When Katie walks to school, it takes her 30 minutes. If she rides her bike, it takes her 15 minutes. Her speed is three miles per hour faster when she rides her bike than when she walks. What are her walking speed and her speed riding her bike?
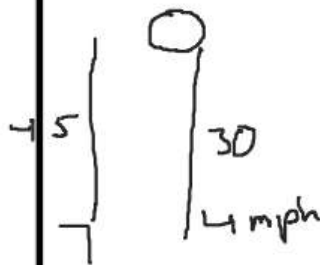
$$\frac{x}{2} = \frac{x}{4} + \frac{3}{4}$$

2x=x+3

x=3

Walking 3 mph
Bike 3+3 = 6 mph

Ryan takes 45 minutes to drive his boat upstream from the dock to his favorite fishing spot. It takes him 30 minutes to drive the boat back downstream to the dock. The boat's speed going downstream is four miles per hour faster than its speed going upstream. Find the boat's upstream and downstream speeds.
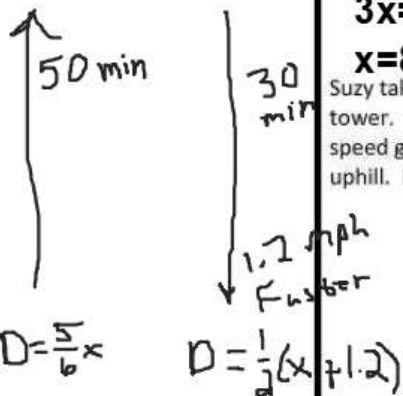
$$\frac{3}{4}x = \frac{1}{2}(x+4)$$

3x=2(x+4)
3x=2x+8
x=8

Upstream speed 8 mph
Downstream speed 12 mph

Suzy takes 50 minutes to hike uphill from the parking lot to the lookout tower. It takes her 30 minutes to hike back down to the parking lot. Her speed going downhill is 1.2 miles per hour faster than her speed going uphill. Find Suzy's uphill and downhill speeds.

$$\frac{5}{6}x = \frac{1}{2}(x+1.2)$$

5x=3(x+1.2)
5x=3x+3.6
50x=30+36
20x=36

Uphill 1.8 mph

Downhill 3 mph

x=36/20

x=9/5 1.8 mph

$\frac{7}{7}$ 5   30   4 mph

50 min   30 min

$D=\frac{5}{6}x$ $D=\frac{1}{2}(x+1.2)$

1.2 mph Faster

$$3\overline{)5265} = 1755$$
$$3$$
$$22$$
$$21$$
$$16$$

Emma got a new job and will have to move. Her monthly income will be $5,265. To qualify to rent an apartment, Emma's monthly income must be at least tree times as much as the rent. What is the highest rent Emma will qualify for?

$$5265 \geq 3x$$

$$x \leq 1755$$

Alan is loading a pallet with boxes that each weighs 45 pounds. The pallet can safely support no more than 900 pounds. How many boxes can he safely load onto the pallet?

$$\frac{45x}{45} \leq \frac{900}{45}$$

$$x \leq 20 \text{ boxes}$$

Dawn won a mini-grant of $4000 to buy tablet computers for her classroom. The tablets she would like to buy cost $254.12 each, including tax and delivery. What is the maximum number of tablets Dawn can buy?

$$254.12x \leq 4000$$

$$x \leq 15.74$$

$$15 \text{ tablets}$$

Pete works at a computer store. His weekley pay will be either a fixed amount, $925, or $500 plus 12% of his total sales. How much should his total sales be for his variable pay option to exceed the fixed amount of $925?

$$500 + .12s > \$925$$
$$-500 \qquad\qquad -500$$

$$.12s > 425$$

$$s > \$3700.83$$

$$12\overline{)42500} = 3700.8$$
$$34$$
$$85$$
$$84$$
$$100$$
$$96$$
$$40$$

Sergio and Liz have a very tight vaction budget. They plan to rent a car from a company that charges $75 a week plus $0.25 a mile. How many miles can they travel and still keep within their $200 budget?

$$75 + .25x \leq 200$$

$$\frac{.25x}{.25} \leq \frac{125}{.25}$$

$$x \leq 500 \text{ miles}$$

Elliot has a landscape miantenance business. His monthly <u>expenses are</u> $1,100. If he charges $60 per job, how many jobs must he do to to earn a <u>profit of at least $4,000 a month?</u>

$$\cancel{60x \geq 4000}$$

$$60x - 1100 \geq 4000$$

$$60x \geq 5100$$

$$x \geq 85 \text{ Job}$$

$$\begin{array}{r} 85 \\ 6 \overline{)510} \\ 48 \\ \hline 30 \end{array}$$

Brenda's best frined is having a destination wedding and the event will last 3 days. Brenda has $500 in savings and can earn $15 an hour babysitting. She expects to pay $350 airfare, $375 for food and entertainment and $60 a night for her share of a hotel room. How many hours must she babysit to have enough money to pay for the trip?

$$500 + 15x \geq 905$$

$$15x \geq 405$$

$$x \geq 27 \text{ hrs}$$

$$\begin{array}{r} 27 \\ 15 \overline{)405} \\ 30 \\ \hline 105 \\ 105 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 1 \\ 350 \\ 375 \\ 120 \\ \hline 845 \\ \$905 \end{array}$$