Unit 7 Objective 5 Remediation

Write, Solve and Interpret a System of Linear Inequalities

Steps to Writing and Solving a System of Linear Inequalities

1. Read the problem and underline important information.
2. Identify the variables and define the unknowns they will represent.
3. Write two inequalities. The inequalities $x \geq 0$ and $y \geq 0$ should also be written.
4. Graph the two inequalities and shade the intersection.
5. Find a solution (point) that lies in the intersection and write your answer in a complete sentence.

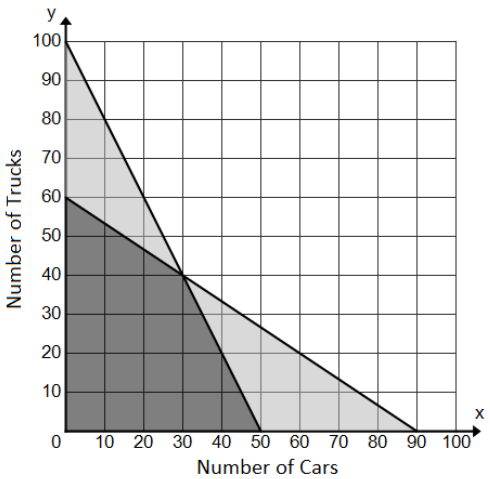
Example

Wildcat Toyz is a small toy company that specializes in toy cars and toy trucks. The people at Wildcat Toyz are confident they can sell all the toy cars and trucks they made. But there are two constraints that limit their production today:

Wheels: Each car needs 4 wheels. Each truck needs 6 wheels.
Wildcat Toys has no more than 360 wheels in stock

Seats: Each car needs 2 seats. Each truck needs 1 seat.
Wildcat Toys has no more than 100 seats in stock.

Write a system of inequalities to determine the possible production of cars and trucks at Wildcat Toyz.

Let $x =$ number of cars Let $y =$ number of trucks	Inequality #1: $4x + 6y \leq 360$ Inequality #2: $2x + y \leq 100$ Inequality #3: $x \geq 0$ Inequality #4: $y \geq 0$
Graph the inequalities. The solution is the overlap of the shading.  	Give one possible combination of cars and trucks that Wildcat Toyz can produce today. Pick any point in the overlap of the shading. Possible answers are… • $(20, 20)$ → 20 Cars and 20 Trucks • $(30, 10)$ → 30 Cars and 10 Trucks • $(10, 50)$ → 10 Cars and 50 Trucks • $(0, 60)$ → 0 Cars and 60 Trucks

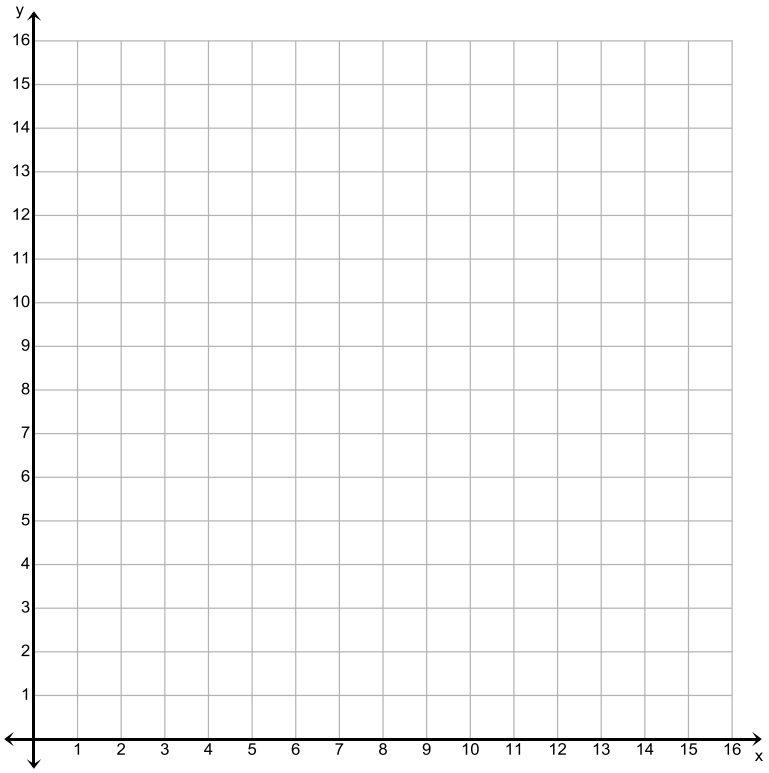
Write the inequalities that would model each situation and solve.

1. You are fishing in a lake for salmon and trout. You can sell the salmon for $3 each and trout for $5 each. Regulations say that you can't catch more than 15 fish a day, and you can't catch more than $55 of fish a day. Write and solve a system of inequalities representing the amount of fish you could catch a day.

