In Class Exercises (ICE) - 10/2/00

Figure 1 shows the percentage of U.S. High School seniors who used various forms of drugs from 1975 to 1998.

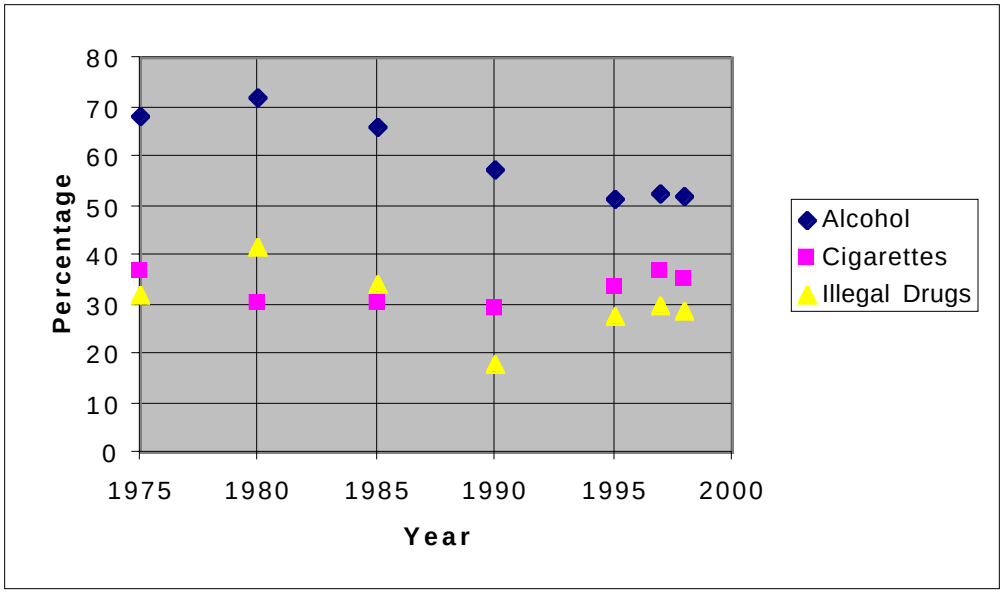


Figure 1: Drug Use by U.S. High School Seniors.

SOURCE: U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NATIONAL INSTITUTE ON DRUG ABUSE.

- ***Using Figure 1, describe the trends in drug use among high school seniors during the 1980's.***

- ***Estimate the percentage of high school seniors who used each of the various drugs in 1975 and 1995. Use your figures to complete the table given below.***

Drug	Percentage in 1975	Percentage in 1995
Alcohol		
Cigarettes		
Illegal Drugs		

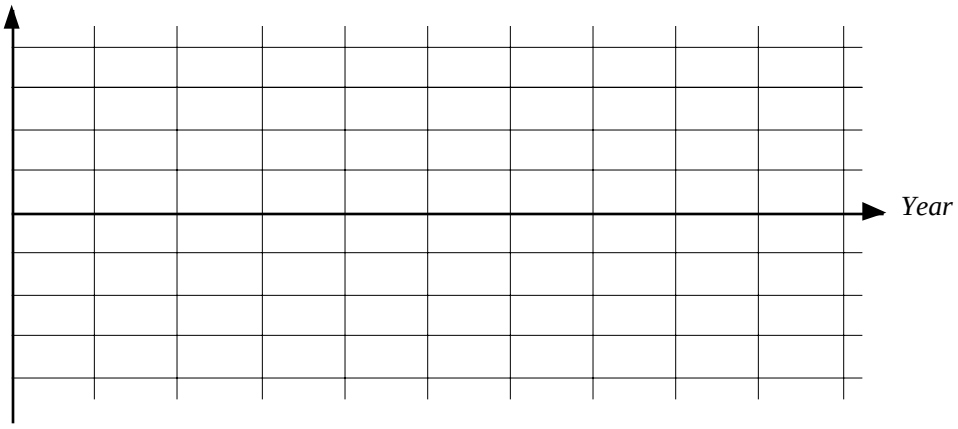
- ***Which drug (or drugs) showed the greatest decrease in use from 1975 to 1998?***

- ***Do you think that the categories of drug use are mutually exclusive? Try to find behavioral reasons why this would not be the case. Figure 1 contains enough information to prove that categories of drug use are not mutually independent.***

- ***Complete the table of average rates of change shown below and plot this data on the given axes. What does this plot tell you?***

Substance	1970-75	1975-80	1980-85	1985-90	1990-95
Alcohol					
Cigarettes					
Illegal drugs					

