

Introduction

1. With respect to merchandise, what does supply and demand mean?
2. What are some factors that would affect *supply*?
3. What are some factors that would affect *demand*?
4. When do you think merchants and consumers are both satisfied?

The Problem:

You are a marketing director for Mattell. You have decided to market a cartoon character mini-doll made to sell at a premium price at participating stores. Your problem is to decide which selling price will best suit the needs of customers and store managers. You have obtained data from similar promotions to help make your decision.

Selling Price of Each Doll	Number of Dolls Supplied to Store	Number of Dolls Requested by Customer
\$1.00	35	530
\$2.00	130	400
\$4.00	320	140

5. On your own graph paper, plot the points representing selling price and supply. Draw the line through the data points, and label your line.
6. On the same graph, plot the points representing selling price and demand. Draw the line through the data points, and label your line.

Supply Line

7. Look at the graph. Is the slope of your line positive or negative? What does this mean in relation to the problem?

8. Look at your graph. What is the x intercept? What is the y intercept? What does this mean in relation to the problem?

9. Choose two points on your line and write an equation for your line. Show your work. (Compare your slope and y intercept with #7-8.)

Demand Line

10. Look at the graph. Is the slope of your line positive or negative? What does this mean in relation to the problem?

11. Look at your graph. What is the x intercept? What is the y intercept? What does this mean in relation to the problem?

12. Choose two points on your line and write an equation for your line. Show your work. (Compare your slope and y intercept with #7-8.)

Connections

13. If you set the price at \$2.50 per doll, how many disappointed customer will each store have during the week? How did you figure this out? Is there another way?

14. If you set the price at \$3.80 per doll, how many unsold dolls will remain at each store by the end of the week? How did you figure this out? Is there another way?

15. According to your graph, if the company could give the dolls away for free, how many would each store need per week? Did you look on the supply line or demand line? Why?

16. According to your graph, what price would make the doll supply so small that the average number available to each store would be zero? Did you look on the supply line or demand line? Why?

Solving a System of Equations

17. Using the graph, estimate the point where supply and demand will be in equilibrium. What does this mean in relation to the problem?

18. Use your graphing calculator to estimate the intersection. (Type both equations in [y=]. Hit [2nd] [Trace] [Intersect]. Use your arrows and hit enter for the "first curve". Repeat for the "second curve". Estimate where they intersect for "guess". At the bottom, the intersection is displayed.) What does your calculator say is the intersection?

19. Using your two equations, solve by substitution.

20. Using your two equations, solve by elimination/linear combinations.

21. What do you notice about #18-20? What can you conclude then about solving any system of equations?

22. In complete sentences, state the price and quantity of dolls that would satisfy both the store managers and consumers.