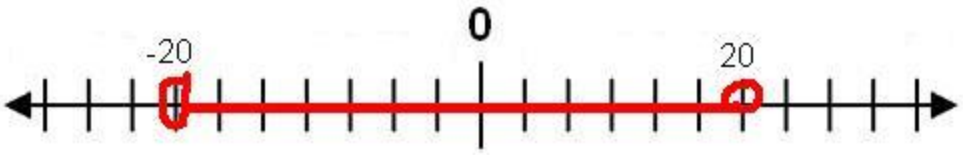
6. $|x| < 12$

$x < 12$	OR	$x > -12$



7. $\left|\frac{w}{10}\right| < 2$

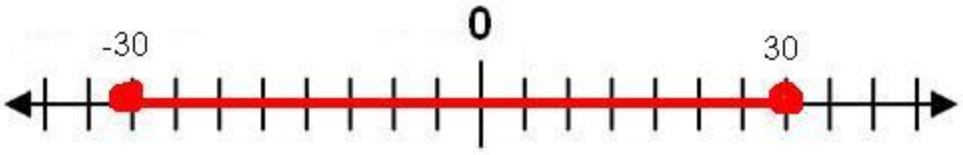
$\frac{w}{10} < 2$	OR	$\frac{w}{10} > -2$
$w < 20$	OR	$w > -20$



8. $\left|\frac{x}{5}\right| \le 6$

$\frac{x}{5} \le 6$ OR $\frac{x}{5} \ge -6$

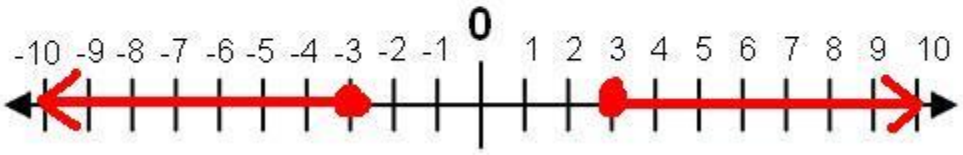
$x \le 30$ OR $x \ge -30$



9. $|7x| \ge 21$

$7x \ge 21$ OR $7x \le -21$

$x \ge 3$ OR $x \le -3$

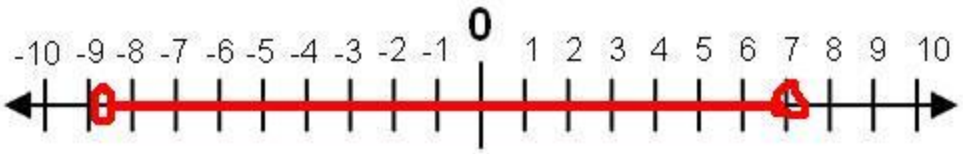


10. $|6c + 5| < 47$

$6c + 5 < 47$ OR $6c + 5 > -47$

$6c < 42$ OR $6c > -52$

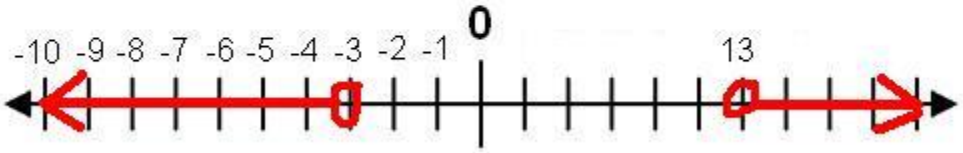
$c < 7$ OR $c > -\frac{26}{3}$ which is $-8\frac{2}{3}$



11. $|x - 5| > 8$

$x - 5 > 8$ OR $x - 5 < -8$

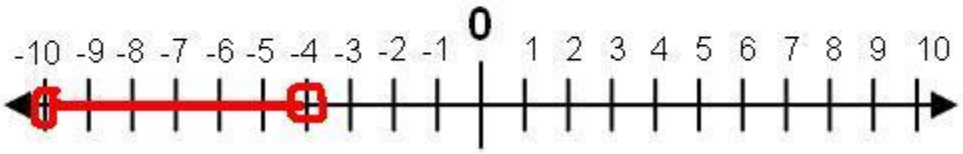
$x > 13$ OR $x < -3$



12. $|x + 7| < 3$

$x + 7 < 3$ OR $x + 7 > -3$

$x < -4$ OR $x > -10$

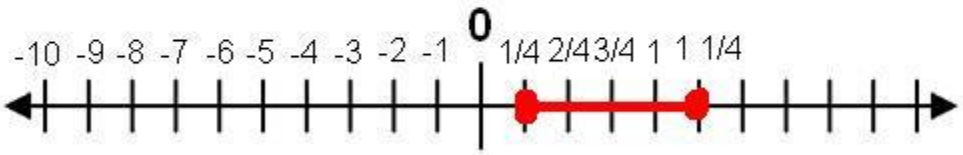


13. $\left|x - \frac{3}{4}\right| \le \frac{1}{2}$

$x - \frac{3}{4} \le \frac{1}{2}$ OR $x - \frac{3}{4} \ge -\frac{1}{2}$

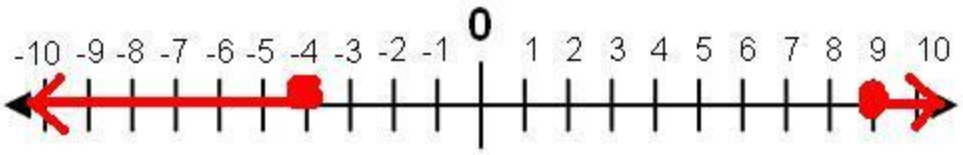
$x \le \frac{1}{2} + \frac{3}{4}$ OR $x \ge -\frac{1}{2} + \frac{3}{4}$

$x \le \frac{5}{4}$ OR $x \ge \frac{1}{4}$



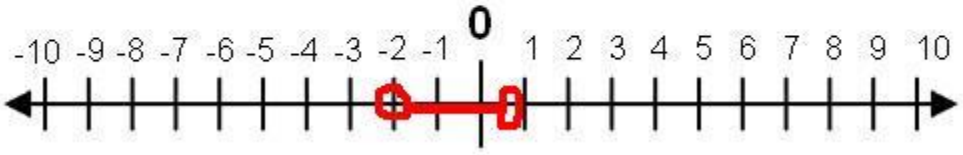
14. $|2x - 5| \geq 13$

$2x - 5 \geq 13$	OR	$2x - 5 \leq -13$
$2x \geq 18$	OR	$2x \leq -8$
$x \geq 9$	OR	$x \leq -4$



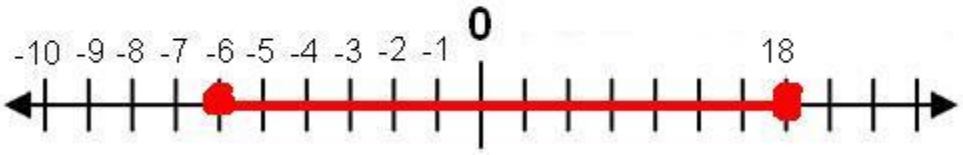
15. $|5x + 3| < 7$

$5x + 3 < 7$	OR	$5x + 3 > -7$
$5x < 4$	OR	$5x > -10$
$x < \frac{4}{5}$	OR	$x > -2$



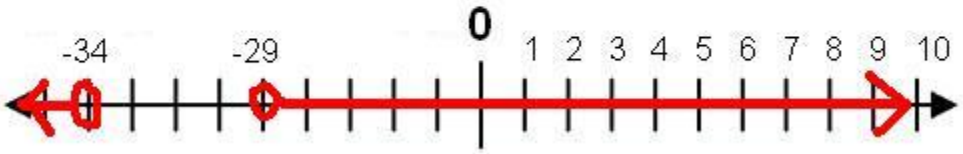
16. $\left|\frac{x}{3} - 4\right| \leq 2$

$\frac{x}{3} - 4 \leq 2$	OR	$\frac{x}{3} - 4 \geq -2$
$\frac{x}{3} \leq 6$	OR	$\frac{x}{3} \geq -2$
$x \leq 18$	OR	$x \geq -6$



17. $\left|\frac{2x}{7}+9\right| > \frac{5}{7}$

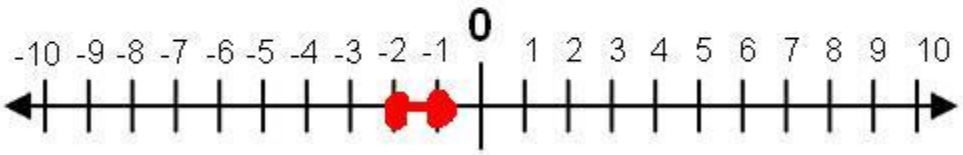
$\frac{2x}{7}+9 > \frac{5}{7}$	OR	$\frac{2x}{7}+9 < -\frac{5}{7}$
$2x + 63 > 5$	OR	$2x + 63 < -5$
$2x > -58$	OR	$2x < -68$
$x > -29$	OR	$x < -34$



18. $|-6t + 3| + 9 \geq 18$

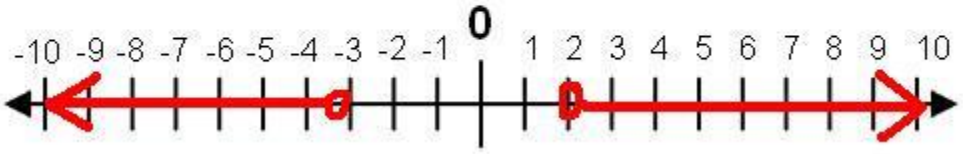
$|-6t + 3| \geq 9$

$-6t + 3 \geq 9$	OR	$-6t + 3 \leq -9$
$-6t \geq 6$	OR	$-6t \leq -12$
$t \leq -1$	OR	$t \geq -2$



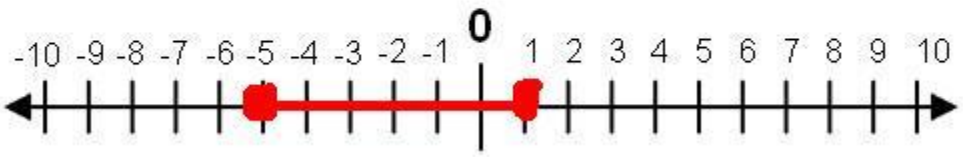
19. $|9p + 5| > 23$

$9p + 5 > 23$	OR	$9p + 5 < -23$
$9p > 18$	OR	$9p < -28$
$p > 2$	OR	$p < -\frac{28}{9}$



20. $|-2s - 4| \leq 6$

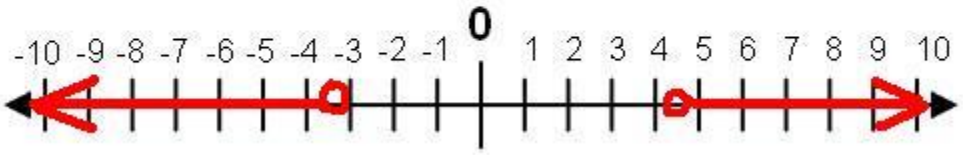
$-2s - 4 \leq 6$	OR	$-2s - 4 \geq -6$
$-2s \leq 10$	OR	$-2s \geq -2$
$s \geq -5$	OR	$s \leq 1$



21. $\dfrac{|10m - 5|}{8} > 5$

$|10m - 5| > 40$

$10m - 5 > 40$	OR	$10m - 5 < -40$
$10m > 45$	OR	$10m < -35$
$m > 4.5$	OR	$m < -3.5$



22. Let a = the average weight of a baby boy.

$|a - 13| \leq 2.5$

$a - 13 \leq 2.5$	OR	$a - 13 \geq -2.5$
$a \leq 15.5$	OR	$a > 10.5$

A three-month old baby boy is healthy if he weighs between 10.5 and 15.5 pounds.

