Unit 4 Extension: Inequalities

---

*I can **solve** and represent **inequalities on a number line**.*

Inequality Symbols:

Greater than: $>$ Less than: $<$ Greater than or equal to: $\geq$

Checking Possible Solutions:

1. Are the following numbers a solution to the inequality $x + 4 > 6$?

   (A)) $x = 3$
   B) $x = 0$
   (C)) $x = 4$
   D) $x = 2$

2. Are the following numbers a solution to the inequality $\frac{1}{2}x \leq 6$?

   (A)) $x = 12$
   (B)) $x = 0$
   C) $x = 14$
   (D)) $x = 3$

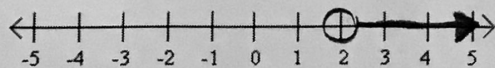3. Which value for x makes the inequality $-4x - 5 > 11$ true?

   (A)) $x = -6$
   B) $x = -4$
   C) $x = 4$
   D) $x = 6$

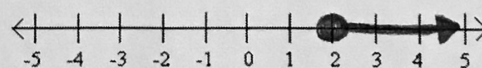4. Which value for x makes the inequality $-2x + 6 < 10$ true? Select all that apply.

   A) $x = -4$
   B) $x = -3$
   C) $x = -2$
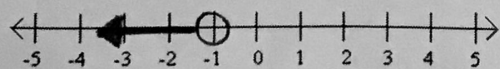   (D)) $x = 4$

Graphing Inequalities:
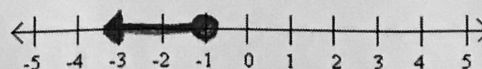
1. $x > 2$

2. $x \geq 2$

3. $x < -1$

4. $x \leq -1$

Graphing Inequalities (Cont'd):

Greater than: ○——→
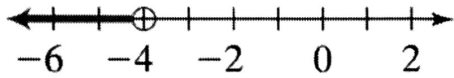
Greater than or equal to: ●——→

Less than: ←——○

Less than or equal to: ←——●

Write the inequality shown on each number line.

1. _____ $x < -4$ _____

$$-6 \quad -4 \quad -2 \quad 0 \quad 2$$

2. _____ $x \geq 2$ _____

$$-2 \quad -1 \quad 0 \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6$$
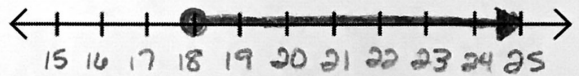
Inequalities in Word Problems:

1. You must be at least 18 years of age to vote. Write and graph an inequality for this requirement.

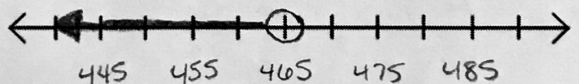Inequality: _____ $x \geq 18$ _____

$$15 \quad 16 \quad 17 \quad 18 \quad 19 \quad 20 \quad 21 \quad 22 \quad 23 \quad 24 \quad 25$$

2. Kamisha got several bills in the mail today: her rent, which is $425; her water bill, which is $25; and her phone bill, which is $15. She says she does not have enough money in the bank to cover these expenses. Write an inequality to represent the amount of money in her account.

$$425 + 25 + 15 = 465$$

Inequality: _____ $x < 465$ _____

$$445 \quad 455 \quad 465 \quad 475 \quad 485$$

Solving Inequalities:

1.　$3x + 2 > 8$

$ -2 \quad -2$

$\dfrac{3x}{3} > \dfrac{6}{3}$

$\boxed{x > 2}$

2.　$5x + 7 \leq 32$

$ -7 \quad -7$

$\dfrac{5x}{5} \leq \dfrac{25}{5}$

$\boxed{x \leq 5}$

The only exception to solving like an equation:

*** If you multiply or divide by a negative on both

sides: _flip the inequality sign._

3.　$-2x - 11 < -15$

$ +11 \quad +11$

$\dfrac{-2x}{-2} < \dfrac{-4}{-2}$

$\boxed{x > 2}$