

## Unit 2 Day 20 - Real-World Applications of Inequalities

Target: Apply inequalities to real-world applications

**Old Stuff:** Joe the handyman charges a flat fee of \$55 plus an additional \$75.00 per hour (h).

- a) Write a linear equation that represents the following equation for the handyman's total charge (c).

$$c = 55 + 75h$$

- b) How many hours has the handyman worked on the job if he charges \$380?

$$380 = 55 + 75h$$

$$325 = 75h$$

$$h = 4.\bar{3}$$

about  $4\frac{1}{3}$  hours

### Helpful Hints on Solving Inequality

#### Word Problems:

- Read each word problem at least two to three times.
- Underline what you know and assign a variable to what you need to find.
- Set up an inequality for the situation, highlighting the inequality keywords such as those in the table above.
- Solve (when necessary) following the same steps (and order) as if you were solving an equation.
- Determine if your answer is *reasonable*.
- Be sure to include a unit or label!

Recall these key words!

>	≥	<	≤
is more than is greater than is larger than above	minimum at least is not less than not smaller than	is smaller than is less than below	maximum at most not more than is not greater than

### New Stuff:

1. Jordan has a part-time job which pays \$75 a week. He has already saved \$55 toward the purchase of the new \$380 iPhone 6.
- a. Write an inequality to represent the number of weeks,  $w$ , Jordan must work in order to save enough for the iPhone.

$$75w + 55 \geq 380$$

- b. What is the *minimum* number of weeks Jordan must work in order to have enough money to buy the smartphone?

$$75w + 55 \geq 380$$

$$75w \geq 325$$

$$w \geq 4.3$$

Minimum  
of  
5 weeks

2. Patrick has a \$30 Amazon Books gift card. He plans to buy as many books he can. The cost of each book is \$4.00. There is also a single shipping charge of \$2.

a. Write an inequality that represents Patrick's situation.

$$2 + 4x \leq 30$$

$x = \# \text{ of books}$

b. How many books can he afford without spending more than his gift card amount?

$$\begin{array}{r} 2 + 4x \leq 30 \\ -2 \quad -2 \\ \hline 4x \leq 28 \end{array}$$

$$4x \leq 28$$

$$x \leq 7$$

at most  
7 books

3. Yellow Cab Taxi charges a \$3 flat rate in addition to \$2 per mile. Carrie has no more than \$20 to spend on a cab.

a. Write an inequality that represents Carrie's situation.

$$3 + 2x \leq 20$$

$x = \# \text{ of miles}$

b. How many miles can Carrie travel without exceeding her limit?

$$3 + 2x \leq 20$$

$$\frac{2x}{2} \leq \frac{17}{2}$$

$$x \leq 8.5$$

at most  
8 and half  
miles

4. An on-line music club has a one-time registration fee of \$25.95 and charges \$0.99 to buy each song. Allison received \$100 at her birthday party and has decided to join this club.

a. Write an inequality to represent how many songs,  $s$ , she can buy if she does not want to spend more than the \$100 from her birthday.

$$25.95 + 0.99x \leq 100$$

b. What is the *maximum* number of songs she can buy?

At most  
74 songs!

$$\begin{array}{r} 25.95 + 0.99x \leq 100 \\ -25.95 \quad -25.95 \\ \hline 0.99x \leq 74.05 \end{array}$$

$$0.99x \leq 74.05$$

$$x \leq 74.80$$

75 would go past  
spending  
amount!

**\*Now you and your partner come up with an application problem!! Write the scenario below\***