23. $|7u| = 77$

$7u = 77$	OR	$7u = -77$
$u = 11$	OR	$u = -11$

24. $\dfrac{2 \text{ inches}}{125 \text{ miles}} = \dfrac{x \text{ inches}}{945 \text{ miles}}$

$125x = 1890$

$x = 15.12$ inches

25. Domain: {–9, –6, –4, 0, 3, 5}
Range: {0}

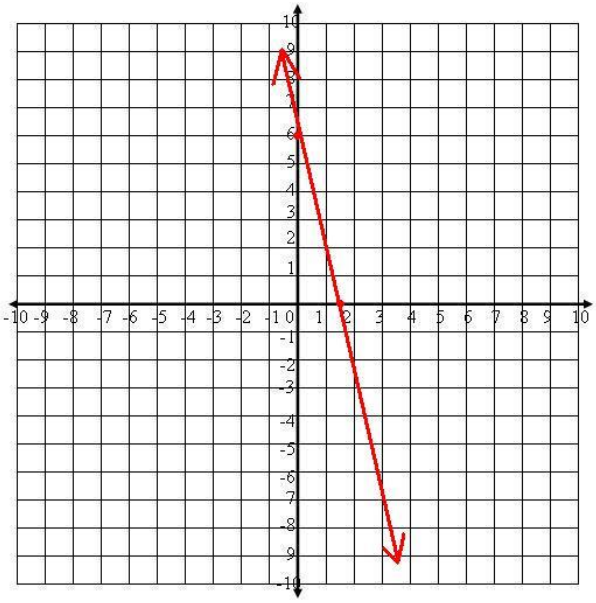
26. Yes, the relation in #25 is a function because each value in the domain belongs to only one value in the range.

27. Either method works. Since 3 is multiplied with everything inside the parentheses, one can simply divide both sides by that number.

28. $4x = 6$ $\qquad$ $y = 6$

$x = \frac{3}{2}$ $\qquad$ $(0, 6)$

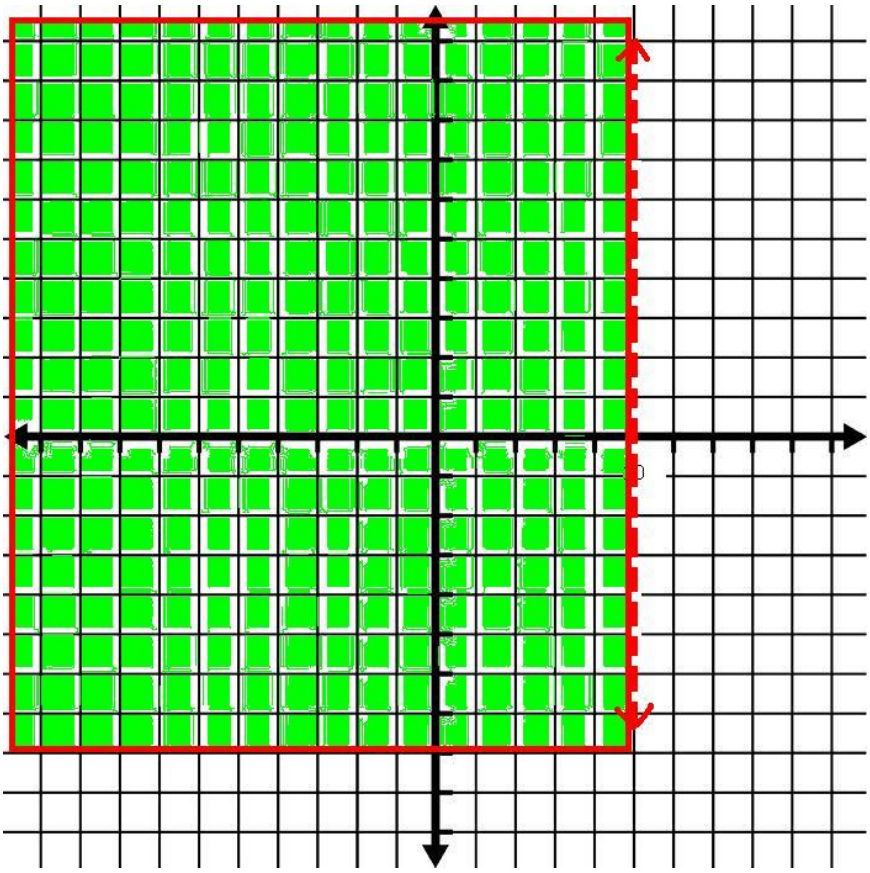
$\left(\frac{3}{2}, 0\right)$



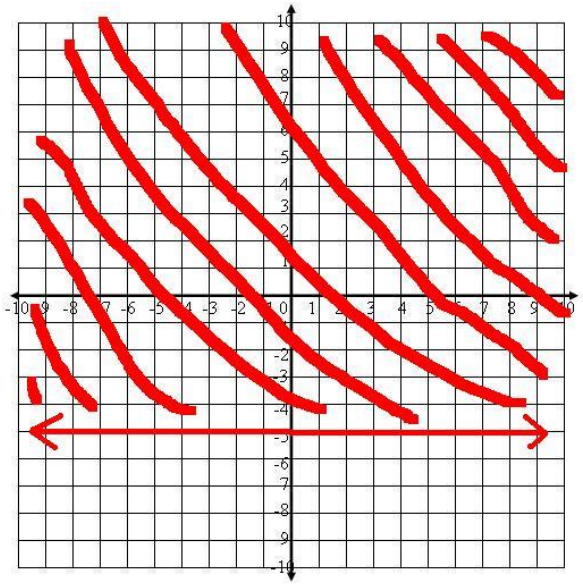
29. $\frac{3}{30} = \frac{1}{10} = 0.10$

30. $-5\frac{2}{3} \div \frac{71}{8} = -\frac{17}{3} \div \frac{71}{8} = -\frac{17}{3}\left(\frac{8}{71}\right) = -\frac{136}{213}$

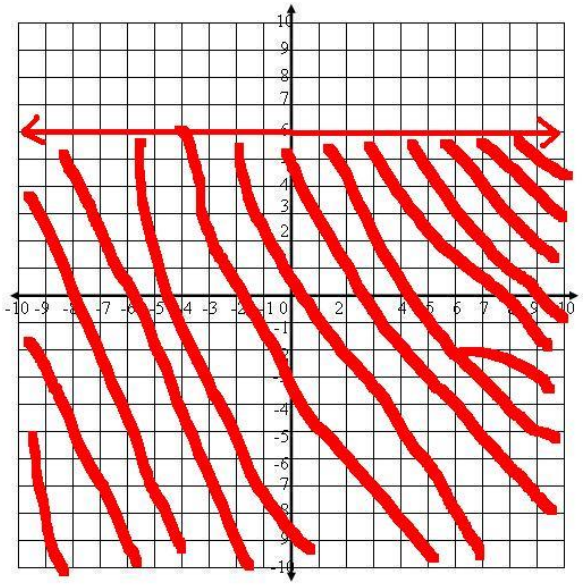
Lesson 6.7

1. The space on either side of a graphed line (boundary line) is called a half-plane.
2. A dashed line is used when graphing linear inequalities with either "<" or ">".
3. A dashed line is used when graphing linear inequalities with either "≤" or "≥".
4. Look at the inequality sign to determine if you should shade above the line or below the line.
5. 

