46. MULTI-STEP PROBLEM Before 1979, there was no 3-point shot in professional basketball; players could score only 2-point field goals and 1-point free throws. In a game before 1979, a team scored a total of 128 points. This situation is given by the equation $2x + y = 128$ where x is the possible number of field goals and y is the possible number of free throws.

1979–present   3 point line

Before 1979
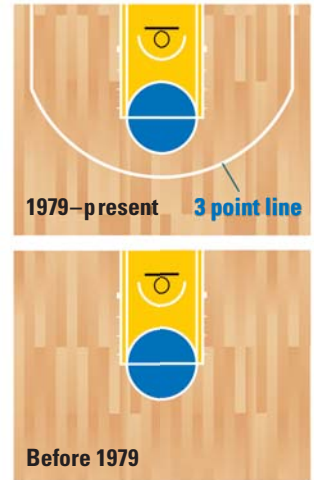
   a. Find the intercepts of the graph of the equation. Graph the equation.

   b. What do the intercepts mean in this situation?

   c. What are three possible numbers of field goals and free throws the team could have scored?

   d. If the team made 24 free throws, how many field goals were made?

47. COMMUNITY GARDENS A family has a plot in a community garden. The family is going to plant vegetables, flowers, or both. The diagram shows the area used by one vegetable plant and the area of the entire plot. The area f (in square feet) of the plot left for flowers is given by $f = 180 - 1.5v$ where v is the number of vegetable plants the family plants.

Area = 1.5 ft^2

Area = 180 ft^2
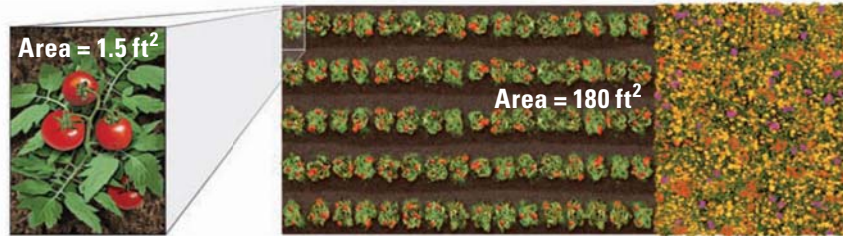
   a. Find the intercepts of the graph of the function and state what the intercepts represent.

   b. Graph the function and identify its domain and range.

   c. The family decides to plant 80 vegetable plants. How many square feet are left to plant flowers?

48. CAR SHARING A member of a car-sharing program can use a car for $6 per hour and $.50 per mile. The member uses the car for one day and is charged $44. This situation is given by

$$6t + 0.5d = 44$$

where t is the time (in hours) the car is used and d is the distance (in miles) the car is driven. Give three examples of the number of hours the member could have used the car and the number of miles the member could have driven the car.

49. ★ **TAKS REASONING** A humidifier is a device used to put moisture into the air by turning water to vapor. A humidifier has a tank that can hold 1.5 gallons of water. The humidifier can disperse the water at a rate of 0.12 gallon per hour. The amount of water w (in gallons) left in the humidifier after t hours of use is given by the function

$$w = 1.5 - 0.12t.$$

After how many hours of use will you have to refill the humidifier? *Explain* how you found your answer.