Key

# Inequality Word Problems

We will solve the following word problems algebraically by writing and solving an inequality!

1. Shaggy earned $7.55 per hour plus an additional $100 in tips waiting tables on Saturday. He earned at least $160 in all. Find the minimum number of hours, to the nearest hour, Shaggy worked on Saturday.

Let $h$ = the # of hours Shaggy worked on Saturday

$$7.55h + \cancel{100} \geq 160$$
$$-\cancel{100} \qquad -100$$

$$\frac{\cancel{7.55}h}{\cancel{7.55}} \geq \frac{60}{7.55}$$

$$h \geq 7.947\ldots$$

$\boxed{\text{Shaggy worked a minimum of 8 hours.}}$

2. Connor went to the county fair with $22.50 in his pocket. He bought a hot dog and drink for $3.75 and then wanted to spend the rest of his money on ride tickets which cost $1.25 each. What is the total maximum number of tickets he can buy based upon the given information?

Let $n$ = the # of tickets Connor can buy

$$\cancel{3.75} + 1.25n \leq 22.50$$
$$-\cancel{3.75} \qquad -3.75$$

$$\frac{\cancel{1.25}n}{\cancel{1.25}} \leq \frac{18.75}{1.25}$$

$$n \leq 15$$

$\boxed{\text{Connor can buy at most 15 tickets.}}$

3. On a particular airline, checked bags can weigh no more than 54 pounds. John packed 25 pounds of clothes and five identical gifts in a suitcase. The suitcase, itself, weighs $7\frac{1}{2}$ pounds. What is the maximum number of pounds that each gift can weigh?

Let $g$ = weight of each gift

$25 + 7.5 + 5g \leq 54$

$32.5 + 5g \leq 54$

$-32.5 \qquad -32.5$

$\frac{5g}{5} \leq \frac{21.5}{5}$

$g \leq 4.3$

Each gift can weigh at most 4.3 pounds.

4. At most, Kyle can spend \$50 on sandwiches and chips for a picnic. He already bought chips for \$6 and will buy sandwiches that cost \$4.50 each. How many sandwiches can Kyle buy?

Let $s$ = the # of sandwiches

$6 + 4.5s \leq 50$

$-6 \qquad -6$

$\frac{4.5s}{4.5} \leq \frac{44}{4.5}$

$s \leq 9.\overline{7}$

Kyle can buy at most 9 sandwiches.

5. Games at the carnival cost \$3 each. The prizes awarded to winners cost the owner \$145.65. How many games must be played for the owner to make at least \$50?

Let $n$ = the # of games

$3n + -145.65 \geq 50$

$+145.65 \qquad +145.65$

$\frac{3n}{3} \geq \frac{195.65}{3}$

$n \geq 65.21\ldots$

There must be at least 66 games played!