

## Inequality Word Problems

- 1) Elisa won 40 lollipops playing basketball at the school fair. She gave two to every student in her math class. She has at least 7 lollipops left. Solve to find the maximum number of students in her class.

Let  $x$  = # of students in Elisa's class

$$\begin{array}{r} 40 - 2x \geq 7 \\ -40 \quad -40 \\ \hline -2x \geq -33 \\ \quad -2 \quad -2 \\ \hline x \leq 16.5 \end{array}$$

16 is the maximum number of students in Elisa's class.

- 2) More than 450 students went on a field trip. Ten buses were filled and 5 more students traveled in a car. Solve the inequality to find the minimum number of people on each bus.

Let  $x$  = # of students on each bus

$$\begin{array}{r} 10x + 5 > 450 \\ -5 \quad -5 \\ \hline 10x > 445 \\ \quad 10 \quad 10 \\ \hline x > 44.5 \end{array}$$

45 is the minimum number of people on each bus.

- 3) Bill spent less than \$26 on a magazine and five composition books. The magazine cost \$4. Solve the inequality to find the maximum cost of each composition book.

Let  $x$  = the cost of a composition notebook

$$\begin{array}{r} 5x + 4 < 26 \\ -4 \quad -4 \\ \hline 5x < 22 \\ \quad 5 \quad 5 \\ \hline x < 4.4 \end{array}$$

The maximum cost of a composition notebook is \$4.39.

- 4) Amanda rented a bike from Shawna's Bikes. They charged her \$2 per hour, plus a \$10 fee. Amanda paid less than \$27. Solve the inequality to find the maximum number of hours Amanda rented the bike.

Let  $x = \#$  of hours Amanda rented a bike

$$\begin{array}{r} 2x + 10 < 27 \\ -10 \quad -10 \\ \hline 2x < 17 \\ \frac{2x}{2} < \frac{17}{2} \\ x < 8.5 \end{array}$$

If you cannot rent for partial hours the maximum number of hours Amanda rented the bike is 8.

- 5) You need to buy some pencils and an eraser. You can spend no more than \$5. The eraser costs \$1 and the pencils cost \$0.25 each. Solve the inequality to find the maximum number of pencils you can buy.

Let  $x = \#$  of pencils

$$\begin{array}{r} 0.25x + 1 \leq 5 \\ -1 \quad -1 \\ \hline 0.25x \leq 4 \\ \frac{.25x}{.25} \leq \frac{4}{.25} \\ x \leq 16 \end{array}$$

You can buy 16 pencils.

- 6) Mark's Canoes rents canoes for \$20 plus \$35 per hour. You do not want to spend more than \$150. For how many hours can you afford to rent the canoe?

Let  $x = \#$  of rental hours

$$\begin{array}{r} 35x + 20 \leq 150 \\ -20 \quad -20 \\ \hline 35x \leq 130 \\ \frac{35x}{35} \leq \frac{130}{35} \\ x \leq 3.7 \end{array}$$

You can afford to canoe for 3.7 hours.

- 7) For a field trip 18 students rode in cars and the rest filled five buses. How many students were in each bus if no more than 250 students went on the trip?

Let  $x = \#$  of students in a bus

$$\begin{array}{r} 5x + 18 \leq 250 \\ -18 \quad -18 \\ \hline 5x \leq 232 \\ \frac{5x}{5} \leq \frac{232}{5} \\ x \leq 46.4 \end{array}$$

There were 46 students in each bus.

- 8) Charles is saving \$5 each week. He earns an extra \$15 by mowing his neighbor's lawn. How many weeks will he need to save in order to have at least \$75?

Let  $x = \# \text{ of weeks}$

$$\begin{array}{r} 5x + 15 \geq 75 \\ -15 \quad -15 \\ \hline 5x \geq 60 \\ \frac{5x}{5} \geq \frac{60}{5} \\ x \geq 12 \end{array}$$

Charles needs to work at least 12 weeks.

- 9) Allison practices her violin for at least 12 hours per week. She practices for three fourths of an hour each session. If Allison has already practiced 3 hours this week, how many more sessions remain for her to meet or exceed her weekly practice goal?

Let  $x = \# \text{ of practice sessions}$

$$\begin{array}{r} 0.75x + 3 \geq 12 \\ -3 \quad -3 \\ \hline 0.75x \geq 9 \\ \frac{0.75x}{.75} \geq \frac{9}{.75} \\ x \geq 12 \end{array}$$

Allison needs to complete 12 sessions to meet her goal, and more than 12 to exceed her goal.

- 10) A taxi charges a flat rate of \$1.75, plus an additional \$0.65 per mile. If Erica has at most \$10 to spend on the cab ride, how far could she travel?

Let  $x = \# \text{ of miles-traveled}$

$$\begin{array}{r} 0.65x + 1.75 \leq 10 \\ -1.75 \quad -1.75 \\ \hline 0.65x \leq 8.25 \\ \frac{0.65x}{.65} \leq \frac{8.25}{.65} \\ x \leq 12.7 \end{array}$$

Erica can travel up to 12.7 miles.