# Michael's Marbles

1. Complete Michael's data table. Each of his marbles has a mass of exactly 6 grams. The box has a mass of 50 grams.

**Box of Marbles**

| N<br>Number of Marbles | M<br>Mass of Box and Marbles (in g) |
|---|---|
| 0 | |
| 1 | 56 |
| 2 | |
| 3 | 68 |
| 4 | |
| 8 | |
| | 110 |

2. Use a sheet of *Centimeter Graph Paper* to make a graph of the marble and box data in Question 1.
   - Label the horizontal axis Number of Marbles (*N*).
   - Label the vertical axis Mass of Box and Marbles in grams (*M*).
   - Number the axes so you have enough room for the values *N* = 15 marbles and *M* = 110 grams.
   - Use a ruler to draw a best-fit line.
   - Title the graph.

**3.** While completing the table in Question 1, Fern and Josh predicted different masses for 8 marbles. Fern said 8 marbles has a mass of 148 grams. Josh said 8 marbles has a mass of 98 grams. Do you agree with Fern or with Josh? Show or tell why.

**4. A.** Use the graph to predict the mass of 7 marbles. Show your work on the graph using a ruler and dotted lines.

**B.** Solve the problem a second way to check your answer.

**5.** If you double the number of marbles, does the mass of the box and marbles double as well? Show or tell how you know.

**6.** If you increase the number of marbles by one, what happens to the mass of the box and marbles? Show or tell how you know.

**7.** Which of the following graphs looks most like your graph?
Explain why it looks like your graph.

**A**  **B**  **C**
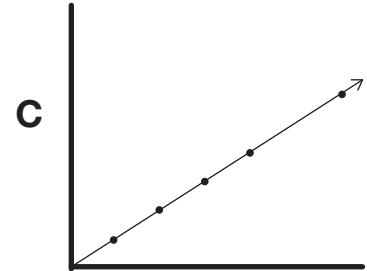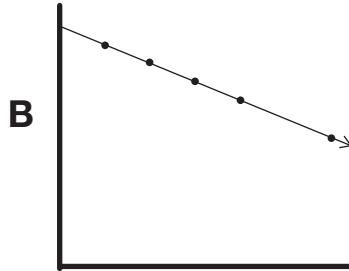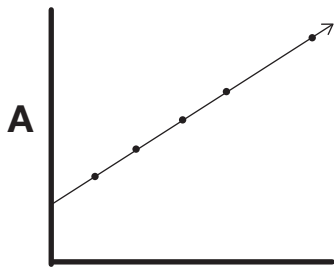
**8.** How is the graph in Question 2 different from other graphs you
have explored?

**9.** Different masses are listed next to each object. Choose the mass that
is most likely to be an accurate estimate for each object. Then use a
balance to mass the objects and see if your estimates are reasonable.

**A.** 12-inch ruler

2g          10g          100g          200g          Mass: _____ g

**B.** calculator

2g          10g          100g          200g          Mass: _____ g

**C.** 2 small paper clips

2g          10g          100g          200g          Mass: _____ g

**D.** wooden meterstick

2g          10g          100g          200g          Mass: _____ g

Name _____  Date _____

**10.** Estimate the mass of a peanut butter and jelly sandwich. Explain how you decided that your estimate is reasonable.

Estimate:     2g          10g          100g          200g

**11.** Each jumbo marble in Yolanda's collection is about 8 grams. Decide whether the measurements she made below "could be" or are "crazy." Circle your choice.

### Jumbo Marbles' Mass

| | N<br>Number of<br>Jumbo Marbles | M<br>Mass in<br>grams | | |
|---|---|---|---|---|
| **A.** | 3 | 24 | Could be | Crazy |
| **B.** | 5 | 50 | Could be | Crazy |
| **C.** | 8 | 64 | Could be | Crazy |
| **D.** | 10 | 79 | Could be | Crazy |
| **E.** | 16 | 200 | Could be | Crazy |

**F.** If you chose crazy, explain why the measurement is crazy.