Average Rate of Change



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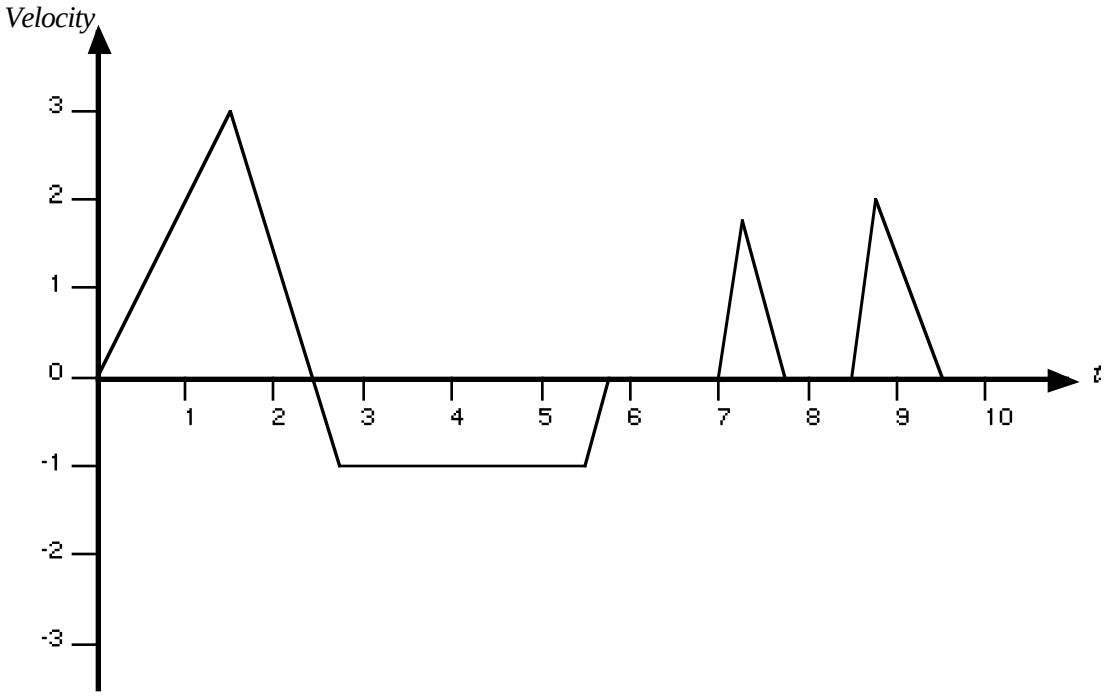
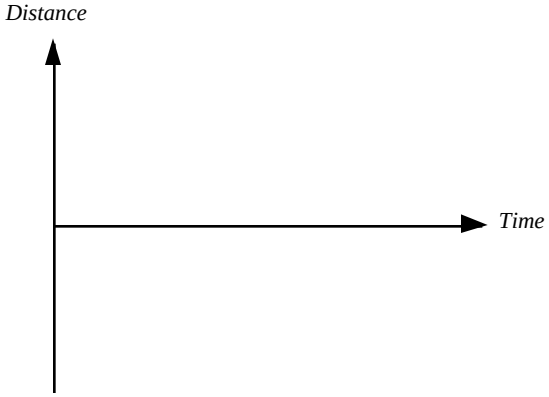
In an experiment to study the foraging behavior of woodland animals, some zoologists videotape a squirrel foraging near the tree that it lives in. The zoologists represent the distance that the squirrel is from the tree after 't' minutes by the function s(t). A graph of the squirrel's velocity versus time is shown below.



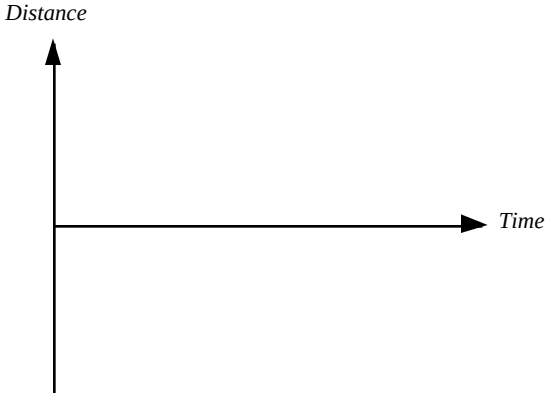
- ***Acceleration is the rate of change of velocity with respect to time. Identify the intervals of time when the squirrel's acceleration is non-zero, and describe what is happening in words during each of these intervals.***

- ***In each of the following situations, use the information provided about velocity and acceleration to sketch a graph of distance versus time.***

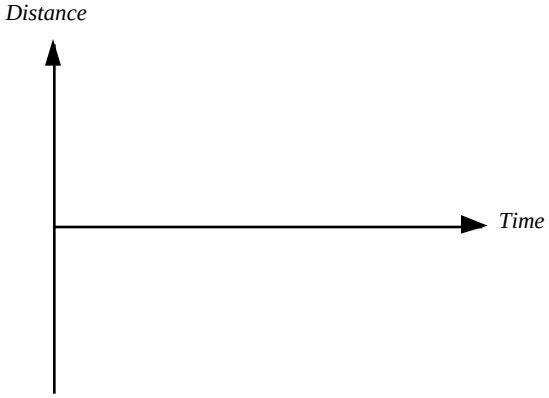
a) velocity = positive
acceleration = positive



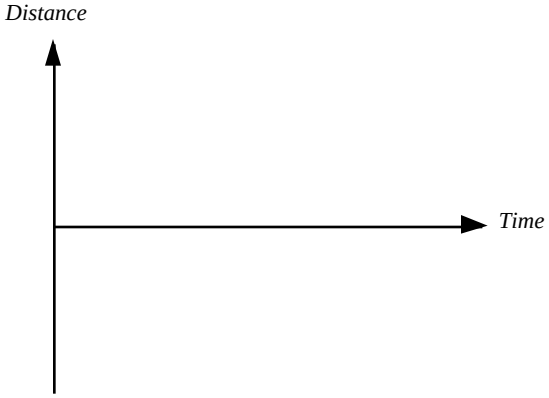
b) velocity = positive
acceleration = negative



a) velocity = negative
acceleration = positive



b) velocity = negative
acceleration = negative



- ***Use the information about the squirrel's velocity and acceleration to sketch a graph showing the squirrel's distance from the tree versus time.***