6. e

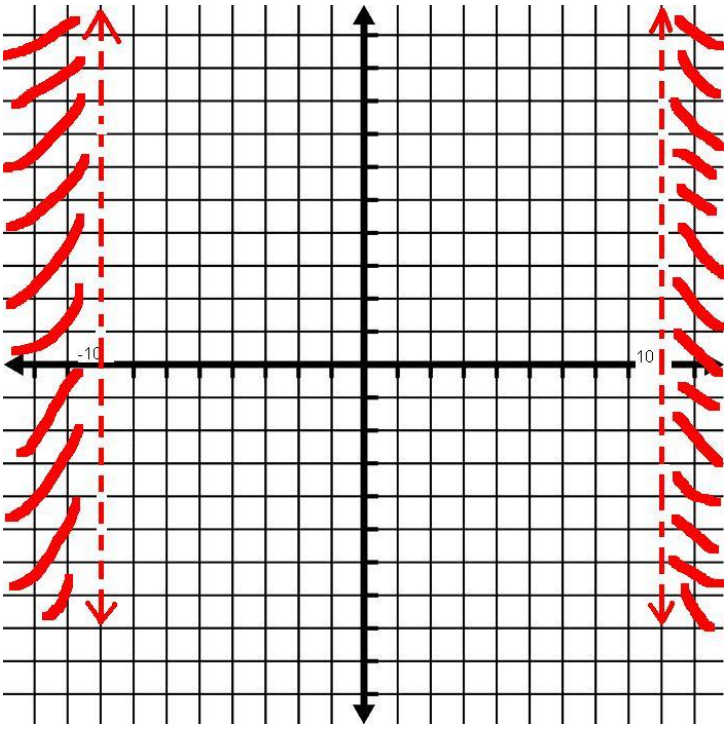


7. e



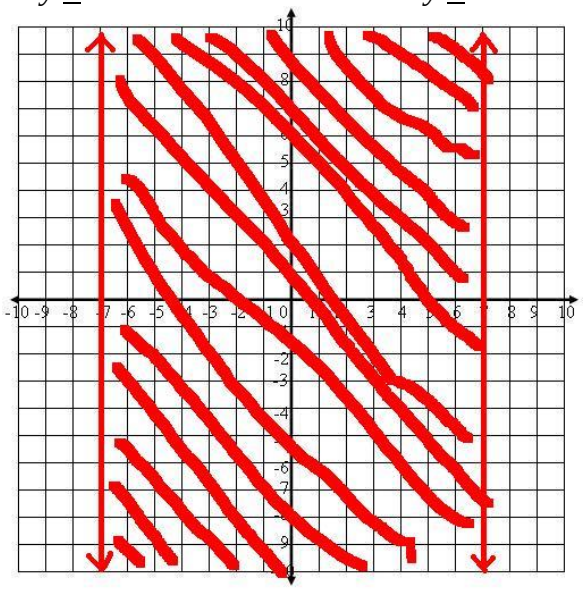
8. $|x| > 10$

$x > 10$ OR $x < -10$

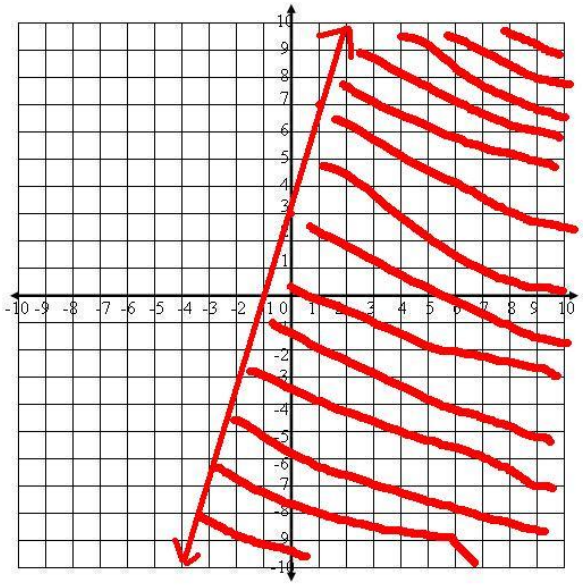


9. $|y| \leq 7$

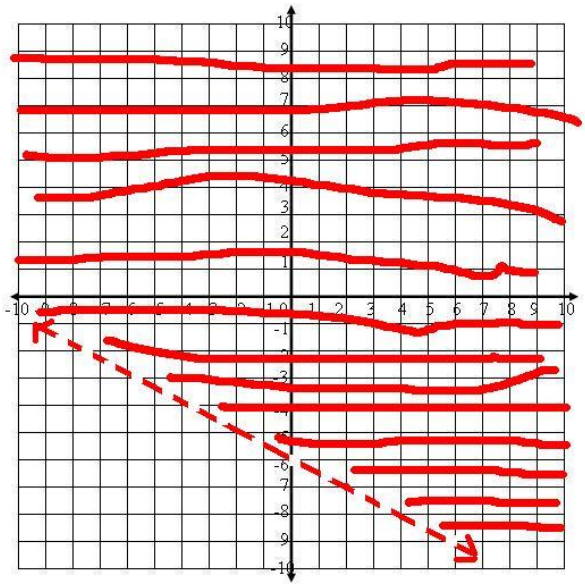
$y \leq 7$ OR $y \geq -7$



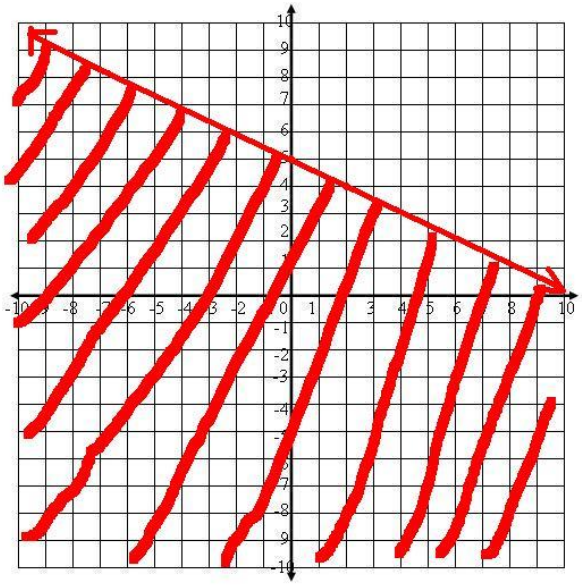
10. s



11. s



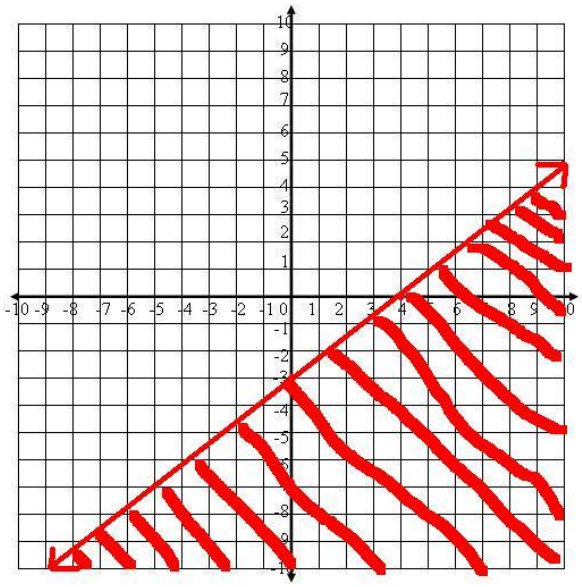
12. s



13. $3x - 4y \geq 12$

$-4y \geq -3x + 12$

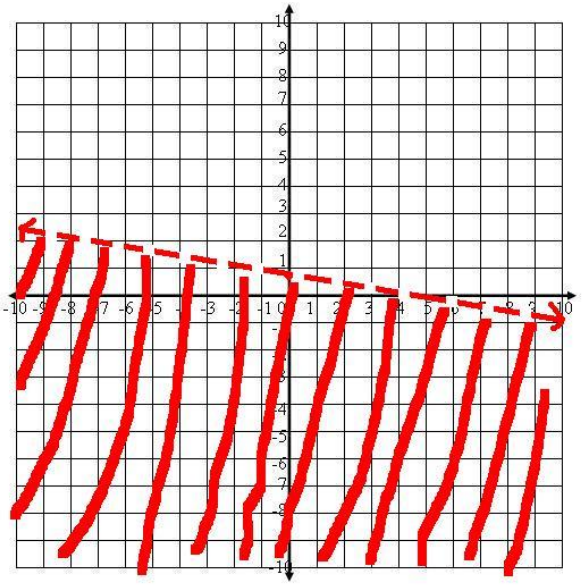
$y \leq \frac{3}{4}x - 3$



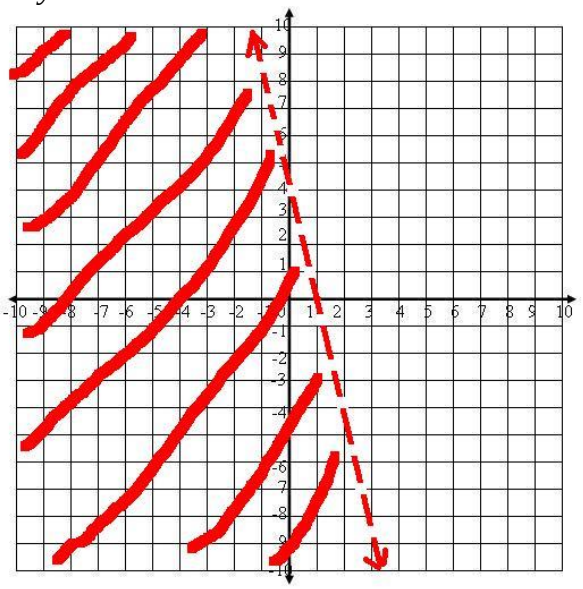
14. $x + 7y < 5$

$7y < -x + 5$

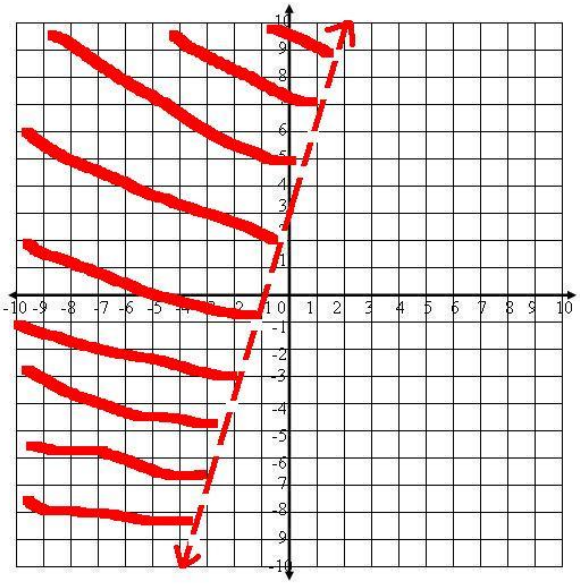
$y < -\frac{1}{7}x + \frac{5}{7}$



15. $y < -4x + 4$



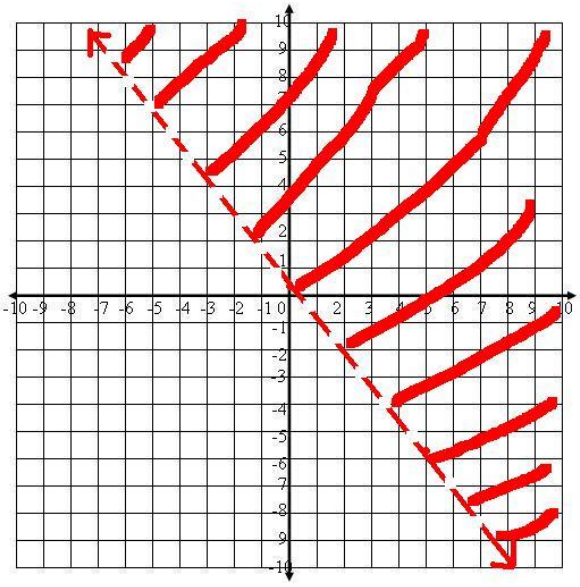
16. $y > \frac{7}{2}x + 3$



17. $6x + 5y > 1$

$5y > -6x + 1$

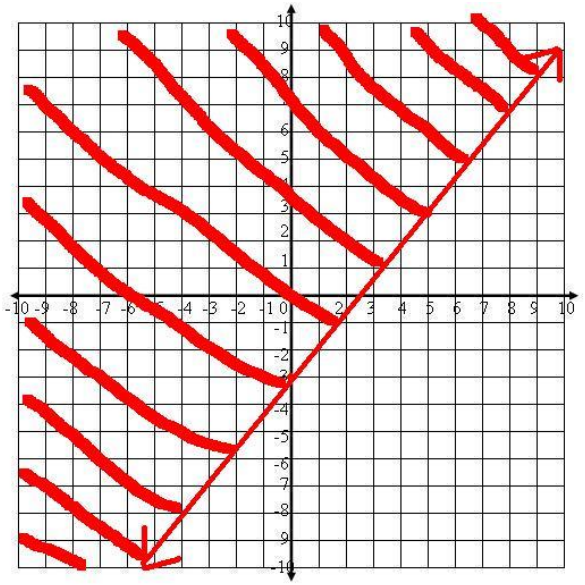
$y > -\frac{6}{5}x + \frac{1}{5}$



18. $6x - 5y \leq 15$

$-5y < -6x + 15$

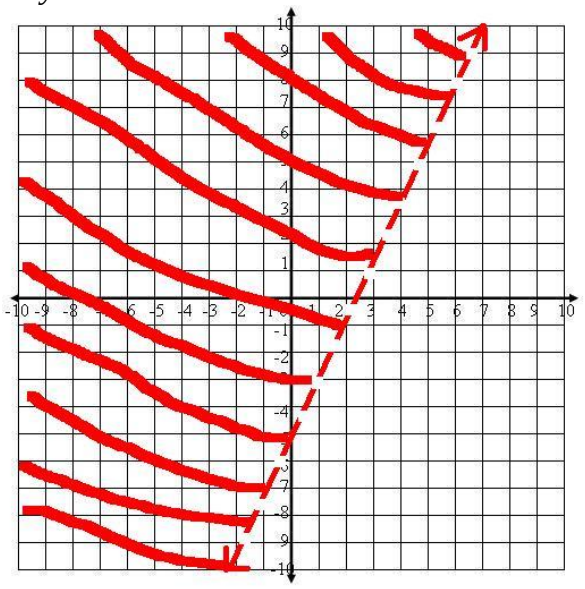
