

**PLOTTING A LINE GRAPH-Steps:**

1. Draw the axes.
2. Label the axes-Put the independent variable (usually on the LEFT side of the data table) on the X AXIS. Put the dependent variable (usually on the RIGHT side of the data table) on the Y AXIS. Be sure to include UNITS of MEASUREMENT on the axes.
3. Create a scale.
4. Plot the data.
5. Draw a line of 'best fit'.
6. Add a title to the graph that identifies the variables.

**PRACTICE PROBLEM**

Question: How does the volume of water affect the time it takes to boil?

Data Table	
Volume of Water (mL)	Boiling Time (min)
500	7.8
1,000	16.6
1,500	26.0
2,000	33.7

**Graphing Practice Problem #1**

A sample of gas was collected at 100 degrees Celsius and then cooled. The changes in the volume of the sample are shown below.

Temperature ( °C )	Volume ( ml )
100	317
80	297
60	288
40	278
30	252
20	243
10	236
0	233
-10	227
-30	202

- A. Graph the data.
- B. What is the relationship between the temperature of a gas and its volume?

## Graphing Practice Problem #2

Age of the tree in years	Average thickness of the annual rings in cm. Forest A	Average thickness of the annual rings in cm. Forest B
10	2.0	2.2
20	2.2	2.5
30	3.5	3.6
35	3.0	3.8
50	4.5	4.0
60	4.3	4.5

- A. The thickness of the annual rings indicate what type of environmental situation was occurring at the time of its development. A thin ring, usually indicates a rough period of development. Lack of water, forest fires, or a major insect infestation. On the other hand, a thick ring indicates just the opposite.
- B. Make a line graph of the data.
- C. What is the dependent variable?
- D. What is the independent variable?
- E. What was the average thickness of the annual rings of 40 year old trees in Forest A?
- F. Based on this data, what can you conclude about Forest A and Forest B?

## Graphing Practice Problem #3

### Tomato Plant Response to Light

A Plants (12 hours light)    B Plants (8 hours light)    C Plants: (4 hours light)

Day	Height (cm)	Height (cm)	Height (cm)
11	1.0	1.0	1.0
12	1.5	1.3	1.1
13	1.9	1.4	1.2
14	2.1	1.6	1.3
15	2.3	1.7	1.4
16	2.5	1.9	1.6
17	2.7	2.1	1.7

- A. How much sunlight do plants need to obtain optimum growth?
- B. Make a line graph of this data. Graph a line for A, B, and C.
- C. What is the independent variable in this experiment?
- D. What is the dependent variable?
- E. What IS the optimum number of hours for plant growth?

## Graphing Practice Problem #4

Water Temperature in °C	Number of developing clams
15	75
20	90
25	120
30	140
35	75
40	40
45	15
50	0

- A. A clam farmer has been keeping records concerning the water temperature and the number of clams developing from fertilized eggs. The data is recorded above.
- B. Make a line graph of the data.
- C. What is the dependent variable?
- D. What is the independent variable?
- E. What is the optimum temperature for clam development?

## Graphing Practice Problem #5

Number of hookworms in the intestine	Amount of blood lost per day in cm <sup>3</sup>
24	12
45	22.5
80	40
88	44
63	31.5
50	25
12	6

- A. Hookworms live in the human intestine drinking the blood it sucks from the intestine wall. It is estimated that a single hookworm can drink  $1/2$  cm<sup>3</sup> of blood per day. The chart above contains data on the number of hookworms and the amount of blood lost caused by that number of worms.
- B. In some cases the data table is blank. Determine the number of worms or the amount of blood lost and complete the table
- C. Make a line graph of the data.
- D. What is the dependent variable?
- E. What is the independent variable?
- F. How many cm<sup>3</sup> of blood will be lost by a person containing 88 hookworms in a week?