

Bellwork:

① Solve:  $|x-1| = 4$

② Evaluate  $|x| - 2|y| - |z|$   
if  $x = -1$ ,  $y = \frac{1}{2}$ , and  $z = 5$ .

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$$|x-1| = 4$$

$$x-1=4$$

$$x=5$$

$$x-1=-4$$

$$x=-3$$

Evaluate  $|x| - 2|y| - |z|$   
if  $x = -1$ ,  $y = \frac{1}{2}$ , and  $z = 5$ .

$$|-1| - 2\left|\frac{1}{2}\right| - |5|$$

$$|-2 \cdot \frac{1}{2} - 5|$$

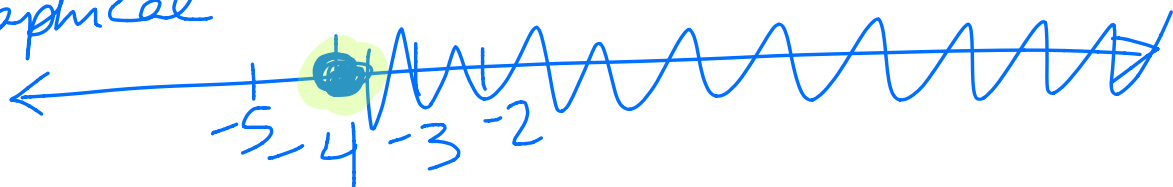
$$|-1 - 5|$$

$$\boxed{-6}$$

10/13 How do I solve linear inequalities?

$$\begin{array}{r} 2x - 1 \leq 4x + 7 \\ -2x \qquad -2x \\ \hline -1 \leq 2x + 7 \\ -7 \qquad -7 \\ \hline -8 \leq 2x \\ \frac{-8}{2} \qquad \frac{2x}{2} \\ -4 \leq x \rightarrow x \geq -4 \end{array}$$

Graphical



Interval

$$[-4, \infty)$$

Set  $\{x | x \geq -4\}$

Ex. Solve:  $2(5-3x) \leq -7x+5$

$$\begin{array}{r} 10 - 6x \leq -7x + 5 \\ -5 \qquad \qquad -5 \\ \hline \end{array}$$

$$\begin{array}{r} 5 - 6x \leq -7x \\ +6x \qquad +6x \\ \hline \end{array}$$

$$\frac{5}{-1} \leq \frac{-x}{-1}$$

$$-5 \geq x \rightarrow \underline{x \leq -5}$$



$$(-\infty, -5]$$

left + right  
(small, large)

$$\{x \mid x \leq -5\}$$

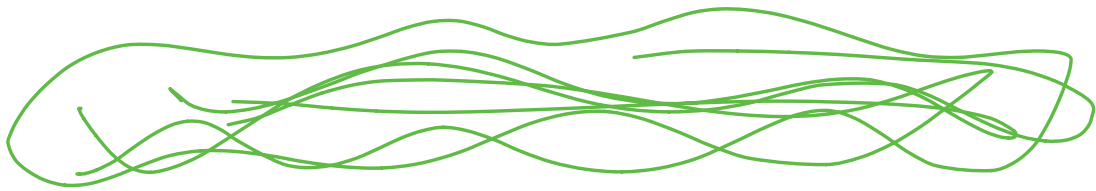
$$\textcircled{1} |x-1| = 4$$

$$x-1 = 4$$

$$x = 5$$

$$x-1 = -4$$

$$x = -3$$



$\textcircled{2}$  Evaluate  $|x| - 2|y| - |z|$   
if  $x = -1$ ,  $y = \frac{1}{2}$ , and  $z = 5$ .

$$|-1| - 2\left|\frac{1}{2}\right| - |5|$$

$$1 - 2 \cdot \frac{1}{2} - 5$$

$$1 - 1 - 5$$
$$\underline{-5}$$

10/13 How do I solve linear inequalities? (Representation of answers).

$$\text{Ex. } \begin{array}{r} 8 - 2x > 4 \\ -8 \qquad \qquad -8 \\ \hline -2x > -4 \\ \underline{-2} \qquad \underline{-2} \\ x < 2 \end{array}$$

Set-Builder:  $\{x \mid x < 2\}$

Graph:

(open circle bc it's not = to)

Interval:  $(-\infty, 2)$

Ex. of Graph + Interval Notation



$[4, \infty)$

[ bc closed dot



Ex. Solve - represent your answer in all three ways.

$$3x - 4(x - 1) \geq 8 - 3x$$

$$3x - 4x + 4 \geq 8 - 3x$$

$$\begin{array}{r} -1x + 4 \geq 8 - 3x \\ +3x \qquad \qquad +3x \\ \hline \end{array}$$

$$2x + 4 \geq 8$$

$$2x \geq 4$$

$$x \geq 2$$



$$\{x \mid x \geq 2\} \text{ set-builder}$$

$$[2, \infty) \text{ interval}$$

### Find and Apply

Solve each inequality. Describe the solution set using set-builder or interval notation. Then, graph the solution set on a number line.

- |   |   |                         |
|---|---|-------------------------|
| 15. $n + 4 \geq -7$                       | 16. $b - 3 \leq 15$                                     | 17. $5x < 35$           |
| 18. $\frac{d}{2} > -4$                    | 19. $\frac{g}{-3} \geq -9$                              | 20. $-8p \geq 24$       |
| 21. $13 - 4k \leq 27$                     | 22. $14 > 7y - 21$                                      | 23. $-27 < 8m + 5$      |
| 24. $6b + 11 \geq 15$                     | 25. $2(4t + 9) \leq 18$                                 | 26. $90 \geq 5(2r + 6)$ |
| 27. $14 - 8n \leq 0$                      | 28. $-4(5w - 8) < 33$                                   | 29. $0.02x + 5.58 < 0$  |
| 30. $1.5 - 0.25c < 6$                     | 31. $6d + 3 \geq 5d - 2$                                | 32. $9z + 2 > 4z + 15$  |
| 33. $2(g + 4) < 3g - 2(g - 5)$            | 34. $3(a + 4) - 2(3a + 4) \leq 4a - 1$                  |                         |
| 35. $y < \frac{-y + 2}{9}$                | 36. $\frac{1 - 4p}{5} < 0.2$                            |                         |
| 37. $\frac{4x + 2}{6} < \frac{2x + 1}{3}$ | 38. $12\left(\frac{1}{4} - \frac{n}{3}\right) \leq -6n$ |                         |

39. **PART-TIME JOB** David earns \$5.60 an hour working at Box Office Videos. Each week, 25% of his total pay is deducted for taxes. If David wants his take-home pay to be at least \$105 a week, solve the inequality  $5.6x - 0.25(5.6x) \geq 105$  to determine how many hours he must work.
40. **STATE FAIR** Juan's parents gave him \$35 to spend at the State Fair. He spends \$13.25 for food. If rides at the fair cost \$1.50 each, solve the inequality  $1.5n + 13.25 \leq 35$  to determine how many rides he can afford.