   Let x $=$

   Let y $=$

   Inequalities:



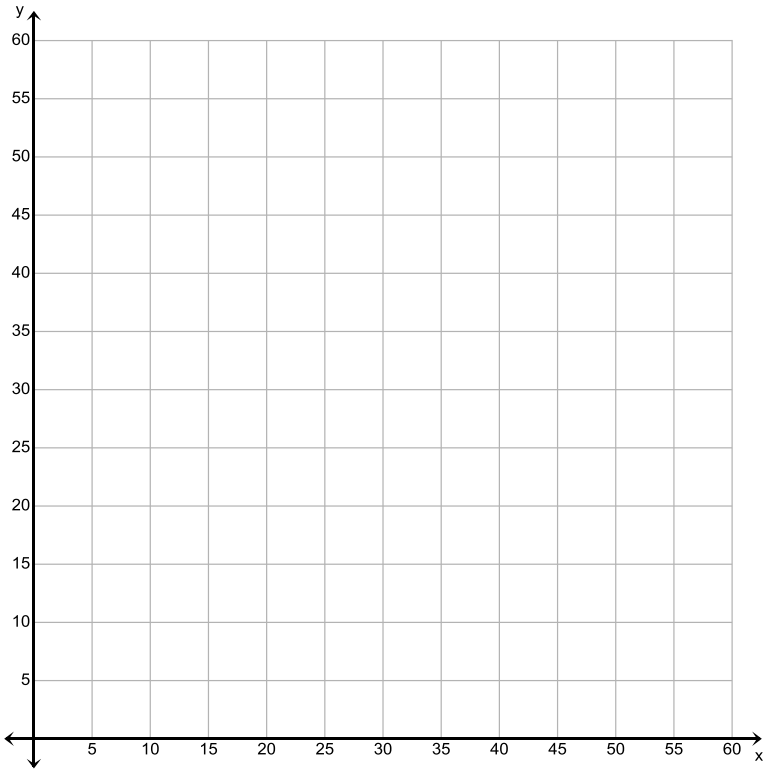
   Give one solution that would satisfy this situation:

2. You are shopping for baseballs and tennis balls at a sports store. Each baseball costs $3 and each tennis ball costs $2. You want to buy not fewer than 45 baseballs and tennis balls altogether, and you have a $100 budget. Write and solve a system of inequalities representing the number of balls you could buy.

   Let x =

   Let y =

   Inequalities:



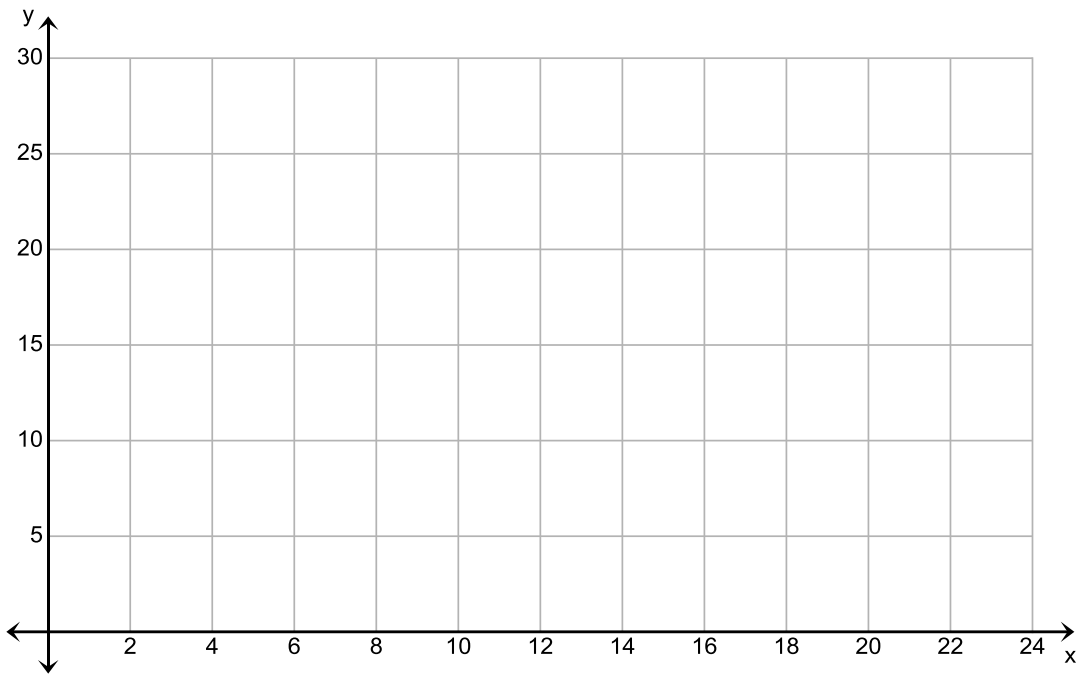
   Give one solution that would satisfy this situation:

3. You are shopping for notebooks and pens at an office supply store. Each notebook costs $4 and each pack of pens costs $2. You don't want to buy more than 20 notebooks and pens together, and you have a $50 budget. Write and solve a system of inequalities representing the number of office supplies you could buy.

   Let x =

   Let y =

   Inequalities:



   Give one solution that would satisfy this situation: