MIXED REVIEW of Problem Solving

MATHEMATICAL PRACTICES Make sense of problems and persevere in solving them.

1. **MULTI-STEP PROBLEM** A minimum of 600 bricks and 12 bags of sand are needed for a construction job. Each brick weighs 2 pounds, and each bag of sand weighs 50 pounds. The maximum weight that a delivery truck can carry is 3000 pounds.

   a. Let x be the number of bricks, and let y be the number of bags of sand. Write a system of linear inequalities that models the situation.

   b. Graph the system of inequalities.

   c. Use the graph to determine whether 700 bricks and 20 bags of sand can be delivered in one trip.

2. **MULTI-STEP PROBLEM** Dan decides to paint the ceiling and the walls of a room. He spends \$120 on 2 gallons of paint for the ceiling and 4 gallons of paint for the walls. Then he decides to paint the ceiling and the walls of another room using the same kinds of paint. He spends \$60 for 1 gallon of paint for the ceiling and 2 gallons of paint for the walls.

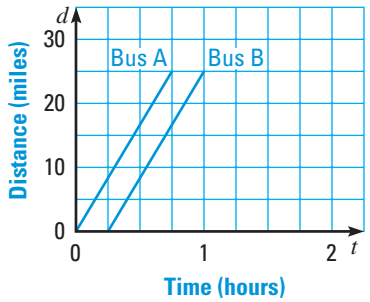
   a. Write a system of linear equations that models the situation.

   b. Is there enough information given to determine the cost of one gallon of each type of paint? *Explain.*

   c. A gallon of ceiling paint costs \$3 more than a gallon of wall paint. What is the cost of one gallon of each type of paint?

3. **SHORT RESPONSE** During a sale at a music and video store, all CDs are priced the same and all DVDs are priced the same. Karen buys 4 CDs and 2 DVDs for \$78. The next day, while the sale is still in progress, Karen goes back and buys 2 CDs and 1 DVD for \$39. Is there enough information to determine the cost of 1 CD? *Explain.*

4. **SHORT RESPONSE** Two airport shuttles, bus A and bus B, take passengers to the airport from the same bus stop. The graph shows the distance d (in miles) traveled by each bus t hours after bus A leaves the station. The distance from the bus stop to the airport is 25 miles. If bus A and bus B continue at the same rates, will bus B ever catch up to bus A? *Explain.*



5. **EXTENDED RESPONSE** During the summer, you want to earn at least \$200 per week. You earn \$10 per hour working as a lifeguard, and you earn \$8 per hour working at a retail store. You can work at most 30 hours per week.

   a. Write and graph a system of linear inequalities that models the situation.

   b. If you work 5 hours per week as a lifeguard and 15 hours per week at the retail store, will you earn at least \$200 per week? *Explain.*

   c. You are scheduled to work 20 hours per week at the retail store. What is the range of hours you can work as a lifeguard to earn at least \$200 per week?

6. **OPEN-ENDED** *Describe* a real-world situation that can be modeled by a system of linear inequalities. Then write and graph the system of inequalities.

7. **GRIDDED ANSWER** What is the area (in square feet) of the triangular garden defined by the system of inequalities below?

$$y \geq 0$$
$$x \geq 0$$
$$4x + 5y \leq 60$$