

## Bellwork: Algebra 1

1. Write down your work for the week in your planner.
2. Take out your two assignments from Thursday and Friday if you did not already turn them in.
3. You will need your composition book today.
4. Answer the following questions in the **MONDAY** section of your bellwork sheet.

Solve the inequality and graph it

$$3(2x - 10) - 8x < -6$$

$$6x - 30 - 8x < -6$$

$$-2x - 30 < -6$$

$$+30 \quad +30$$

$$-2x < 24$$

$$\frac{-2x}{-2} < \frac{24}{-2}$$

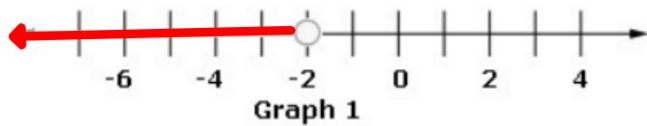
$$-12 < x$$

$$x > -12$$

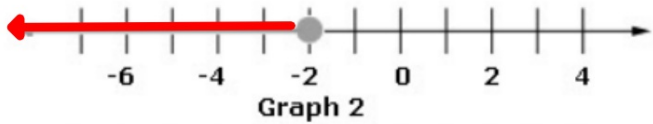




| Statement  | Inequality  |
|--|-------------|
| A student will study German for <u>at least</u> 3 years.     | $x \geq 3$  |
| All employees work <u>less than</u> 40 hours.                | $x < 40$    |
| There are <u>at least</u> 35 people in the emergency room.   | $x \geq 35$ |
| The carton holds <u>at most</u> 12 eggs.                     | $x \leq 12$ |
| There are <u>no more than</u> 10 gallons of gas in the tank. | $x \leq 10$ |
| There are <u>fewer than</u> 10 yards of fabric left.         | $x < 10$    |
| The temperature is <u>above</u> 32°F.                        | $x > 32$    |
| Years of experience <u>cannot be less than</u> 5 years.      | $x \geq 5$  |

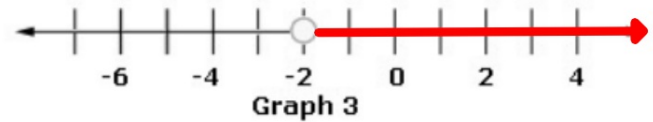


Write the inequality for each graph shown above:



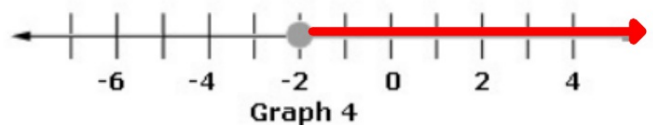
Graph 1:  $x < -2$

Graph 2:  $x \leq -2$



Graph 3:  $x > -2$

Graph 4:  $x \geq -2$



3. The Latino Rams at Englewood High School are seeking to raise at least \$750 in a fundraiser to pay for their end-of-the year field trip to Islands of Adventures.

Part A: Write an inequality to represent this situation.

$$x \geq 750$$

Part B: Graph the inequality on a number line.



4. Find the solution set to each inequality. Express the solution in set notation.

$$\begin{array}{r} 6m + 2 < 5m - 4 \\ -5m \quad -5m \\ \hline m + 2 < -4 \\ -2 \quad -2 \\ \hline m < -6 \end{array}$$
$$\{m \mid m < -6\}$$

$$\begin{array}{r} \frac{a}{5} + 8 \leq 13 \\ -8 \quad -8 \\ \hline 5 \cdot \frac{a}{5} \leq 5 \cdot 5 \\ a \leq 25 \end{array}$$
$$\{a \mid a \leq 25\}$$

$$\begin{array}{r} -3(x - 7) > -27 \\ -3x + 21 > -27 \\ -21 \quad -21 \\ \hline -3x > -48 \\ -3 \quad -3 \\ \hline x < 16 \end{array}$$
$$\{x \mid x < 16\}$$

$$\begin{array}{r} 8(p - 6) > 4(p - 4) \\ 8p - 48 > 4p - 16 \\ -4p \quad -4p \\ \hline 4p - 48 > -16 \\ +48 \quad +48 \\ \hline 4p > 32 \\ \frac{4p}{4} > \frac{32}{4} \\ p > 8 \end{array}$$
$$\{p \mid p > 8\}$$

1. In order for Brady to earn a B in his biology course, his test scores must average at least 80%. On the first 5 tests, he has an average of 77%. There is one test remaining in the course.

