

SYSTEM of INEQUALITIES WORD PROBLEMS

1. You can work at most 20 hours next week. You need to earn at least \$92 to cover your weekly expenses. Your dog-walking job pays \$7.50 per hour and your job as a car wash attendant pays \$6 per hour. Write a system of linear inequalities to model the situation.

2. Marsha is buying plants and soil for her garden. The soil cost \$4 per bag, and the plants cost \$10 each. She wants to buy at least 5 plants and can spend no more than \$100. Write a system of linear inequalities to model the situation.

3. Jonah is going to the store to buy candles. Small candles cost \$3.50 and large candles cost \$5.00. He needs to buy at least 20 candles, and he cannot spend more than \$80. Write a system of linear inequalities that represent the situation.

4. John is packing books into boxes. Each box can hold either 15 small books or 8 large books. He needs to pack at least 35 boxes and at least 350 books. Write a system of linear inequalities to represent the situation.

5. During a family trip, you share the driving with your dad. At most, you are allowed to drive for three hours. While driving, your maximum speed is 55 miles per hour.

a) Write a system of inequalities describing the possible numbers of hours t and distance d you may have to drive.

b) Is it possible for you to have driven 160 miles?

SYSTEM of INEQUALITIES WORD PROBLEMS

Key

1. You can work at most 20 hours next week. You need to earn at least \$92 to cover your weekly expenses. Your dog-walking job pays \$7.50 per hour and your job as a car wash attendant pays \$6 per hour. Write a system of linear inequalities to model the situation.

$d = \text{dog walking} - 7.50$
 $c = \text{car attendant} - 6$

$$\begin{cases} x + y \leq 20 \\ 7.50x + 6y \geq 92 \end{cases}$$

2. Marsha is buying plants and soil for her garden. The soil cost \$4 per bag, and the plants cost \$10 each. She wants to buy at least 5 plants and can spend no more than \$100. Write a system of linear inequalities to model the situation.

$b = \text{bag soil} - 4$
 $p = \text{plants} - 10$

$$\begin{cases} 4b + 10p \leq 100 \\ p \geq 5 \end{cases}$$

3. Jonah is going to the store to buy candles. Small candles cost \$3.50 and large candles cost \$5.00. He needs to buy at least 20 candles, and he cannot spend more than \$80. Write a system of linear inequalities that represent the situation.

$s = \text{small} - 3.50$
 $l = \text{large} - 5$

$$\begin{cases} s + l \geq 20 \\ 3.50s + 5l \leq 80 \end{cases}$$

4. John is packing books into boxes. Each box can hold either 15 small books or 8 large books. He needs to pack at least 35 boxes and at least 350 books. Write a system of linear inequalities to represent the situation.

$s = \text{small} - 15$
 $l = \text{large} - 8$

$$\begin{cases} s + l \geq 35 \\ 15s + 8l \geq 350 \end{cases}$$

5. During a family trip, you share the driving with your dad. At most, you are allowed to drive for three hours. While driving, your maximum speed is 55 miles per hour.

a) Write a system of inequalities describing the possible numbers of hours t and distance d you may have to drive.

$t \leq 3$
 $s \leq 55 \frac{\text{m}}{\text{hr}}$

$t \leq 3$
 $d \leq 3(55) \text{ or } d \leq 165 \text{ miles}$

$55(3) = 165$

b) Is it possible for you to have driven 160 miles?

Yes, it is possible for you to drive 160 miles. You could actually drive 165 miles since you can go 55 miles/hr + can drive for 3 hours.