$y \geq \frac{6}{5}x - 3$



19. $2x - y < 5$

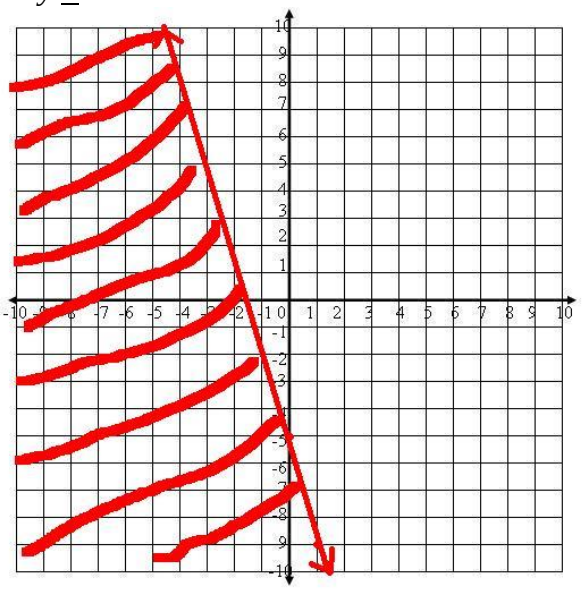
$-y < -2x + 5$

$y > 2x - 5$



20. $y + 5 \leq -4x + 10$

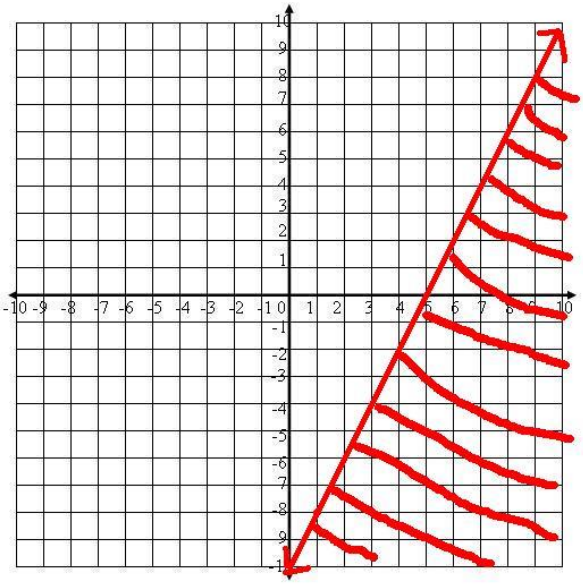
$y \leq -4x - 5$



21. $x - \frac{1}{2}y \geq 5$

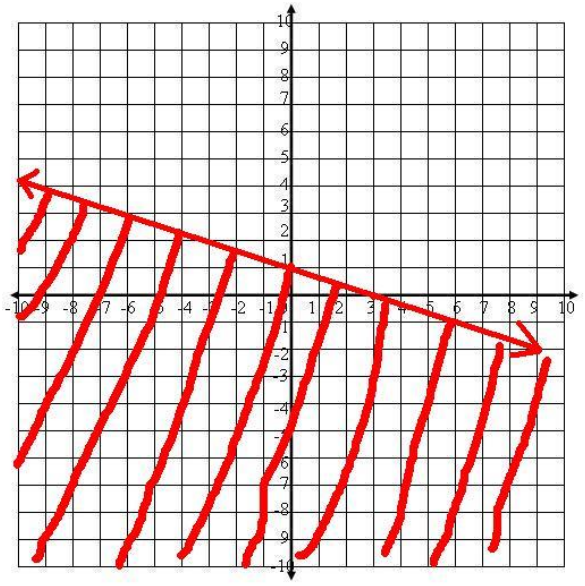
$-\frac{1}{2}y \geq -x + 5$

$y \leq 2x - 10$



22. $y + 4 \le -\frac{x}{3} + 5$

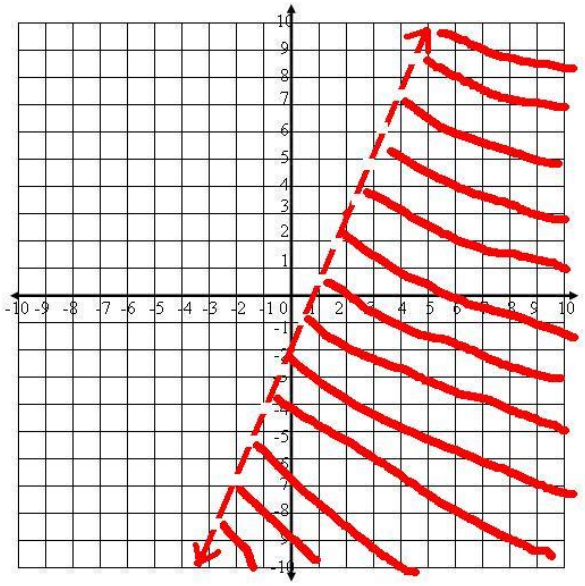
$y \le -\frac{1}{3}x + 1$



23. $5x - 2y > 4$

$-2y > -5x + 4$

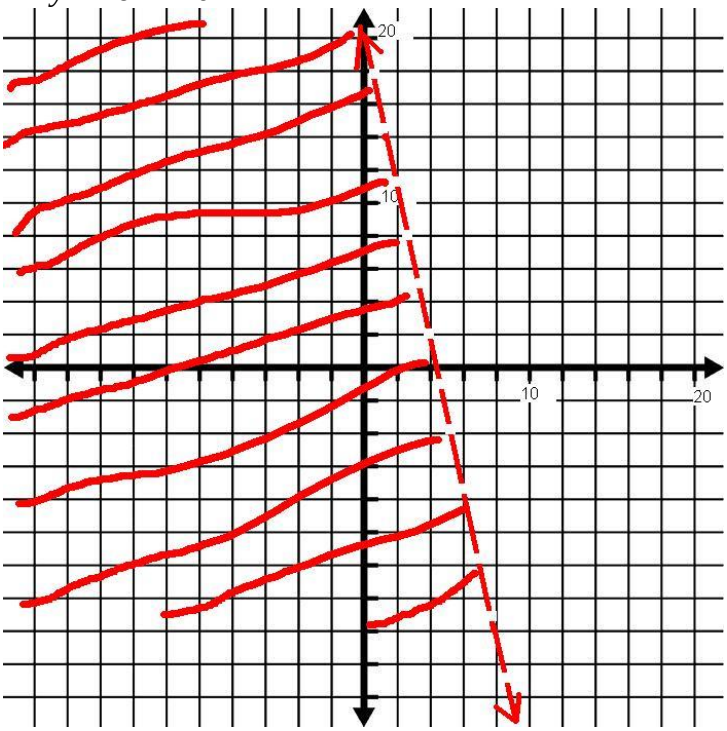
$y < \frac{5}{2}x - 2$



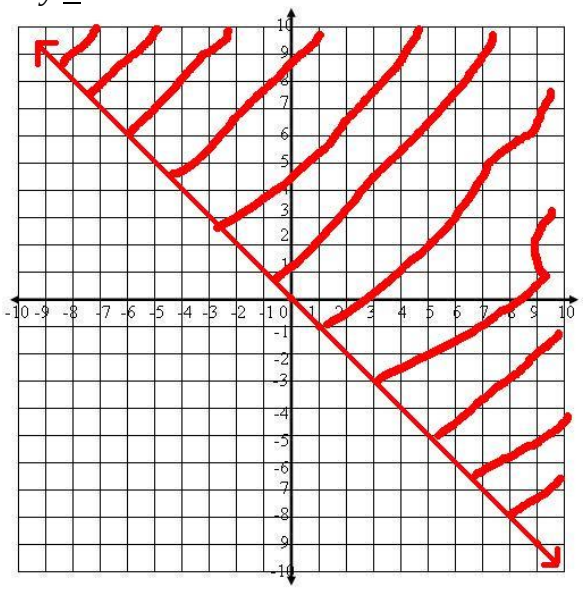
24. $30x + 5y < 100$

$5y < -30x + 100$

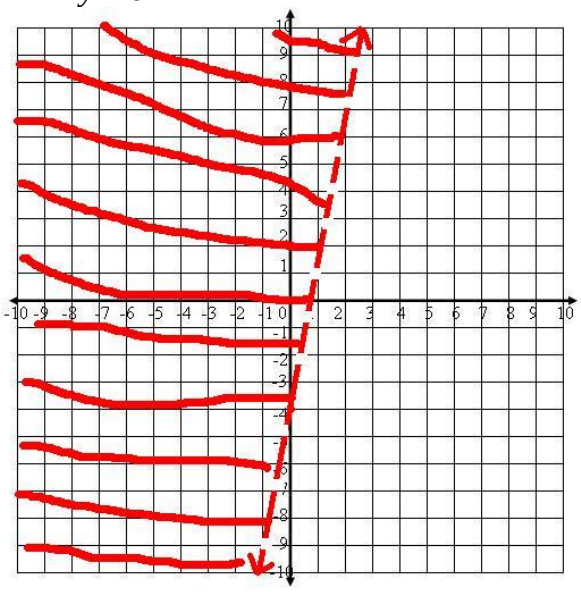
$y < -6x + 20$



25. $y \geq -x$



26. $6x - y < 4$
$-y < -6x + 4$
$y > 6x - 4$



27. Let a = the number ankle bracelets and w = the number of wrist bracelets.
Then $8a + 6w \leq 600$
$6w < 8a + 600$
$w < \frac{4}{3}a + 100$