What is the minimum score Brady needs to earn on the last test to receive a B in the class?

$$\frac{x + 5(77)}{6} = \frac{385 + x}{6} \geq 80$$

$$385 + x \geq 480$$

$$x \geq 95$$

Minimum  
score

95

2. Shawn has been hired as a sales associate Horizon Mobile Phone Company. He has two salary options. He can either receive a fixed salary of \$750.00 per week or a salary of \$400.00 per week plus an 8% commission of his weekly sales. Which solution set among the options below represents the dollar amount of sales that he must generate each week in order for the option with commission to be the better choice?

- A  $\{s | s > \$810.00\}$   
 B  $\{s | s > \$1150.00\}$   
 C  $\{s | s > \$4,375.00\}$   
 D  $\{s | s > \$9,375.00\}$

$$750 < 400 + .08x$$

$$\frac{350}{.08} < \frac{.08x}{.08}$$

$$4375 < x$$

3. In GeoTown, there are 210 teenagers that own a tablet. This is at least  $\frac{4}{5}$  of all teenagers that live in GeoTown. What is the maximum number of teenagers who live in GeoTown?

262  
teenagers

$$\frac{4}{5} \leq \frac{210}{x}$$

$$4x \leq 1050$$

$$x \leq 262.5$$

$$x \leq 262$$

4. Ms. Ache is paid \$1250 per week but is fined \$100 each day she is late to work. Ms. Ache wants to make at least \$3,000 over the next three weeks so she can take a vacation.

Over the next three weeks, what is the maximum number of days she can be late to work and still reach her goal of making at least \$3000?

$$\begin{aligned} 3(1250) - 100x &\geq 3000 \\ 3750 - 100x &\geq 3000 && \text{17 days} \\ \frac{-100x}{-100} &\geq \frac{-750}{-100} \\ x &\leq 7.5 \end{aligned}$$

5. The Hot Summer Fair is coming to town! Admission to the fair costs \$12.99 and each ride costs \$1.75. You have \$35 to spend at the fair including admission.

Part A: Write an inequality that represents this situation.

$$12.99 + 1.75x \leq 35$$

Part B: Solve the inequality to determine the maximum number of rides you can enjoy at the Hot Summer Fair?

$$12.99 + 1.75x \leq 35$$



$$1.75x \leq 22.01$$

$$x \leq 12.6$$



So MAXIMUM number of rides = 12

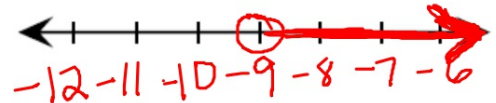


| Main Ideas/Questions   | Notes/Examples  |  |
|--|---|--|
| <h1>Interval Notation</h1>   | <p><b>Interval Notation</b> is another way of expressing the answer to an inequality. It uses parentheses and brackets to show where the graph starts and ends.</p> |  |
| <h1>Symbols</h1> <p><math>&lt;</math>, <math>&gt;</math></p> <p><math>\leq</math>, <math>\geq</math></p> | <p><b>(</b></p>   | <p>Parentheses mean “<b>not included</b>”, or “<b>open</b>”.<br/>Use when a graph starts or ends on a <b>OPEN CIRCLE</b>. </p> |
|  | <p><b>[</b></p>   | <p>Brackets mean “<b>included</b>”, or “<b>closed</b>”.<br/>Use when a graph starts or ends on a <b>CLOSED CIRCLE</b>. </p>   |
|  | <p>Always use <u>parenthesis</u> with infinity or negative infinity!</p>  |  |

