

Name: _____

Date: _____

UNIT 2 • REASONING WITH LINEAR EQUATIONS AND INEQUALITIES

Lesson 8: Solving Linear Inequalities in Two Variables and Systems of Inequalities

Practice 2.8.2: Solving Systems of Linear Inequalities

A

For problems 1–7, solve the given system by creating a graph.

1.
$$\begin{cases} y > x \\ y > -x \end{cases}$$

2.
$$\begin{cases} y \leq x \\ y \geq -x \end{cases}$$

3.
$$\begin{cases} y > x - 4 \\ y < 2x + 10 \end{cases}$$

4.
$$\begin{cases} y > x - 10 \\ y > -3x + 4 \end{cases}$$

5.
$$\begin{cases} 3x + y \leq 3 \\ x + y \geq 0 \\ x \geq 0 \\ y \geq 0 \end{cases}$$

6.
$$\begin{cases} 2x - y > 0 \\ 2x - y \geq 2 \\ x \leq 5 \\ y \geq 0 \end{cases}$$

7.
$$\begin{cases} x + y \leq 7 \\ x - y \leq 7 \\ x \geq 0 \\ y \leq 0 \end{cases}$$

continued

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For problems 8–10, use the given information to answer the questions that follow.

8. A school supply company produces wooden rulers and plastic rulers. It takes 30 minutes to cut, shape, and sand a wooden ruler. It takes 15 minutes to mold, dry, and cut a plastic ruler. A maximum of 480 minutes per day is set aside for these tasks.

It takes 6 minutes to paint the lines and numbers on both types of rulers. A maximum of 180 minutes per day is set aside for this task.

- What is a system of inequalities that models this scenario?
 - What is the graph of the solution to this system?
9. A bicycle shop sells road bikes and town cruisers. It takes 2 hours to assemble a road bike. It takes 1 hour to assemble a town cruiser. A maximum of 60 hours a week is set aside to complete the assembly for both types of bike.

After assembly, for safety reasons the assembly needs to be checked and tested. It takes $\frac{1}{2}$ hour to check and test the road bikes, and $\frac{1}{4}$ hour to check and test the town cruisers. A maximum of 20 hours per week is set aside to complete these tasks for both types of bike.

- What is a system of inequalities that models this scenario?
 - What is the graph of the solution to this system?
10. Jana is a caterer. She's making lasagna cupcakes and Gorgonzola onion tarts for a party, and only has a limited time to finish. She already has all her fillings ready and just needs to assemble and bake the appetizers. It takes 10 minutes to assemble each pan of lasagna cupcakes. It takes 15 minutes to roll out the Gorgonzola onion tarts and fill each pan. She has a maximum of 2 hours to assemble the appetizers.

Next she needs to bake the appetizers. Each pan of lasagna cupcakes takes 20 minutes to bake. Each pan of Gorgonzola tarts takes 6 minutes to bake. She has 60 minutes to bake the appetizers.

- What is a system of inequalities that models this scenario?
- What is the graph of the solution to this system?