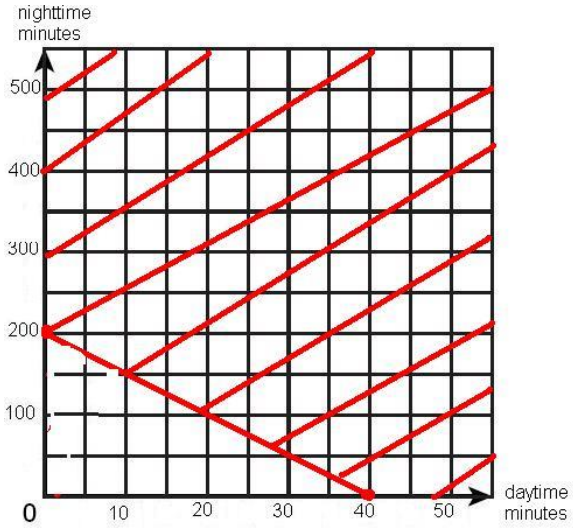
28. Let g = the amount of gold and s = the amount of silver.
$670g + 13s < 600$
$13s < -670g + 600$
$s < -51.54g + 46.15$

29. Let d = daytime minutes and n = nighttime minutes.

$0.5d + 0.1n > 20.00$

$0.1n > -0.5d + 20.00$

$n > -5d + 200$

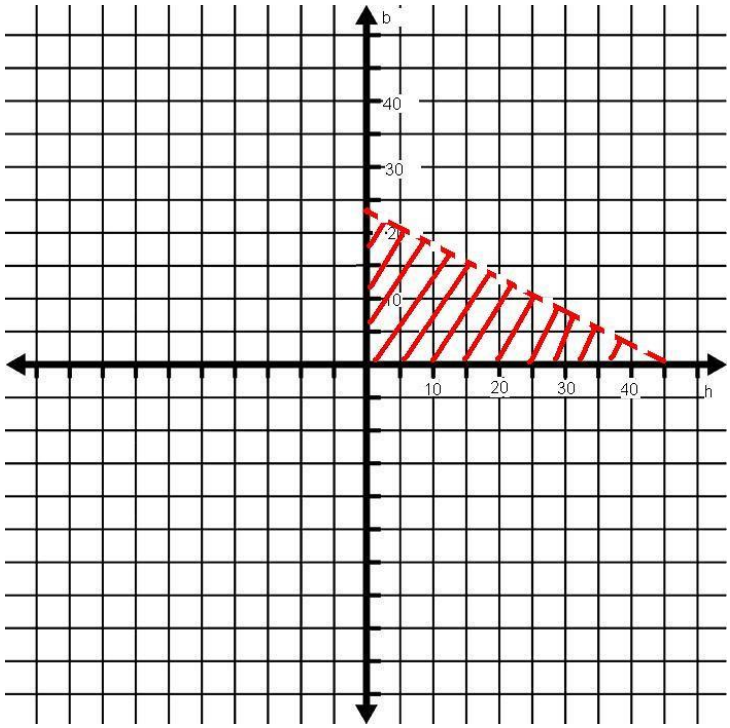


30. Let h = the number of hot dogs and b = the number of burgers.

$0.75h + 1.25b < 30$

$1.25b < -0.75h + 30$

$b < -0.6h + 24$

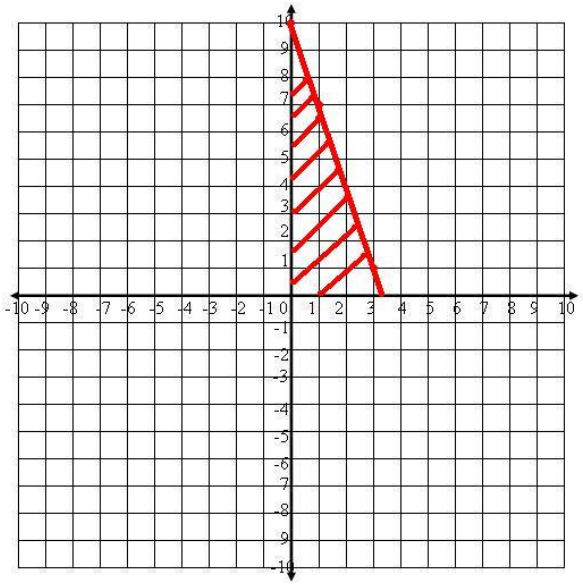


31. Let s = the number of pounds of strawberries and b = the number of pounds of bananas.

$3.00s + 1.00b \leq 10.00$

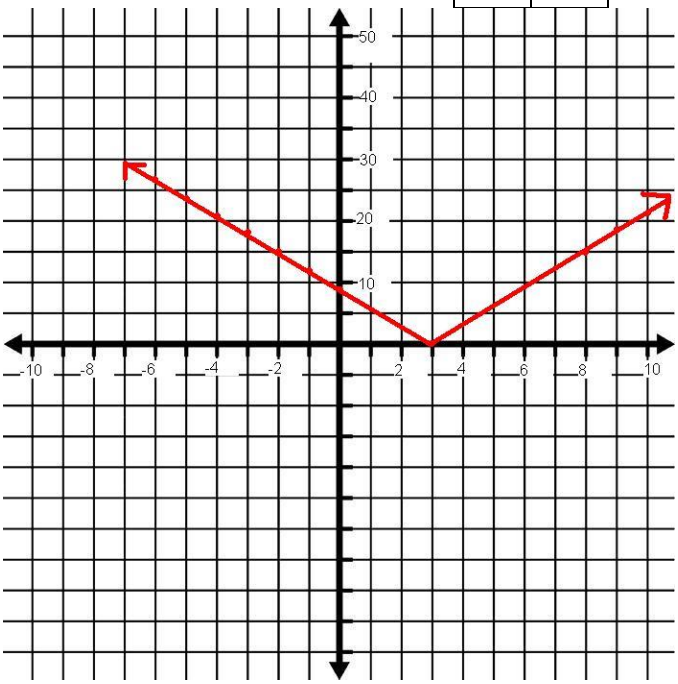
$1.00b \leq -3.00s + 10.00$

$b \leq -3.00s + 10.00$

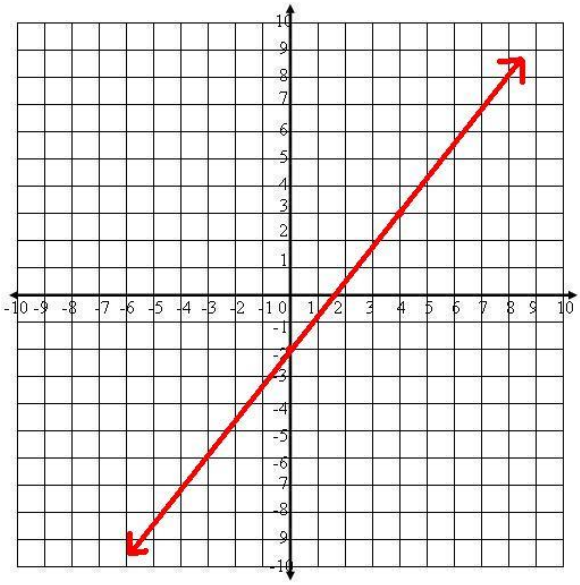


32. $y = 3|x - 3|$

x	y
–3	18
–2	15
–1	12
3	0
8	15
9	18
10	21



33. $y = \frac{5}{4}x - 2$



34. What is 14.75% of 29?
$x = 0.1475(29) = 4.2775$

35. New price = 31.99, percent change = 15% or 0.15
31.99 is 115% of what number?
$31.99 = 1.15x$
$x = \$27.82$
The original price was \$27.82.

36. $F(16) = 1.8(16) + 32 = 60.8°F$

37. Let C = the number of apples Charlene has. Then $C = 36 + 18 = 54$.
Charlene has 54 apples.

38. The possible outcomes are Head and Tails.

39. There are 360° in a circle.

Lesson 6.8

1. The experimental probability is the ratio of the proposed outcome to the number of trials of the experiment (page 254-255).

2. Theoretical probability is what one thinks will happen before an event occurs while experimental probability is what actually happens during an event.

3.

Fraction	Decimal	Percent
$\frac{49}{50}$	0.98	98%
$\frac{3}{200}$	0.015	1.5%
$\frac{1}{16}$	0.0625	6.25%
$\frac{2}{3}$	$0.\overline{6}$	$66.\overline{6}\%$
$\frac{31}{50}$	0.62	62%
$\frac{73}{100}$	0.73	73%

4. The sample space is {1, 2, 3, 4, 5}.

5. P(spinning a 4) = $\frac{1}{5}$

6. 3, 2, 4, 3, 5, 2, 2, 4, 3, 3, 2, 5, 4, 2, 3

Spin	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Outcome	3	2	4	3	5	2	2	4	3	3	2	5	4	2	3

7. P(spinning a 4) = $\frac{3}{15} = \frac{1}{5}$
8. Since there are no spaces labeled “6”, P(spinning a 6) = 0.

9. There are 52 values in the sample space. One way to list them is by suit and numerical order.

10. P(king) = $\frac{4}{52} = \frac{1}{13}$

11. The face cards are K, Q, J. There are 3(4) = 12 face cards in the deck, so there are 52 – 12 = 40 non-face cards in the deck. The odds against drawing a face card are $\frac{40}{12} = \frac{10}{3}$.

12. There are 4 6's in the deck. Therefore the odds in favor of drawing a 6 are $\frac{4}{48} = \frac{1}{12}$.

13. P(diamond) = $\frac{13}{52} = \frac{1}{4}$

14. P(nine of clubs) = $\frac{1}{52}$

15. P(king or 8-hearts) = $\frac{4}{52} + \frac{1}{52} = \frac{5}{52}$

16. There are 13 spades, so there are 39 non-spades. The odds against drawing a spade are $\frac{39}{13} = \frac{3}{1}$.

17. There are 26 red and 26 black cards. The odds against drawing a red card are the same as the odds for drawing a red card, $\frac{26}{26} = 1$.