1.  $4(x+3) > -24$

$$\begin{array}{r} 4x + 12 > -24 \\ -12 \quad -12 \\ \hline 4x > -36 \\ \hline x > -9 \end{array}$$

$$x > -9$$

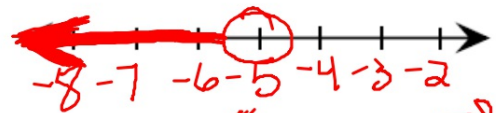


Interval Notation:  $(-9, \infty)$

2.  $x - 3(x+2) > 4$

$$\begin{array}{r} x - 3x - 6 > 4 \\ -2x - 6 > 4 \\ +6 \quad +6 \\ \hline -2x > 10 \end{array}$$

$$x < -5$$



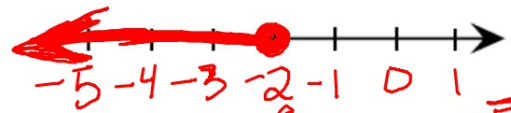
Interval Notation:  $(-\infty, -5)$

3.  $7x - 2(x-4) \leq -2$

$$\begin{array}{r} 7x - 2x + 8 \leq -2 \\ 5x + 8 \leq -2 \\ -8 \quad -8 \\ \hline 5x \leq -10 \\ \hline x \leq -2 \end{array}$$

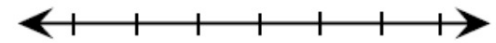
$$\frac{5x}{5} \leq \frac{-10}{5}$$

$$x \leq -2$$



Interval Notation:  $(-\infty, -2]$

4.  $-8(x-1) - x \leq -28$



Interval Notation: \_\_\_\_\_

5.  $6x + 1 < 9 - 2x$

$+2x \quad +2x$

$x < 1$

$8x + 1 < 9$

$-1 \quad -1$

$8x < 8$



Interval Notation:  $(-\infty, 1)$

6.  $2x - 1 \leq 5x + 20$

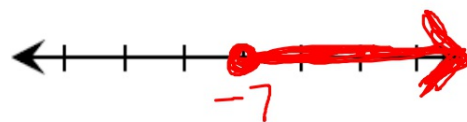
$-2x \quad -2x$

$-7 \leq x$

$-1 \leq 3x + 20$

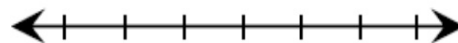
$-20 \quad -20$

$-21 \leq 3x$



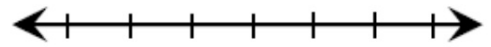
Interval Notation:  $[-7, \infty)$

7.  $3 - (2x - 7) \leq 34 - 6x$



Interval Notation: \_\_\_\_\_

8.  $-3(x+2) - 3x < 2x + 18$

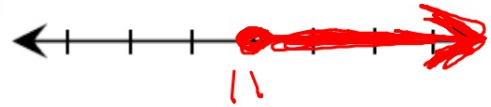


Interval Notation: \_\_\_\_\_

9.  $5x - 3(x+6) \geq 8 - (x-7)$

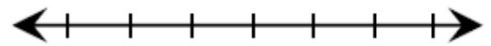
$$\begin{aligned}
 5x - 3x - 18 &\geq 8 - x + 7 \\
 2x - 18 &\geq 15 - x \\
 \rightarrow x & \qquad \qquad \rightarrow x \\
 \hline
 3x - 18 &\geq 15 \\
 +18 & \qquad +18 \\
 3x &\geq 33
 \end{aligned}$$

$$\begin{aligned}
 \frac{3x}{3} &\geq \frac{33}{3} \\
 x &\geq 11
 \end{aligned}$$



Interval Notation:  $[11, \infty)$

10.  $-(3x+3) - 2x > -4(x-2) - 2$



Interval Notation: \_\_\_\_\_