

6.1: Solving One-Step Inequalities

GOAL: To be able to solve inequalities using addition, subtraction, multiplication, and division.

Part 1: Graphing Inequalities

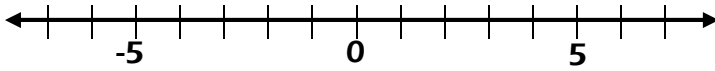
< means _____

≤ means _____

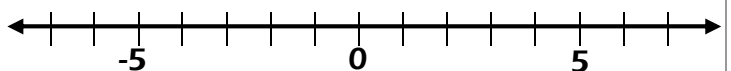
> means _____

≥ means _____

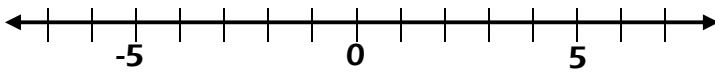
1) $x < 2$



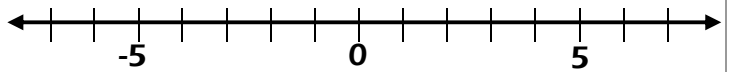
2) $y > -3$



3) $a \leq -4$



4) $b \geq 5$



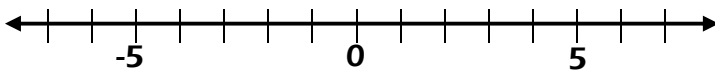
○ When graphing inequalities:

Open circles are used for the signs _____ and _____.

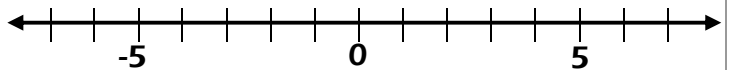
Closed circles are used for the signs _____ and _____.

Graph the following inequalities.

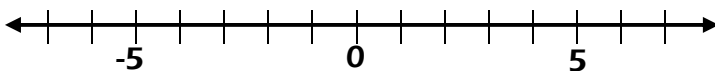
5) $c > -6$



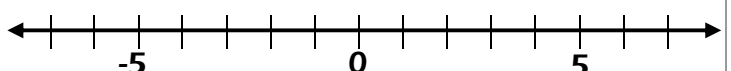
6) $x \leq 4$



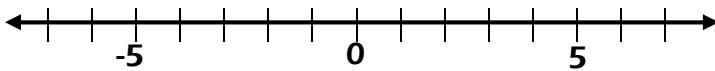
7) $d \geq 0$



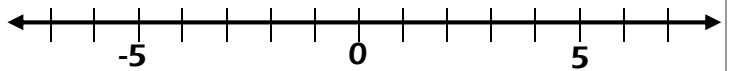
8) $y < -5$



9) $m > -7$



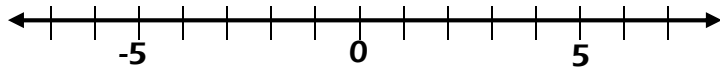
10) $n \leq -2$



Part 2: Solving Inequalities Using Addition and Subtraction

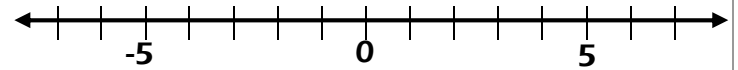
Solving for equations and inequalities are the same for addition and subtraction.

With equations: $x + 6 = 2$



Solution: Is a point.

With inequalities: $x + 6 \leq 2$

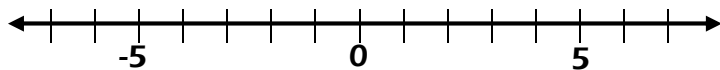


Solution: Is all real numbers less than that point.

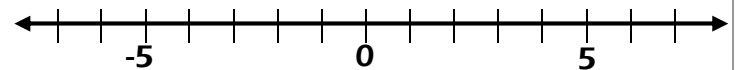
- One variable equations gave us **one** point as the answer.
- Inequalities have _____ points as the answer.

Solve the following inequalities. Then graph the inequalities on the number line.