18. P(drawing a card) = 100%

19. Sixty percent is fairly strong likelihood because it is larger than a chance happening of 50%.

20. [This answer is one of many.] The probability of a hurricane in my area tomorrow is nearly 0%. First, I live about 1,000 miles inland. Second, it is not hurricane season.

21. {HH, HT, TH, TT}

22. P(one H and one T) = $\frac{2}{4} = \frac{1}{2}$

23. P(HH) = $\frac{1}{4}$

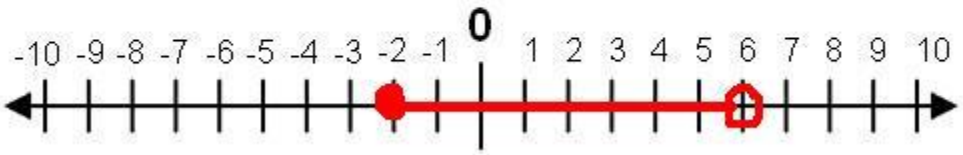
24. P(each coin landing on H or T) = 100%

25.

Flip	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Outcome	TT	TH	TH	HT	TT	TT	HH	HH	TH	TT	TH	HH	HT	TH	HH	HH	HH	TT	HH	HH

The experimental probability for flipping two heads is $P(\text{HH}) = \frac{8}{20} = \frac{2}{5}$. The theoretical probability for flipping two heads is $P(\text{HH}) = \frac{1}{4}$.

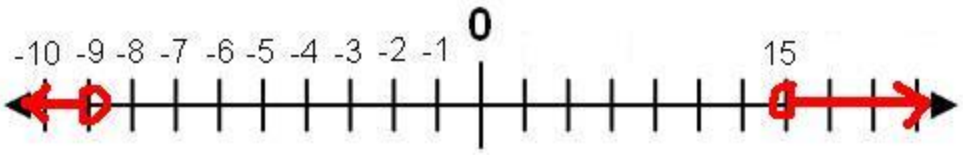
26. $-2 \leq w < 6$



27. $|n - 3| > 12$

$n - 3 > 12$ OR $n - 3 < -12$

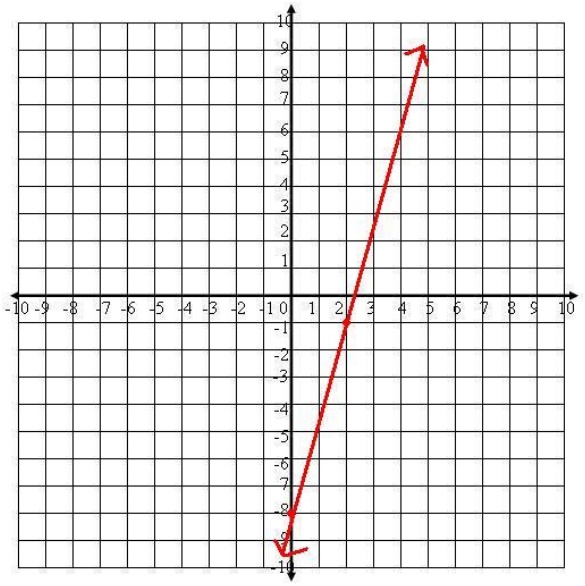
$n > 15$ OR $n < -9$



28. $|n - 3| > 12$

$n = 4.175$ is not a solution because it does not fall within the shaded areas of the solutions.

29.



30. The values reduce by 5 each time. Therefore, the pattern is –5.

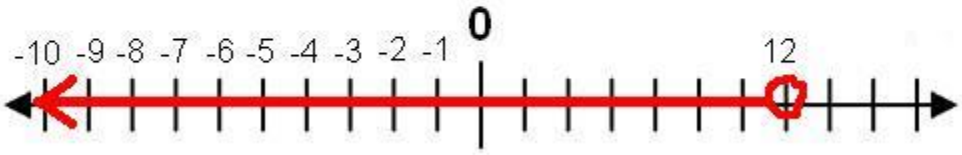
31. $(-3)\left(\frac{(29)(2)(-8)}{-10}\right) = (-3)\left(\frac{-464}{-10}\right) = (-3)\left(\frac{232}{5}\right) = -\frac{696}{5}$ OR $-139\frac{1}{5}$

6.9 Chapter Review

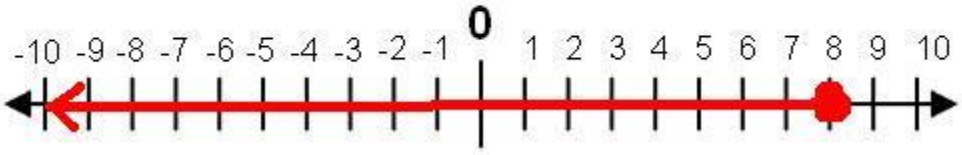
1. algebraic inequality – a mathematical sentence connecting an expression to a value, variable, or another expression with an inequality sign (page 218).
2. interval notation – this notation uses brackets to denote the range of values in an inequality (page 219).
3. intersection of sets – What the sets have in common (page 231).
4. union of sets – Combining both sets into one large set (page 231).
5. absolute value – the distance from zero on a number line (page 237).
6. compound inequality – inequalities that relate to the same topic; uses words "and" and "or" (page 231).
7. boundary line – the line that separates the shaded half-plane from the unshaded half-plane in a linear inequality
8. half-plane – the space on either side of a graphed line (boundary line)
9. solution set – the values that make a given inequality true
10. probability – the likelihood of a given event occurring
11. theoretical probability – what one thinks will happen before an event occurs
12. experimental probability – what actually happens during an event

13. $|16 - 104| = |-88| = 88$

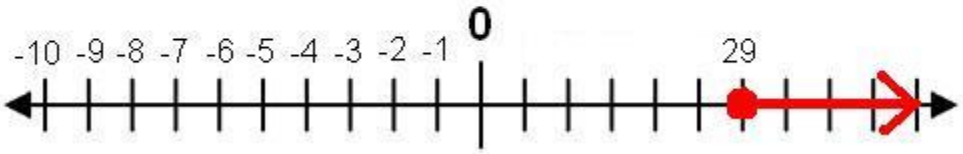
14. Let x = the number of eggs Shanna needs. Then $x < 12$.



15. Let x = the number of eggs Shanna needs. Then $x \leq 8$.



16. $y + 7 \geq 36$
$y \geq 29$



17. $16x < 1$
$x < \frac{1}{16}$

18. $y - 64 < -64$
$y < 0$

19. $5 > \frac{t}{3}$
$15 > t$

20. $0 < 6 - k$
$-6 < -k$
$6 > k$

21. $-\frac{3}{4}g \leq 12$
$g \geq 12\left(-\frac{4}{3}\right)$
$g \geq -16$

22. $10 \geq \frac{q}{-3}$
$-30 \leq q$

23. $-14 + m > 7$
$m > 21$

24. $4 \geq d + 11$
$-7 \geq d$

25. $t - 9 \leq -100$
$t \leq -91$

26. $\frac{v}{7} < -2$

$v < -14$

27. $4x > -4$ AND $\frac{x}{5} < 0$

$x > -1$ AND $x < 0$

28. $n - 1 < -5$ OR $\frac{n}{3} \geq -1$

$n < -4$ OR $n > -3$

29. $\frac{n}{2} > -2$ AND $-5n > -20$

$n > -4$ AND $n < 4$

30. $-35 + 3x > 5(x - 5)$
$-35 + 3x > 5x - 25$
$-35 > 2x - 25$
$-10 > 2x$
$-5 > x$

31. $x + 6 - 11x \geq -2(3 + 5x) + 12(x + 12)$
$x + 6 - 11x \geq -6 - 10x + 12x + 144$
$-10x \geq 2x + 138$
$-12x \geq 138$
$x \leq -11.5$

32. $-64 < 8(6 + 2k)$
$-64 < 48 + 16k$
$112 < 16k$
$7 < k$

33. $0 > 2(x + 4)$
$0 > 2x + 8$
$-8 > 2x$
$-4 > x$

34. $-4(2n - 7) \leq 37 - 5n$
$-8n + 28 \leq 37 - 5n$
$28 \leq 37 + 2n$
$-9 \leq 2n$
$-4.5 \leq n$

35. $6b + 14 \leq -8(-5b - 6)$
$6b + 14 \leq 40b + 48$
$14 \leq 32b + 48$
$34 \leq 32b$
$1\frac{1}{16} \leq b$

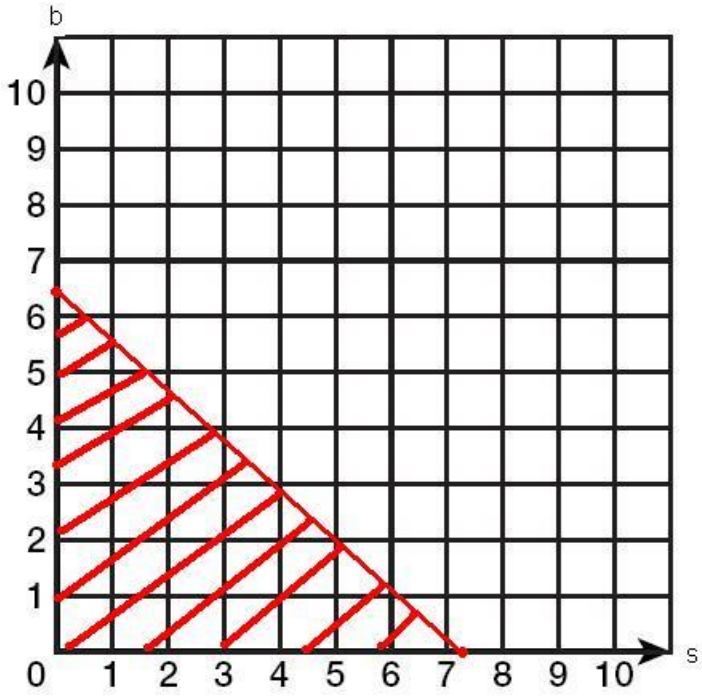
36. The inequality $6b + 14 \leq -8(-5b - 6)$ has infinitely many solutions.

37. $6x + 11 < 3(2x - 5)$
$6x + 11 < 6x - 15$
$11 < -15$
This inequality has no solution.

