PROBLEM SOLVING

EXAMPLE 4 on p. 468 for Exs. 36–38

36. COMPETITION SCORES In a marching band competition, scoring is based on a musical evaluation and a visual evaluation. The musical evaluation score cannot exceed 60 points, the visual evaluation score cannot exceed 40 points. Write and graph a system of inequalities for the scores that a marching band can receive.

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37. NUTRITION For a hiking trip, you are making a mix of x ounces of peanuts and y ounces of chocolate pieces. You want the mix to have less than 70 grams of fat and weigh less than 8 ounces. An ounce of peanuts has 14 grams of fat, and an ounce of chocolate pieces has 7 grams of fat. Write and graph a system of inequalities that models the situation.

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38. FISHING LIMITS You are fishing in a marina for surfperch and rockfish, which are two species of bottomfish. Gaming laws in the marina allow you to catch no more than 15 surfperch per day, no more than 10 rockfish per day, and no more than 15 total bottomfish per day.

a. Write and graph a system of inequalitites that models the situation.

b. Use the graph to determine whether you can catch 11 surfperch and 9 rockfish in one day.

39. HEALTH A person's maximum heart rate (in beats per minute) is given by $220 - x$ where x is the person's age in years ($20 \leq x \leq 65$). When exercising, a person should aim for a heart rate that is at least 70% of the maximum heart rate and at most 85% of the maximum heart rate.

a. Write and graph a system of inequalitites that models the situation.

b. A 40-year-old person's heart rate varies from 104 to 120 beats per minute while exercising. Does his heart rate stay in the suggested target range for his age? *Explain.*

40. TAKS REASONING A photography shop has a self-service photo center that allows you to make prints of pictures. Each sheet of printed pictures costs \$8. The number of pictures that fit on each sheet is shown.

a. You want at least 16 pictures of any size, and you are willing to spend up to \$48. Write and graph a system of inequalities that models the situation.

b. Will you be able to purchase 12 pictures that are 3 inches by 5 inches and 6 pictures that are 4 inches by 6 inches? *Explain.*

Four 3 inch by 5 inch pictures fit on one sheet.

Two 4 inch by 6 inch pictures fit on one sheet.