Meaningful Marbles

Today you will perform an experiment, collect data, and analyze the data.

Materials for each group:

- 100 ml graduated cylinder with water in it
- Bag of marbles
- Empty cup and funnel
- Handout (one for each person in group)
- Ruler

In this experiment you will add marbles to a graduated cylinder partially filled with water.

1. Write a hypothesis about what will happen to the water level as the marbles are added.

   _____

   _____

   _____

2. Identify the variables in this experiment:

   Independent variable: _____

   Dependent variable: _____

   Now pick a variable to represent each quantity.

   Let ___ = _____

   Let ___ = _____

Adapted from Marvelous Marbles, International Center for Leadership in Mathematics

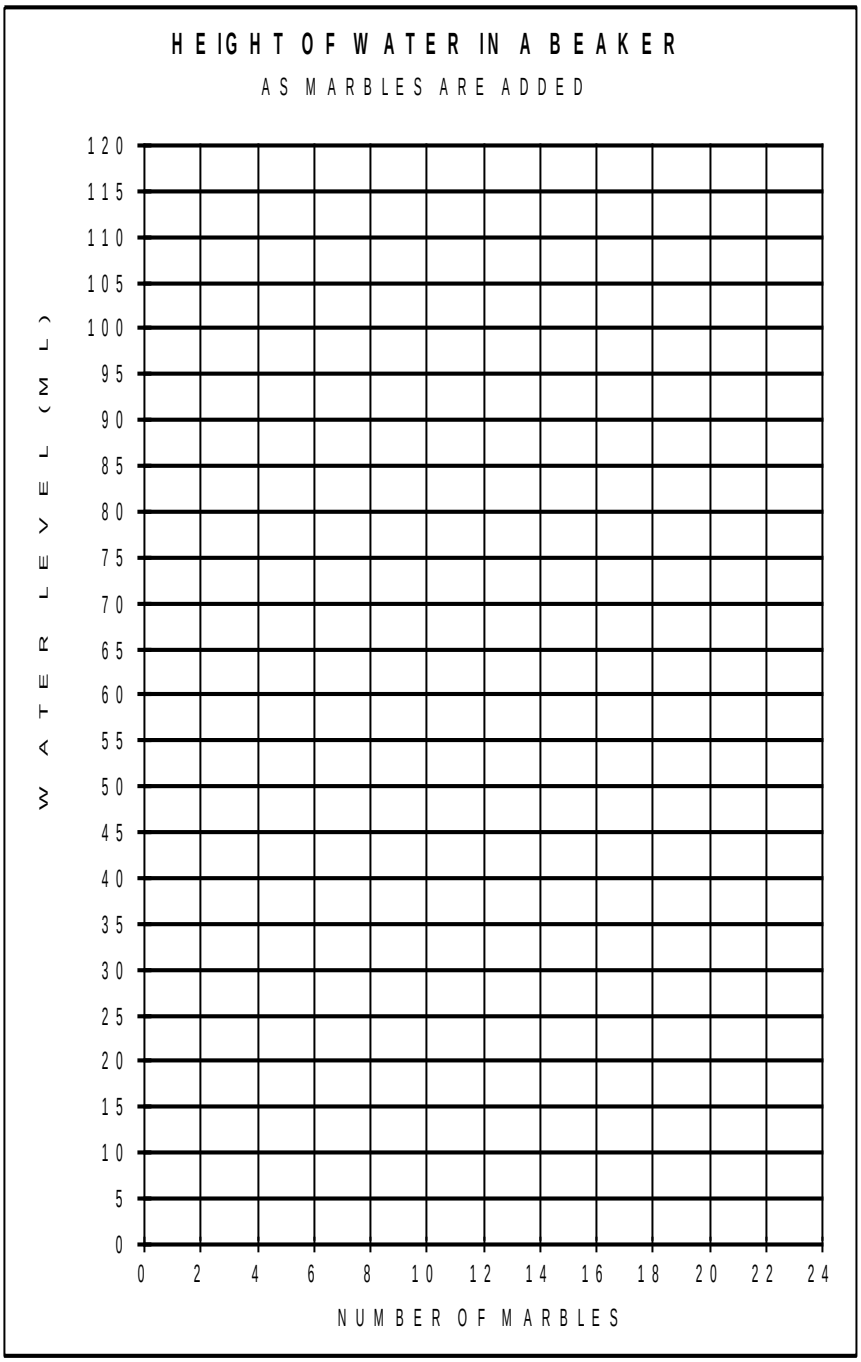
3. Perform experiment:

- Begin with 100 ml graduated cylinder with water in it; record water level
- Add 2 marbles to cylinder (tilt cylinder and slide in marbles so water does not splash.
- Record new water level.
- Repeat until 8 marbles are in cylinder.

Number of marbles	**Water level in ml**			
0				
2				
4				
6				
8				

4. Graph the data; draw in a line that best fits your data.

5. Compare your line to that of other groups.


HEIGHT OF WATER IN A BEAKER
AS MARBLES ARE ADDED
WATER LEVEL (ML)
120
115
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
0 2 4 6 8 10 12 14 16 18 20 22 24
NUMBER OF MARBLES

STOP

6. Write an equation that fits your line. Explain how you determined the equation.

7. What is the domain and range for this experiment? Explain how you determined the domain and range.