

**Break-Even Graph: When Do You Start Making Profit?***Miki Merritt*CALCULATORS: Casio: *fx-9750G Plus* • Casio: *CFX-9850G Series***Student Worksheet****Discussion**

In the last activity you did a "Break-Even Analysis" showing how much money your business would have to earn monthly to break even. There is also another way to investigate when your company will break even using graphs. If your company invests a certain amount of money to develop a product, as the product is ready for sales, it takes a certain amount of money per unit sold to maintain your company's expenses.

With this information, you can calculate the amount of sales you will need to make in order to begin making a profit. In this activity, you will use the calculator to determine break-even sales for a start-up company.

**Using the Calculator**

Company "Y" invests \$200,000 in one particular business venture and it costs them approximately \$20 per sale to continue the business. You can represent their cost for business by the equation  $\text{Cost} = 20 \times \#\text{Sales} + 200,000$ . The company decides to sell the product for \$75 a piece. The profit can be represented by the equation:  $\text{Profit} = 75 \times \#\text{Sales}$ .

Let's calculate the number of sales needed for Company "Y" to make a profit:

- Press the **AC/ON** button or the **MENU** button, select **5** for GRAPH.
  - For Y1 type **20 X,θ,T + 200000 EXE** .
  - For Y2 type **75 X,θ,T EXE** .
  - Set the viewing window, press **SHIFT F3** :
    - XMin: type **0 EXE** .
    - XMax: type **5000 EXE** .
    - Scale: type **500 EXE** .
    - YMin: **-1000 EXE** .
    - YMax: **500000 EXE** .
    - Scale: type **50000 EXE** .
    - Press **EXIT** to return to the previous screen.
- Press **F6** to draw the graphs. Two graphs will appear on the screen.
- Solve for the Break-Even Point:
  - Press **F5** for G-Solv and select **F5:ISCT**.
  - The calculator will trace to the point of intersection.

Company "Y" will have to make 3,637 sales to begin making a profit.

# Break-Even Graph: When Do You Start Making Profit?

*continued*

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## Student Worksheet

### Practice Problems

Calculate the Break-Even point for the following company. Answer the questions that follow.

**Company 1:**

Initial Investment: \$1,000,000

Cost to keep producing product: \$10 / unit

Sale price of product: \$50

How many sales will the company need to make to break even? \_\_\_\_\_

After how many sales will they begin to make a profit? \_\_\_\_\_

**Analysis**

1. What suggestions can you make to the company above to make the break-even point 'faster'?

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2. You notice many times companies will decrease the price of a product after a certain period of time. What do you think is the reason for the decrease in price?

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**Extension**

Calculate the Break-Even point for the following company. Answer the questions that follow.

**Company 2:**

Monthly Investment: \$15,000

Cost to keep producing product: \$30 / unit

Sale price of product: \$50

How many sales does this company need to make to break-even each month? \_\_\_\_\_

What suggestions do you make to this company?

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