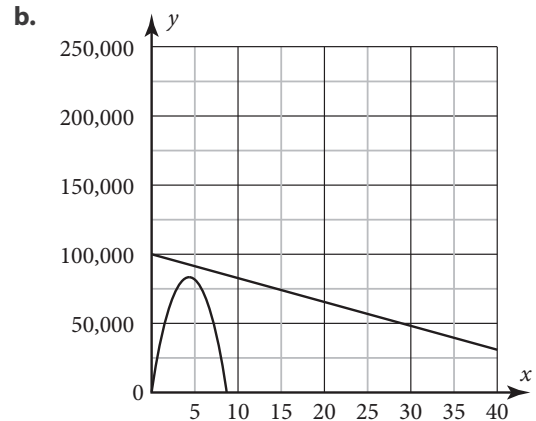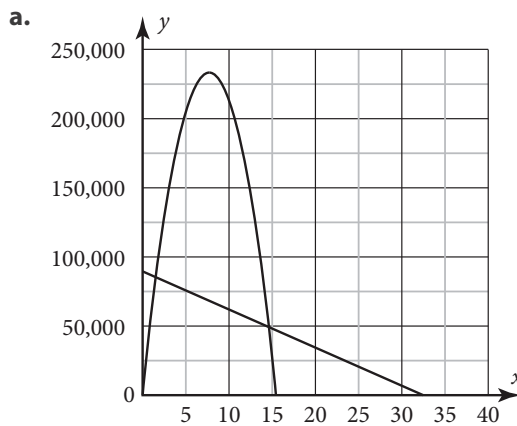# 2-6   Breakeven Analysis

Exercises

1. AVS Industries has determined that the combined fixed and variable expenses for the production and sale of 800,000 items are $24,000,000. What is the price at the breakeven point for this item?

2. The expense equation for the production of a certain MP3 player is $E = 1,250q + 700,000$ where q is the quantity demanded. At a particular price, the breakeven revenue is $3,800,000. What is the quantity demanded at the breakeven point?

3. A manufacturer determines that a product will reach the breakeven point if sold at either $30 or $120. At $80, the expense and revenue values are both $120,000. At $120, the expense and revenue values are both $400,000. Graph possible revenue and expense functions that would depict this situation. Label the maximum and minimum values for each of the axes. Circle the breakeven points.

4. Estimate the breakeven points of the expense and revenue functions in each graph.

a.

b.

5. Sound Foundations Inc. is a firm that manufactures concrete building supplies. Their research department has invented a new product which they want to sell to builders. After extensive analysis, they have found that their breakeven point will occur only once when the price of the item is $1,200. At this price, the expense and revenue will be $3,500,000. Graph possible revenue and expense functions that would depict this situation. Label the maximum and minimum values for each of the axes. Circle the breakeven point and interpret the graph.

6. Sunset Park Equipment produces camping gear. They are considering manufacturing a new energy-efficient lantern. The expense function is $E = -54,000p + 7,000,000$ and the revenue function is $R = -1,800p^2 + 200,000p$.

   a. Sketch the graphs of the expense and revenue functions. Label the maximum and minimum values for each axis. Circle the breakeven points.

   b. Determine the prices at the breakeven points. Round to the nearest cent.

   c. Use your answers from part b to determine the revenue and expense amounts for each of the breakeven points. Round to the nearest cent.

7. Baby-B-Good manufactures affordable plastic baby rattles. The expense equation is $E = -3,400p + 50,000$, and the revenue equation is $R = -1,800p^2 + 20,000p$.

   a. Sketch the graph of the expense and revenue functions. Circle the breakeven points.

   b. Determine the prices at the breakeven points. Round to the nearest cent.

   c. Use your answers from part b to determine the revenue and expense amounts for each of the breakeven points. Round to the nearest cent.

8. Determine both the expense and revenue functions shown in the graph in terms of price *x*.