38. Let m = the number of miles.
$0.15m + 25 \geq 108$
$0.15m \geq 83$
$m \geq 553.3$ miles

39. The smallest part will be $15 - 0.015 = 14.985$ cm. The largest part will be $15 + 0.015 = 15.015$ cm.

40. Let s = the number of pounds of strawberries, and b = the number of pounds of blueberries.
$1.67s + 1.89b \leq 12.00$
$1.89b \leq -1.67s + 12.00$
$b \leq -0.884s + 6.349$



41. $24 = |8z|$

$8z = 24$	OR	$8z = -24$
$z = 3$	OR	$z = -3$

42. $\left|\frac{u}{4}\right| = -1.5$

There is no solution to this equation because an absolute value cannot be equal to a negative value.

43. $1 = |4r - 7| - 2$
$3 = |4r - 7|$

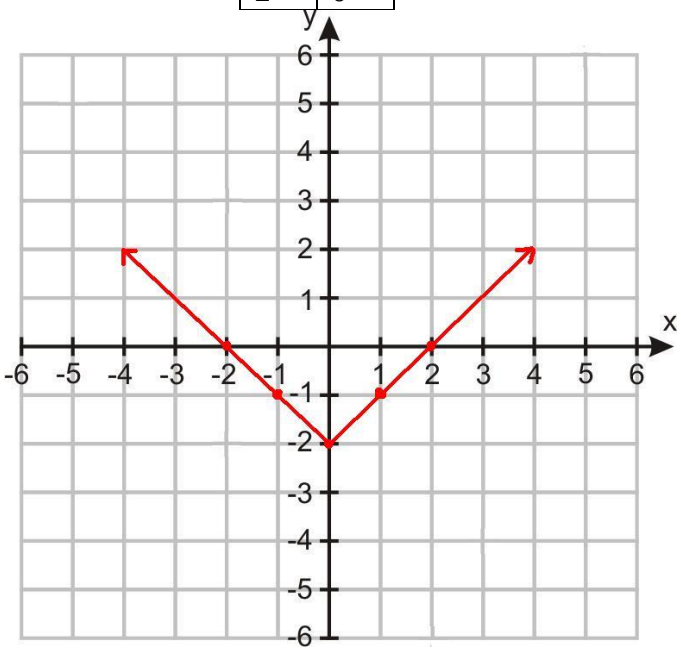
$4r - 7 = 3$	OR	$4r - 7 = -3$
$4r = 10$	OR	$4r = 4$
$r = \frac{5}{2}$	OR	$r = 1$

