**Patterns of Change**

When we have information about a relationship between two or more variables, one of the standard ways to display and communicate that information is with coordinate graphs of (x,y) data pairs. The graphs display many particular pairs of related numerical data as well as a visual image of the pattern in those data.

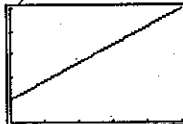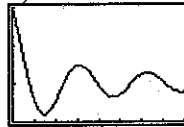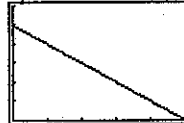1. The graphs below show eight important and relatively common patterns relating pairs of variables.
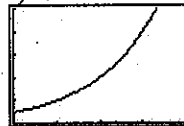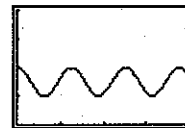
a)

d)

g)

b)

e)

h)

c)

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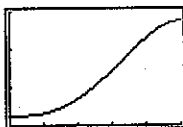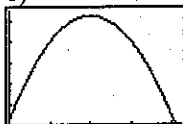
The following statements describe eight different situations in which two variables are related to each other. Match each situation to the graph that you believe is most likely to represent the relation between those variables. Then explain as carefully as you can what the shape of the graph tells about the ways the variables change in relation to each other:

a) When a tennis player hits a high lob shot, its height changes as time passes. What pattern seems likely to relate time and height?

b) The senior class officers at Lincoln High School decided to order and sell souvenir baseball caps with the school insignia, name, and Class of '95 on them. One supplier said it would charge $100 to make the design and then an additional $4 for each cap made. How would the total cost of the order be related to the number of caps in the order?

c) The population of the world has been increasing for as long as data or estimates have been available. What pattern of population growth has occurred over that time?

d) In planning a bus trip to Florida for spring break, a travel agent worked on the assumption that each bus would hold at most 40 students. How would the number of buses be related to the number of student customers?

e) The depth of water under the U. S. Constellation in Baltimore Harbor changes due to tides as time passes in a day. What pattern would that (time, depth) data fit?

f) When the Lincoln High School class officers decided to order and sell t-shirts with names of everyone in the Class of '95, they checked with a sample of students to see how many would buy at various proposed prices. How would sales be related to price charged?

g) How does the height of a bungee jumper vary as time passes in the jump?

h) In a wildlife experiment, all fish were removed from a lake and the lake was restocked with 1000 new fish. The population of fish then increased over the years as time passed. What pattern would likely describe change in fish population over time?