Unit 5 **Name _____**

Remediation Objective 6 **Section _____**

Modeling Situations Using Linear Inequalities

Change words to an inequality. Remember what we did for Unit 3. Each can be written as an inequality.

There are two types of problems.

Type 1: The words need to be written as an inequality.

Ex. John has more than 5 dollars in his wallet. Use d for the number of dollars.

$d > 5$

Ex. Sue has between 5 and 11 clients each week. Use c for the number of clients.

$5 < c < 11$

Type 2: The slope and starting value need to be identified and y=mx+b will be used.

Ex. For Jerome to rent his apartment there is a $500 security deposit that must be made. It will then cost him $525 a month. What is the largest number of months he can rent with $4200 bonus he received from his job?

Find m=525 and find b=500. So, y=mx+b will become y=525x+500. This needs to be turned into an inequality, so it will be 525x+500≤4200.

When the problem looks like this, the inequality will need to be solved and interpreted.

$$525x + 500 \leq 4200$$

$$525x \leq 3700$$

$$x \leq 7.0476$$

So, the largest number of months will be 7 months. The little bit over 7 won't be enough for a whole month.

1. **Susan as at least 100 songs on her play list.**
2. **There are more than 100 rooms in the hotel.**
3. **Ginger's grade is no more than 89% and at least 72%.**
4. **The restaurant has between 5 and 20 customers in any given hour it is open.**

5. To rent a carpet cleaner the cost is $52. There is an additional cost of $15 dollars a day. If Paul cannot afford to pay more than $100 for cleaning his carpets, how many days does he have to finish the job?
   a. Write an inequality to model the situation.

   b. Solve the inequality above.

   c. Interpret the answer to part b.

6. Belle is a hairdresser specializing in doing hair for weddings. She charges $40 for the wedding party and $50 for every woman's hair that she works on. If she makes at least $250 for each wedding party, how many people are in each wedding party?
   a. Write an inequality to model the situation.

   b. Solve the inequality above.

   c. Interpret the answer to part b.

7. Rhona needs to get her car inspected. It will cost $50 for the inspection and $40 an hour for all repairs that are needed to be made on the car. If Rhona has only $200 to spend on her car's inspection, how many hours can she afford to have her car repaired?
   a. Write an inequality to model the situation.

   b. Solve the inequality above.

   c. Interpret the answer to part b.

8. Mr. Tims got a speeding ticket. If getting a speeding ticket costs $100 and $20 for every mile over the speed limit, how many miles over the speed limit was he driving if his ticket was over $220 dollars?
   a. Write an inequality to model the situation.

   b. Solve the inequality above.

   c. Interpret the answer to part b.

9. **A small office bought a copying machine for $1000 and each ream of paper costs $10. If the company has budgeted $2000 for this year, how many reams of paper can it afford to buy?**
   a. **Write an inequality to model the situation.**

   b. **Solve the inequality above.**

   c. **Interpret the answer to part b.**

10. **Mrs. Rudolpho wants to buy a cell phone plan that cost $105 for the phone and $45 a month. She doesn't want to spend more than $600 a year. How many months can she afford her phone?**
   a. **Write an inequality to model the situation.**

   b. **Solve the inequality above.**

   c. **Interpret the answer to part b.**