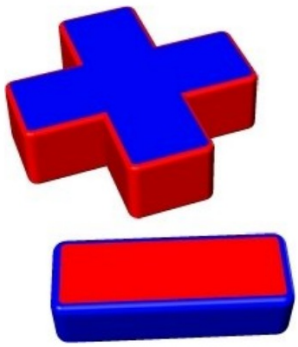
Lesson 4.2: Solving Inequalities Using Addition or Subtraction

Learning Target: Solve and Graph Inequalities



Addition Property of Inequality

Adding the same number to both sides of an inequality produces an equivalent inequality.

---

if $a < b$

then $a + c < b + c$

$3k < 17$

$3k + 5 < 17 + 5$

Subtraction Property of Inequality

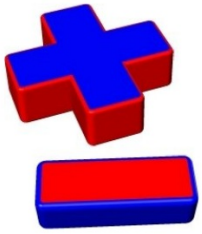
Subtracting the same number from both sides of an inequality produces an equivalent inequality.

---

if $a < b$

then $a - c < b - c$

Solving Equations with Addition and Subtraction



$p - 5 = 18$

$+5 \quad +5$

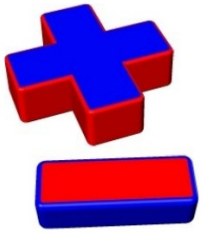
$p = 23$

$-9 = y + 4$

$-4 \quad -4$

$-13 = y$

Solving Inequalities with Addition and Subtraction



$p - 5 \geq 18$

$+5 \quad +5$

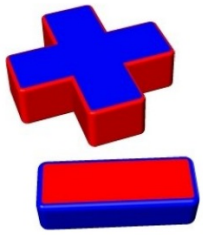
$p \geq 23$

$-9 > y + 4$

$-4 \quad -4$

$-13 > y$

Solving and Graphing Inequalities with Addition and Subtraction

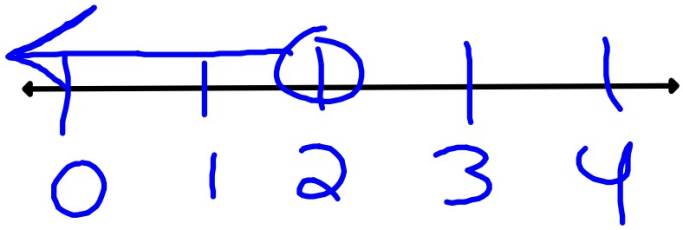


Solve the inequality and graph the solution

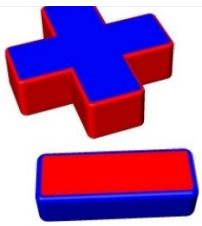
$$x - 5 < -3$$

$+5 \quad +5$

$x < 2$



Solving and Graphing Inequalities with Addition and Subtraction

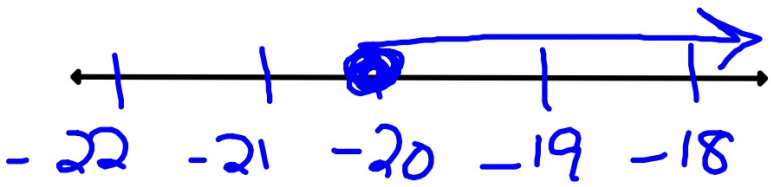


Solve the inequality and graph the solution

$$x + 9 \geq -11$$

$-9 \quad -9$

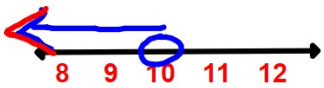
$x \geq -20$



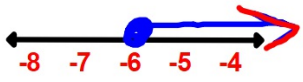
Reading and Rewriting Inequalities

It may be easier to "read" inequalities when the variable is on the left.

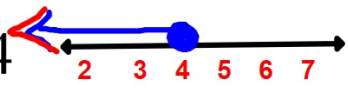
$k < 10$



$x \geq -6$



$y \leq 4$



$w > 7$

.

Rewriting Inequalities

It may be easier to "read" inequalities when the variable is on the left.

$4 > m \rightarrow m < 4$

$12 \geq x \rightarrow x \leq 12$

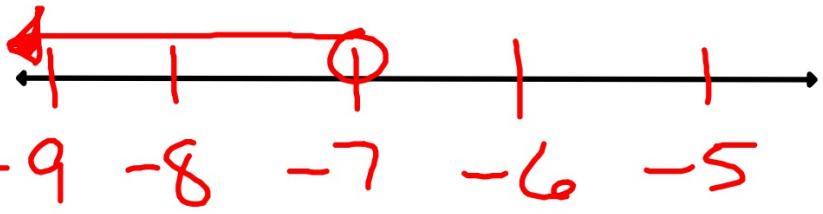
$-9 \leq f \rightarrow f \geq -9$

$-3 < p \rightarrow p > -3$

On your own.

Graph the inequality

$-7 > y$



$y < -7$

A person can be no taller than 6.25 feet to become an astronaut pilot for NASA. Your friend is 5 feet 9 inches tall. Write and solve an inequality that represents how much your friend can grow and still meet the requirement.

$5'9'' = 5\frac{9}{12} = 5.75 \text{ ft}$

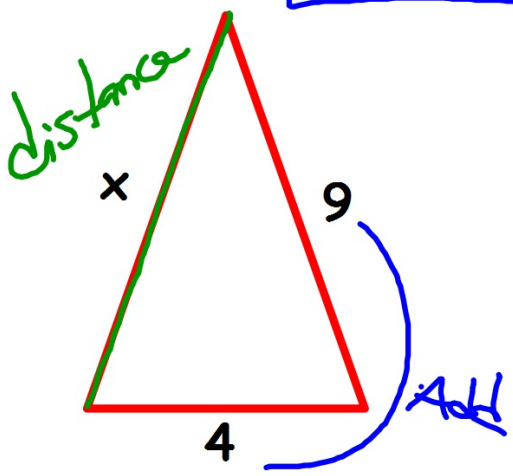
$6.25 \rightarrow \quad 0.25 = \frac{1}{4} \quad 12 \div 4 = 3 \quad 6'3''$

$5.75 + y \leq 6.25$

The school cafeteria seats 250 students. 203 students are already seated. Write and solve an inequality that represents the additional number of students that can be seated.

Write and solve an inequality for x

The perimeter is less than 21



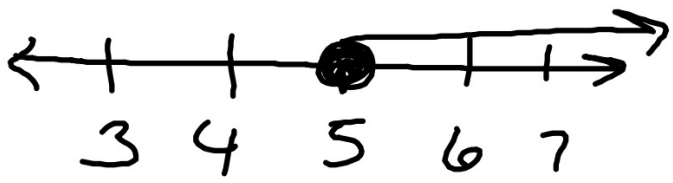
$9+4+x < 21$

$13+x < 21$

$-13 \quad -13$

$0 < x < 8$

What is the Solution Set for X?



$x \geq 5$

4.2 Homework

Pg.134-135

#1-10,

18-22, 26