Quiz 1.3

1. (2 point) Temperature Conversion $C = \dfrac{5}{9}(F - 32)$
Solve for F

2. (2 point) Statistics $Z = \dfrac{x - \mu}{\sigma}$
Solve for x

3. (3 points) Dimensions of a Window The perimeter of a rectangular window is 26 feet. The width of the window is 3 more than the length. What are the dimensions of the window?

1.4 Linear Inequalities

Replace the ? with <, >, or = to make the statement true.

1. $3 < 6$ 2. $-3 > -6$

3. $\dfrac{1}{2} = .5$ 4. $\dfrac{2}{3} > \dfrac{3}{5}$

Examples of Linear inequalities

$8z \leq 10$ $5x - 1 \leq 14$

$z \leq \dfrac{5}{4}$

$x - 4 > 9$ $5x - 1 \geq 3x + 8$
                     $-3x + 1 \quad -3x + 1$

$\dfrac{9}{2} \leq x$ $\dfrac{2x}{2} \geq \dfrac{9}{2}$

                     $x \geq \dfrac{9}{2}$

$\dfrac{-3x}{-3} < \dfrac{9}{-3}$

$x > -3$

$-6x + 9 \leq 15$

$-6x \leq 6$

$x \geq -1$

Representing Inequalities Using a Real Number Line and Interval Notation

	Table 7	
Interval	**Inequality Notation**	**Graph**
The open interval (a, b)	$\{x \mid a < x < b\}$	
The closed interval $[a, b]$	$\{x \mid a \leq x \leq b\}$	
The half-open interval $[a, b)$	$\{x \mid a \leq x < b\}$	
The half-open interval $(a, b]$	$\{x \mid a < x \leq b\}$	
The interval $[a, \infty)$	$\{x \mid x \geq a\}$	
The interval (a, ∞)	$\{x \mid x > a\}$	
The interval $(-\infty, a]$	$\{x \mid x \leq a\}$	
The interval $(-\infty, a)$	$\{x \mid x < a\}$	
The interval $(-\infty, \infty)$	$\{x \mid x \text{ is a real number}\}$	

Write each inequality using interval notation then graph.

$$-2 \le x \le 4 \quad [-2, 4]$$

$$1 < x \le 5$$

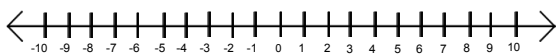Write each inequality using interval notation then graph.

$$x < 2 \quad (-\infty, 2)$$

$$x \ge -3$$

You try

$$-3 \le x \le 2$$

$$x < 3$$

Write each interval using inequality notation involving x, then graph.
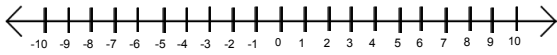
[-2, 4) $\{x \mid -2 \le x < 4\}$

(1, 5)

(-∞, 1) $\{x \mid x < 1\}$

$$-\infty < x < 1$$

You try

(0, 5]

|←|—|—|—|—|—|—|—|—|—|—|—|—|—|—|—|—|—|—|—|—|→|

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

(-6, 0)

|←|—|—|—|—|—|—|—|—|—|—|—|—|—|—|—|—|—|—|—|—|→|

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

$$\left(-\infty, \frac{8}{3}\right]$$

|←|—|—|—|—|—|—|—|—|—|—|—|—|—|—|—|—|—|—|—|—|→|

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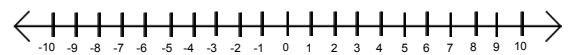
Solving Inequalies

$$x - 4 \geq 5x + 12$$

You try

$$-2x + 1 \leq 3x + 11$$

$$3(x - 1) + 2x < 6x + 3$$

You try

$$4(x-2) < 3x-4$$

$$\frac{2(2x+1)}{6\ 3} > \frac{3(x-2)}{2\ 6}$$

$$4x + 2 > 3x - 6$$
$$-3x - 2 \qquad -3x - 2$$
$$\boxed{x > -8}$$

You try

$$\frac{3x+1}{5} \geq 2$$

BankOne has offered you two different credit card options. The Southwest rewards card charges an annual fee of $39 plus 12.9% simple interest on all outstanding balances. The Marriott rewards card charges an annual fee of $30 plus 14.15% simple interest on all outstanding balances. What annual balance results in the southwest card costing less then the Marriott card.

You try

BankOne has offered you two different credit card options. The Southwest rewards card charges an annual fee of $25 plus 9.9% simple interest on all outstanding balances. The Marriott rewards card charges no fee and is 14.9% simple interest on all outstanding balances. What annual balance results in the southwest card costing less then the Marriott card.