Constraint - a limit on the values used for a variable. A typical constraint is $x \geq 0$ or $y \geq 0$ for positive values of an item (time, vacuums, etc.)

Writing Inequalities

EQ: How do I represent a constraint?

What am I learning today?

How to use constraints to write an inequality

How will I show that I learned it?

Write and solve an inequality from a word problem

Keith owes $1000 in student loans. He wants to owe less than $250 after 12 months. How much should Keith pay each month to achieve this?

$-12x + 1000 < 250$

$ he pays — Keith Owes

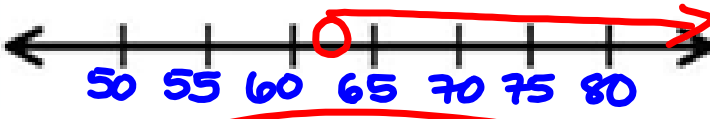
Q1: Write an inequality that represents Keith's situation.

Q2: Solve and graph your inequality.

$-12x + 1000 < 250$

$-1000 \quad -1000$

$\frac{-12x}{-12} < \frac{-750}{-12}$



$x > \$62.50$

Q3: Would $60 be enough? no $75? yes

Deja is working at Chick-fil-A. She gets paid $8.25 per hour. Deja currently has $50 in her bank account and wants to have at least $500. How many hours does Deja need to work?

Q1: Write an inequality that represents Deja's situation.

hour $8.25h + 50 \geq 500$

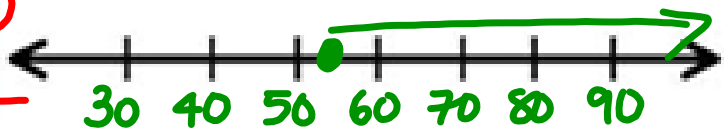
Q2: Solve and graph your inequality.

$8.25h + 50 \geq 500$

$-50 \quad -50$

$\frac{8.25h}{8.25} \geq \frac{450}{8.25}$

$h \geq 54.5$



Q3. Would 60 hours be enough? yes 50 hours? no

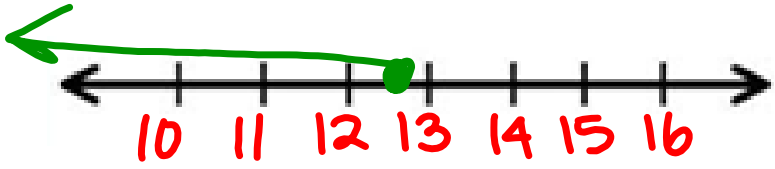
Yellow Cab Taxi charges a $1.75 flat rate in addition to $0.65 per mile. Katie has no more than $10 to spend on a ride.

Q1. Write an inequality that represents Katie's situation.

#of miles $.65m + 1.75 \leq 10$

Q2: Solve and graph your inequality.

$m \leq 12.7$



5 miles? yes 10 miles? yes

20 miles? no