

# Inequalities Applications Notes

1. Albert earns \$3.50 for each hour he works. If he wants to earn **at least** \$52.50, how many hours must he work?

$h = \text{hours}$

$$3.50h \geq 52.50$$

$$\frac{3.50h}{3.5} \geq \frac{52.50}{3.5}$$

$$h \geq 15$$

2. The daily production costs for a skate factory **cannot be more than** \$5400. It costs \$15 in materials to make each pair of skates, and the daily operating costs are \$900. How many pairs of skates can be produced under these circumstances?

$p = \text{pairs of skates}$

$$15p + 900 \leq 5400$$

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$$\frac{15p}{15} \leq \frac{4500}{15}$$

$$p \leq 300$$

3. A group of 3 friends went to the movies. After paying for their tickets, they had a total of **\$10** to spend on refreshments. Sodas cost \$1.50 each, and a box of popcorn cost \$1.75. How many sodas can they buy if they purchase 2 boxes of popcorn?

$c = \text{cokes}$

$p = \text{popcorn} = 2$

$$1.50c + 1.75p \leq 10$$

$$1.50c + 1.75(2) \leq 10$$

$$1.50c + 3.50 \leq 10$$

$$\frac{1.50c}{1.50} \leq \frac{6.50}{1.50}$$

$$c \leq 4$$

4. Kevin's history grade will be determined by the average of 4 tests. He received a 76, an 85, and a 74 on the first 3 tests. He needs to get an **average of at least 80** to receive a B. What is the minimum he can make on the 4<sup>th</sup> test to receive a B in history?

$t = 4^{\text{th}} \text{ test}$

$$4 \cdot \left( \frac{235 + t}{4} \right) \geq 80 \cdot 4$$

$$\frac{76 + 85 + 74 + t}{4} \geq 80$$

$$235 + t \geq 320$$

$$t \geq 85$$

5. On an interstate highway the maximum speed is 70 miles per hour and the minimum speed is 45 miles per hour. If  $x$  represents speed, then write an inequality to express this condition.

Compound inequality:

$$45 \leq x \leq 70$$