44. $|-9 + x| = 7$

$-9 + x = 7$	OR	$-9 + x = -7$
$x = 16$	OR	$x = 2$

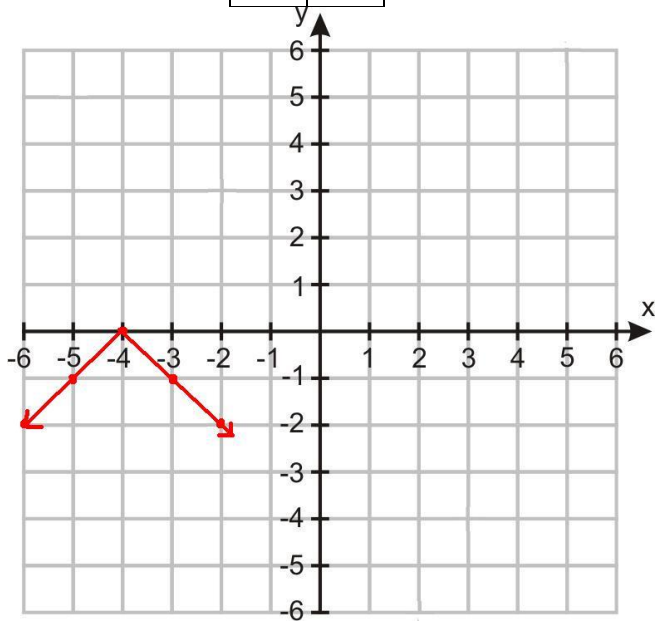
45. $y = |x| - 2$

x	y
–2	0
–1	–1
0	–2
1	–1
2	0



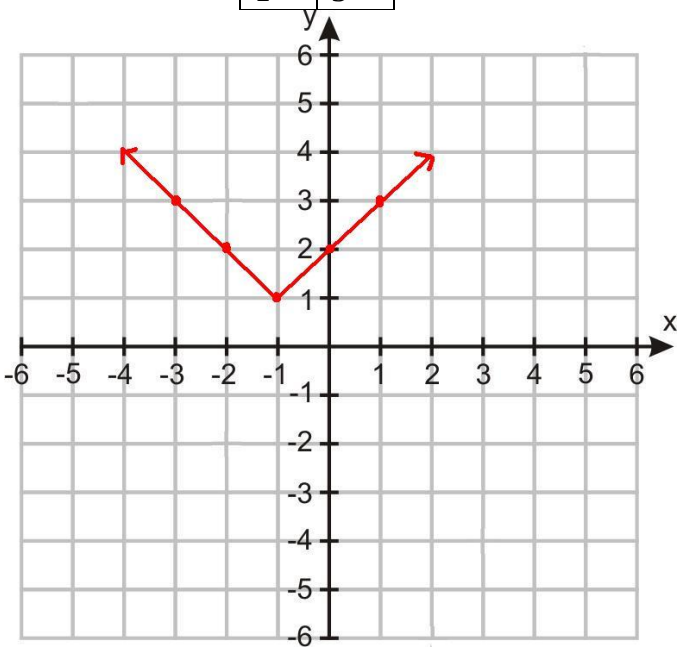
46. $y = -|x + 4|$

x	y
–6	–2
–5	–1
–4	0
–3	–1
–2	–2



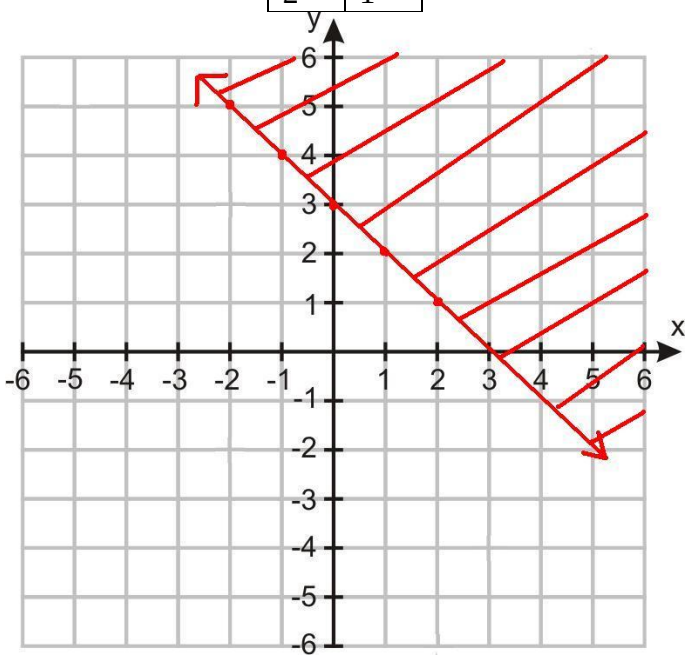
47. $y = |x + 1| + 1$

x	y
–3	3
–2	2
–1	1
0	2
1	3



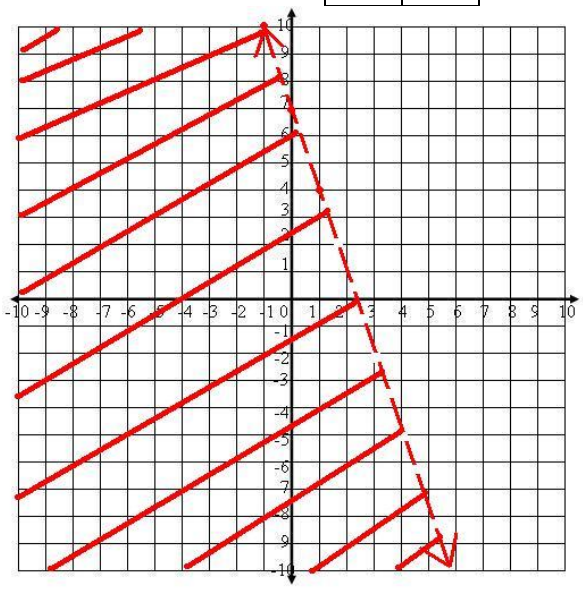
48. $y \geq -x + 3$

x	y
–2	5
–1	4
0	3
1	2
2	1



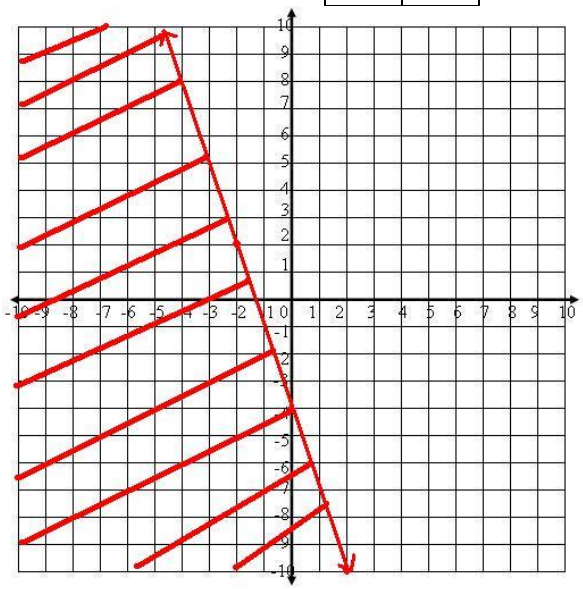
49. $y < -3x + 7$

x	y
–1	10
0	7
1	4

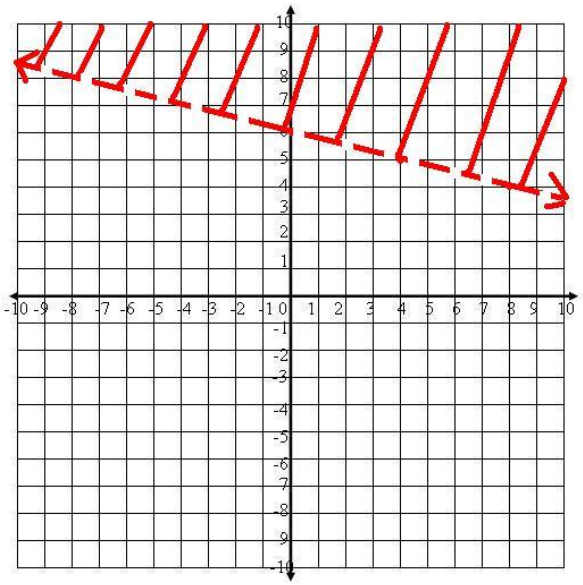


50. $3x + y \leq -4$
$y \leq -3x - 4$

x	y
–2	2
0	–4
2	–10



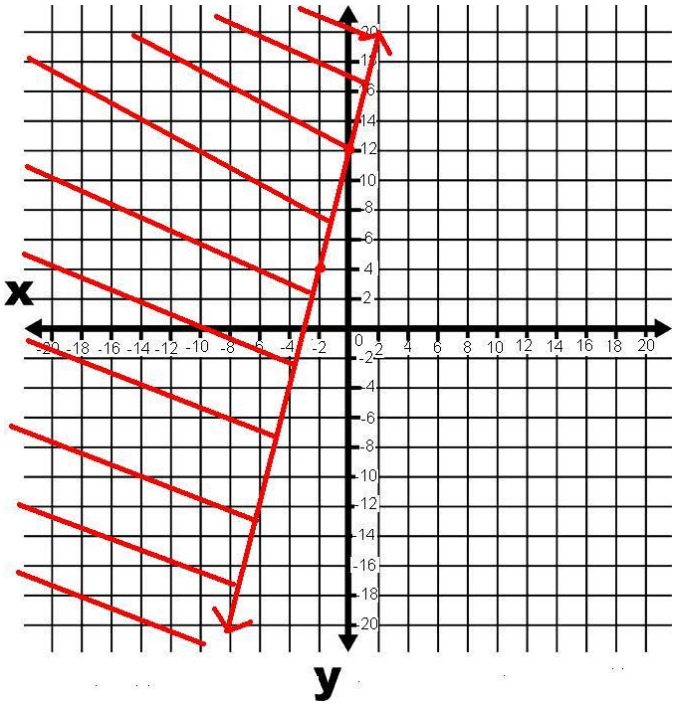
51. $y > -\frac{1}{4}x + 6$



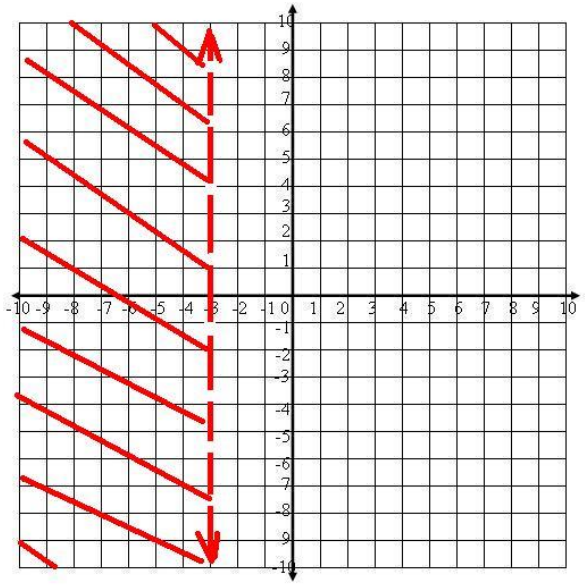
52. $8x - 3y \leq -12$

$-3y \leq -8x - 12$

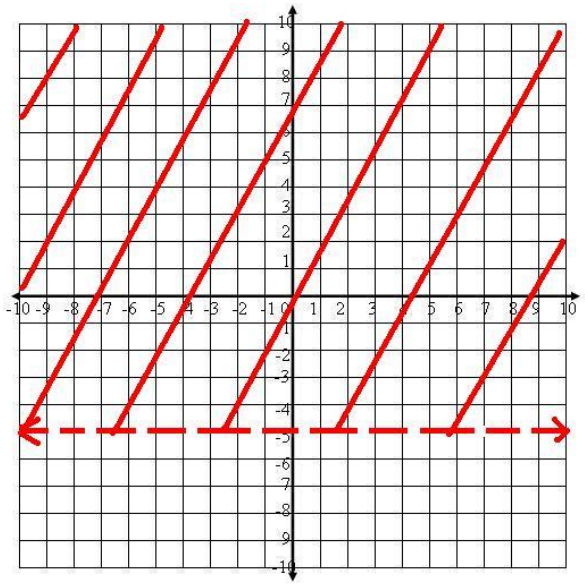
$y \geq 8x + 12$



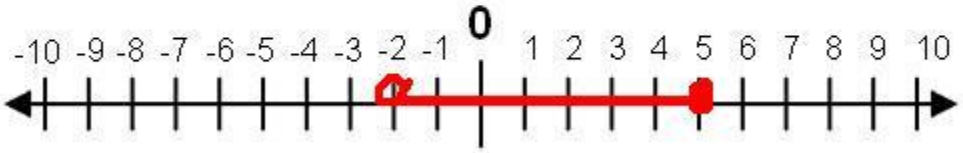
53. $x < -3$



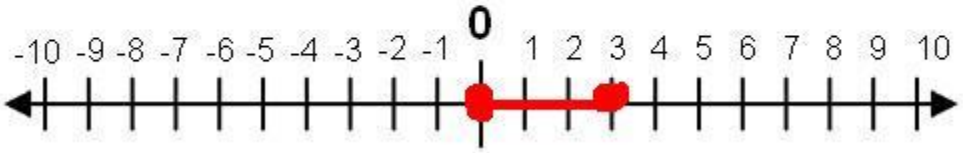
54. $y > -5$



55. $-2 < x \leq 5$

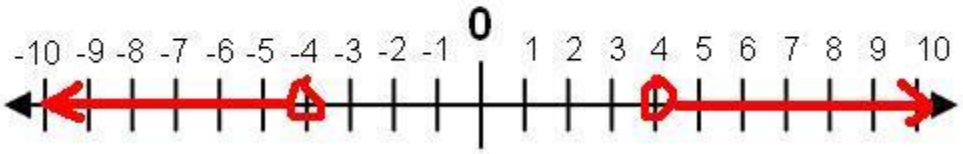


56. $0 \leq y \leq 3$



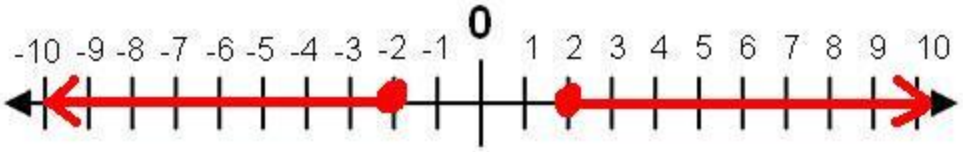
57. $|x| > 4$

$x > 4$ OR $x < -4$



58. $|y| \leq -2$

$y \leq -2$ OR $y \geq 2$



59. Sample space = {1, 2, 3, 4, 5, 6, 7, 8}

60. $\frac{1}{8}$

61. There are 4 even numbers, so the $P(\text{even}) = \frac{1}{2}$.

62. The multiples of 2 are 2, 4, 6, and 8. Therefore the odds for landing on a multiple of 2 are 4:4 or 1:1.

63. The prime numbers are 3, 5, and 7. Therefore the odds against landing on a prime number are 5:3.

64.

Spin	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Outcome	1	2	3	3	1	7	3	3	3	6	1	8	5	2	8

$P(3) = \frac{5}{15} = \frac{1}{3}$

65. $P(x > 5) = \frac{4}{15}$

66. $P(1 \leq x \leq 8) = 1 = 100\%$

67. $P(\text{even}) = \frac{1}{2}$

6.10 Chapter 6 Test

1. a) $P(\text{red 4}) = \frac{2}{52} = \frac{1}{26}$

   b) $P(\text{purple Ace}) = 0$

   c) $P(\text{number card}) = \frac{36}{52} = \frac{9}{13}$

2. $-7 \le y + 7 < 5$

$-7 \le y + 7$	AND	$y + 7 < 5$
$-14 \le y$	AND	$y < -2$

3. The distance between –1.5 and 9 is $|-1.5 - 9| = |-10.5| = 10.5$.

4. $23 = |8 - 7r| + 3$

   $20 = |8 - 7r|$

$8 - 7r = 20$	OR	$8 - 7r = -20$
$-7r = 12$	OR	$-7r = -28$
$r = -\frac{12}{7}$	OR	$r = 4$

5. $|-7c| \ge 49$

$-7c \ge 49$	OR	$-7c \le -49$
$c \le -7$	OR	$c \ge 7$

6. $x - 2y \le 10$

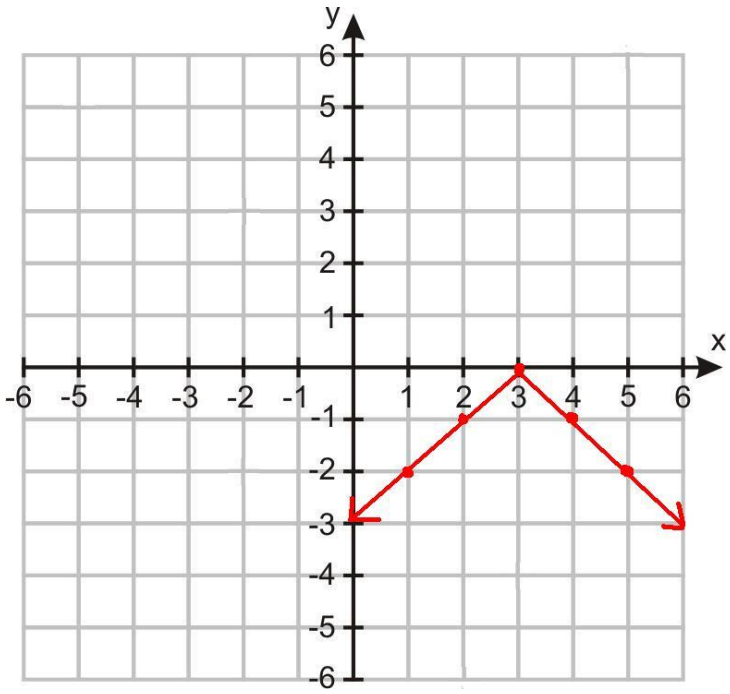
   $-2y \le -x + 10$

   $y \ge \frac{1}{2}x - 5$

7. $y > -\frac{3}{5}x + 4$

8. $y = -|x - 3|$

x	y
1	−2
2	−1
3	0
4	−1
5	−2



9.

a. Sample space = {red, red, blue, blue, blue, black, black, black, black}

b. $P(\text{blue}) = \frac{3}{9} = \frac{1}{3}$

c. Odds against drawing a black sock = 5:4

d. Odds for drawing a red sock = 2:7

10.

$2(6 + 7r) > -12 + 8r$

$12 + 14r > -12 + 8r$

$22r > -24$

$r > -\frac{24}{22} OR -1\frac{1}{11}$

11.

$-56 \leq 8 + 8(7x + 6)$
$-56 \leq 8 + 56x + 48$
$-56 \leq 56x + 56$
$-112 \leq 56x$
$-2 \leq x$