Graphing Practice Problem #1

Oxygen can be generated by the reaction of Hydrogen Peroxide with Manganese Dioxide.

$$2H_2O_2 + MnO_2 \rightarrow 2H_2O + Mn + 2O_2$$

A chemistry class sets up nine test tubes and places different masses of MnO_2 in each test tube. An equal amount of H_2O_2 is added to each test tube and the volume of gas produced is measured each minute for five minutes. The data from the experiment is:

Tube #	MnO_2 (g)	1 min (ml O_2)	2 min (ml O_2)	3 min (ml O_2)	4 min (ml O_2)	5 min (ml O_2)
1	0.1	1.4	2.6	3.5	4.2	5.1
2	0.2	2.8	4.6	5.8	7.1	7.6
3	0.3	4.9	7.2	8.8	10.2	11.3
4	0.5	5.9	8.5	10.4	11.8	13.3
5	1.0	8.5	12.4	14.4	16.1	17.1
6	1.5	11.0	14.8	17.5	19.8	21.8
7	2.0	12.0	17.0	20.2	22.7	24.8
8	2.5	13.6	19.0	22.1	24.7	27.3
9	3.0	16.2	21.8	25.1	28.2	30.4

A. **What volume of O_2 did tube #3 produce between the second and fourth minutes?**
B. **How much O_2 is produced in tube #5 during the first two minutes?**
C. **How much oxygen did tubes 7 and 8 produce together during the third minute?**
D. **What volume of oxygen gas, in liters, was produced during this procedure?**
E. **Graph the amount of oxygen produced each minute in test tubes # 2, 4, and 6.**
F. **By comparing the slope of the graph curves, which tube was producing oxygen at the fastest rate between minutes four and five?**
G. **Make a graph using the mass of manganese dioxide and the volume of oxygen for all tubes at five minutes.**

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

pH of water	Number of tadpoles
8.0	45
7.5	69
7.0	78
6.5	88
6.0	43
5.5	23

A. **Make a line graph of the data.**
B. **What is the dependent variable?**
C. **What is the independent variable?**
D. **What is the average pH in this experiment?**
E. **What is the average number of tadpoles per sample?**
F. **What is the optimum water pH for tadpole development?**
G. **Between what two pH readings is there the greatest change in tadpole number?**
H. **How many tadpoles would we expect to find in water with a pH reading of 5.0?**