

Algebra 1 - 2.5 Compound Inequalities

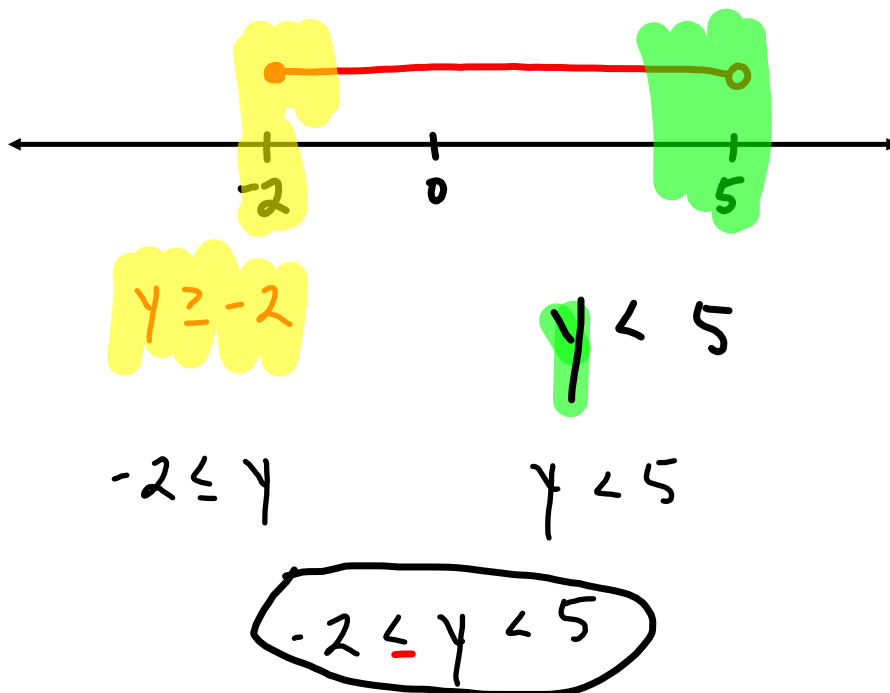
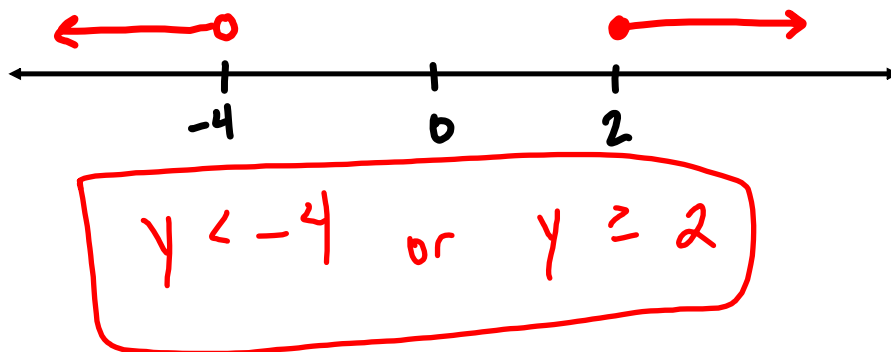
Solve the following inequalities. Graph them on the same number line.

$$\begin{array}{ccc}
 3y - 5 < -8 & \text{or} & 2y - 1 > 5 \\
 +5 \quad +5 & & +1 \quad +1 \\
 \frac{3y}{3} < \frac{-3}{3} & & \frac{2y}{2} > \frac{6}{2} \\
 y < -1 & & y > 3
 \end{array}$$

This is basically what we are doing today. A Compound inequality has Two inequality signs, joined together in one problem.

Lesson 2.5 Solving Compound Inequalities

Write an inequality for each of the graphed solutions below.



Try to write these statements into inequalities.

Ex: "A number a is fewer than -6 or no less than -3 ."

$$a < -6 \quad \text{or} \quad a \geq -3$$

Sometimes you can merge the two inequalities into one.

Ex: "A number d is more than 0 and less than 10 ."

$$\begin{array}{cc} d > 0 & d < 10 \\ \downarrow & \downarrow \\ 0 < d < 10 \end{array}$$

Lesson 2.5 Solving Compound Inequalities

Solving "Or" problems:

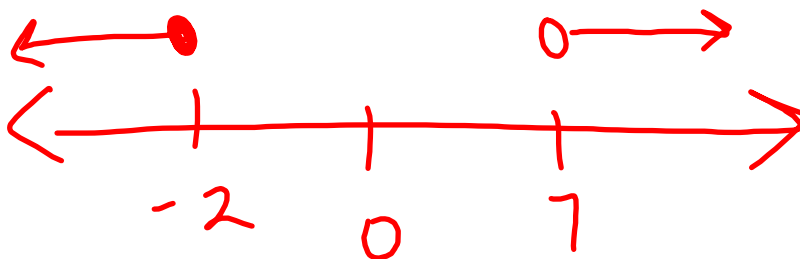
Just work each problem out independently, then graph the solution on One number line.

$$\overbrace{4c + 3 \leq -5} \quad \text{or} \quad c - 8 > -1$$

$-3 \quad -3$ $+8 \quad +8$

$$\frac{4c}{4} \leq \frac{-8}{4} \qquad c > 7$$

$c \leq -2$ or



Lesson 2.5 Solving Compound Inequalities

Solving "And" or "Between" problems.

This is when your variable is sandwiched between two inequalities.

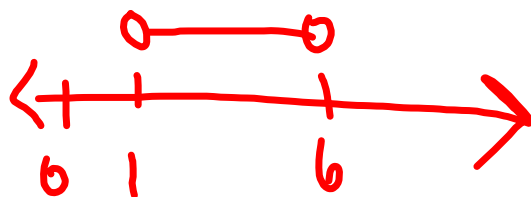
Use the same algebra techniques we've been using to isolate the variable.

Whatever you do to the middle must be done to the left and right sides of the inequality.

$$\begin{array}{c} -3 < 2k - 5 < 7 \\ +5 \quad +5 \quad +5 \end{array}$$

$$\frac{2}{2} < \frac{2k}{2} < \frac{12}{2}$$

$$1 < k < 6$$



Lesson 2.5 Solving Compound Inequalities

$$\text{Ex: } 35 < 7(2-b) \quad \text{or} \quad \frac{1}{3}(15b-12) \geq 21$$

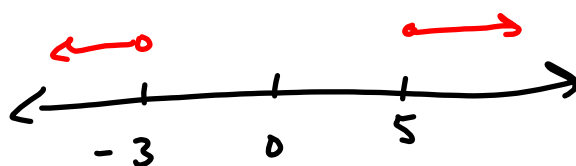
$$35 < 14 - 7b$$

-14 -14

$$\frac{21}{-7} < \frac{-7b}{-7}$$

flip sign

$$-3 > b \quad \text{or} \quad b > 5$$



Lesson 2.5 Solving Compound Inequalities

Homework:

Pages 89-91

Numbers 3, 6, 8, 10, 13, 16-18, 25, 26