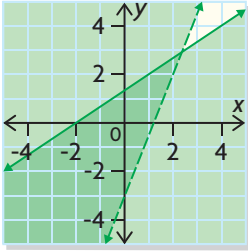
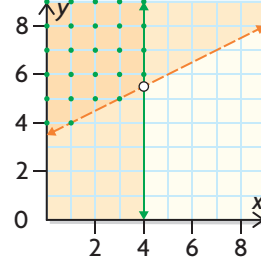


1. Identify any errors in each graph. Explain your decisions.

a) $\{(x, y) \mid 4 + 2x \leq 3y, x \in \mathbb{R}, y \in \mathbb{R}\}$
 $\{(x, y) \mid 5x - 2y > 6, x \in \mathbb{R}, y \in \mathbb{R}\}$



b) $\{(x, y) \mid x - 3y \leq 4 - 3y, x \in \mathbb{W}, y \in \mathbb{W}\}$
 $\{(x, y) \mid 2y > x + 7, x \in \mathbb{W}, y \in \mathbb{W}\}$



2. This model could be used to solve an optimization problem. What point in the feasible region would result in the minimum value for the objective function? What point would result in the maximum value? Explain how you know.

Optimization Model

Restrictions:

$$x \in \mathbb{R}, y \in \mathbb{R}$$

Constraints:

$$y \geq 0$$

$$3x + y \leq 8$$

$$y \leq 2x + 3$$

Objective function:

$$Q = x + y$$

3. Ribbon flowers and crepe-paper rosettes are being made as decorations.
- At least 50 ribbon flowers and no more than 75 rosettes are needed.
 - Altogether, no more than 140 decorations are needed.
 - Each ribbon flower takes 6 min to make, and each rosette takes 9 min to make.

What combination of ribbon flowers and rosettes will take the least amount of time to make? What is the minimum time needed to make these decorations?

4. A transportation company leases vehicles.
- It has 10-passenger vans and 16-passenger minibuses to lease.
 - At most, 5 minibuses are available to lease.
 - There are 120 or fewer people to be transported.
 - Each minibus plus a driver costs \$730 to lease, and each van plus a driver costs \$550.

What combination of vans and minibuses will allow the transportation company to maximize the value of the leases? What will the maximum value be? How many people can be transported?



WHAT DO You Think Now? Revisit **What Do You Think?** on page 293. How have your answers and explanations changed?