PROBLEM SOLVING

EXAMPLE 4 on p. 134 for Exs. 43–48

43. CALLING CARDS You have a $20 phone card. Calls made using the card cost $.03 per minute to destinations within the United States and $.06 per minute to destinations in Brazil. Write an inequality describing the numbers of minutes you can use for calls to U.S. destinations and to Brazil.

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44. RESTAURANT MANAGEMENT A pizza shop has 300 pounds (4800 ounces) of dough. A small pizza uses 12 ounces of dough and a large pizza uses 18 ounces of dough. Write and graph an inequality describing the possible numbers of small and large pizzas that can be made. Then give three possible solutions.

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45. CRAFTS Cotton lace costs $1.50 per yard and linen lace costs $2.50 per yard. You plan to order at most $75 of lace for crafts. Write and graph an inequality describing how much of each type of lace you can order. If you buy 24 yards of cotton lace, what are the amounts of linen lace you can buy?

46. TAKS REASONING You sell T-shirts for $15 each and caps for $10 each. Write and graph an inequality describing how many shirts and caps you must sell to exceed $1800 in sales. *Explain* how you can modify this inequality to describe how many shirts and caps you must sell to exceed $600 in *profit* if you make a 40% profit on shirts and a 30% profit on caps.

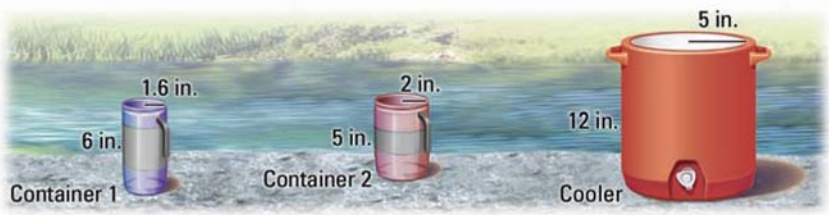
47. MULTI-STEP PROBLEM On a two week vacation, you and your brother can rent one canoe for $11 per day or rent two mountain bikes for $13 each per day. Together, you have $120 to spend.

a. Write and graph an inequality describing the possible numbers of days you and your brother can canoe or bicycle together.

b. Give three possible solutions of the inequality from part (a).

c. You decide that on one day you will canoe alone and your brother will bicycle alone. Repeat parts (a) and (b) using this new condition.

48. TAKS REASONING While camping, you and a friend filter river water into two cylindrical containers with the radii and heights shown. You then use these containers to fill the water cooler shown.



a. Find the volumes of the containers and the cooler in cubic inches.

b. Using your results from part (a), write and graph an inequality describing how many times the containers can be filled and emptied into the water cooler without the cooler overflowing.

c. Convert the volumes from part (a) to gallons ($1 \text{ in.}^3 \approx 0.00433$ gal). Then rewrite the inequality from part (b) in terms of these converted volumes.

d. Graph the inequality from part (c). *Compare* the graph with your graph from part (b), and explain why the results make sense.