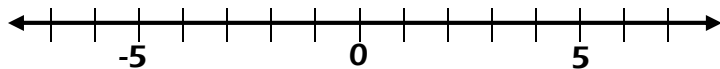
11) $y + 7 > 11$



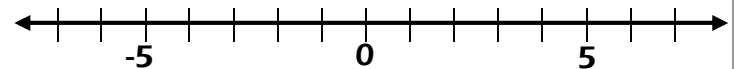
12) $-8 + y \leq -3$



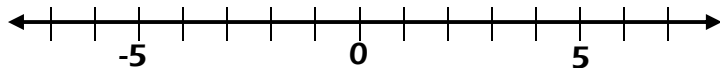
13) $15 \geq a + 17$



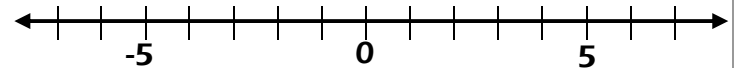
14) $-19 < b - 15$



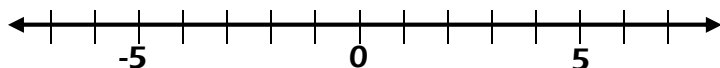
15) $-5 + m > -5$



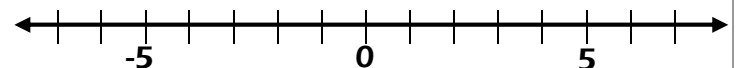
16) $12 \leq n + 7$



17) $-3 < y - 2$



18) $p - 1 \leq -4$



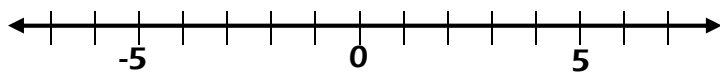
Part 3: Solving Inequalities Using Multiplication and Division

Solving for equations and inequalities are the same for multiplication and division, except.....

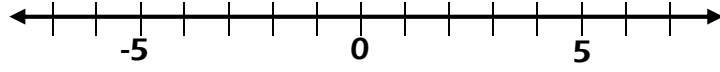
WHEN MULTIPLYING OR DIVIDING BY A NEGATIVE YOU MUST FLIP YOUR INEQUALITY!!

Examples

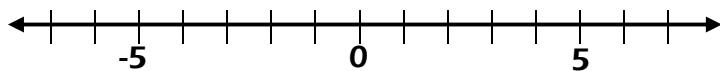
Multiplying by a positive: $\frac{x}{4} \leq 1$



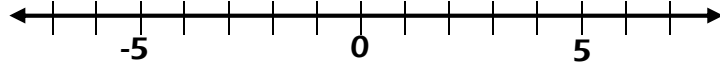
Dividing by a positive: $4x > 20$



Multiplying by a negative: $-\frac{1}{3}a > 2$

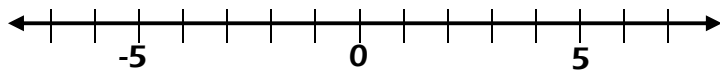


Dividing by a negative: $49 \geq -7b$

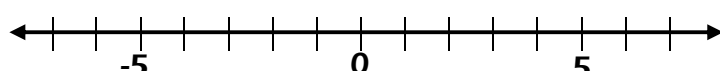


Solve the following inequalities. Then graph the inequalities on the number line.

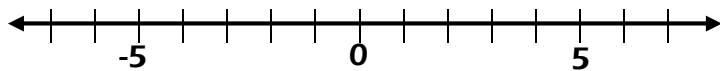
19) $2s \leq -8$



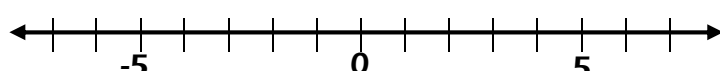
20) $2 < \frac{t}{3}$



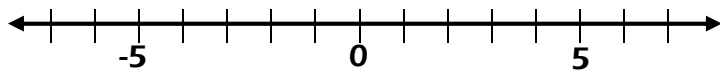
21) $-4m > 20$



22) $-\frac{1}{3}n \leq 1$



23) $-16 < -8x$



24) $0 \geq -\frac{1}{2}y$

