

## 6.3

### Modeling Linear Inequalities

**Ex. The difference between my age and Carter's age is more than 15 years. Crater's age is definitely more than 10 years.**

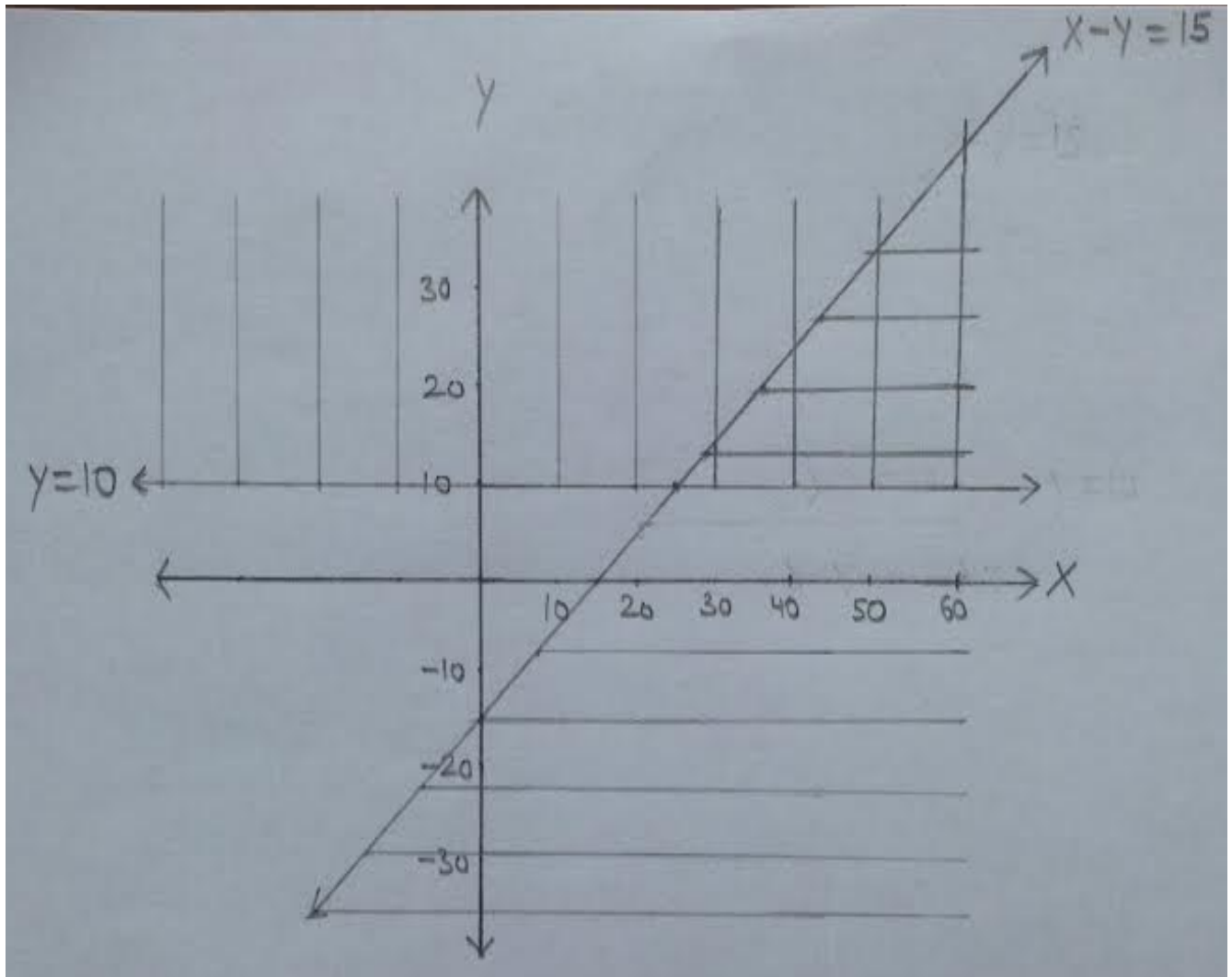
1. Define the variables.

2. Describe the restrictions on the variables in this situation. (Domain & Range)

3. Write a system of inequalities that models this situation.

4. Graph the system to determine the solution set.

## 5. Interpretation



Any point in the ..... region a solution.

## **Classwork**

**Q.1.** A company makes two types of tractors on two different assembly lines: Adam tractors and Nate tractors.

- When both assembly lines are running at full capacity, a maximum of 20 tractors can be made in a day.
- The demand for Adam tractors is greater than the demand for Nate tractors, so the company makes at least 5 more Adam tractors than Nate tractors each day.

What combinations of tractors should the company make each day?

**Sol.**

Step.1. Define the variables.

Step.2. Describe the restrictions on the variables in this situation. (Domain & Range)

Step.3. Write a system of inequalities that models this situation.

Step.4. Graph the system (as explained in 6.2) to determine the solution set.

Step.5. Interpret the solution.

**Q.2.** A toy company manufactures two types of toy vehicles: racing cars and sport-utility vehicles.

- Because the supply of materials is limited, no more than 40 racing cars and 60 sport-utility vehicles can be made each day.
- However, the company can make 70 or more vehicles, in total, each day.

What combinations of racing cars and sport-utility vehicles that could be made every day.

Step.1. Define the variables.

Step.2. Describe the restrictions on the variables in this situation. (Domain & Range)

Step.3. Write a system of inequalities that models this situation.

Step.4. Graph the system (as explained in 6.2) to determine the solution set.

Step.5. Interpret the solution.

**Q.3.** Trish is setting up her social networking page :  
She wants to have at least 20 school friends, and no more than 10 volleyball friends.  
She also wants to have no more than 30 friends on her social networking page.

What are the possible combinations of school and rugby friends?

Step.1. Define the variables.

Step.2. Describe the restrictions on the variables in this situation. (Domain & Range)

Step.3. Write a system of inequalities that models this situation.

Step.4. Graph the system (as explained in 6.2) to determine the solution set.

Step.5. Interpret the solution.

**Q.4.** The staff in a cafeteria are making two kinds of sandwiches: egg salad, and ham & cheese:

- A maximum of 450 sandwiches are needed.
- Based on previous demand, there should be at least twice as many ham and cheese sandwiches as egg salad sandwiches.

What are the possible combinations of egg salad, and ham & cheese sandwiches?

Step.1. Define the variables.

Step.2. Describe the restrictions on the variables in this situation. (Domain & Range)

Step.3. Write a system of inequalities that models this situation.

Step.4. Graph the system (as explained in 6.2) to determine the solution set.

Step.5. Interpret the solution.