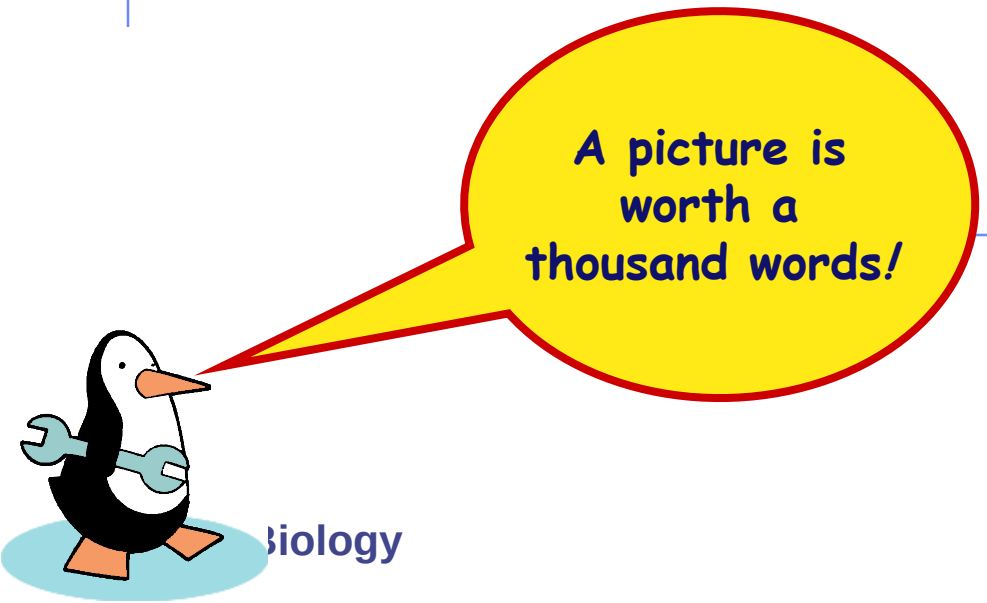
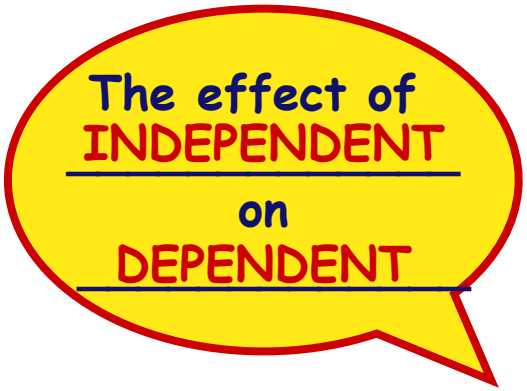
Graphing Your Data

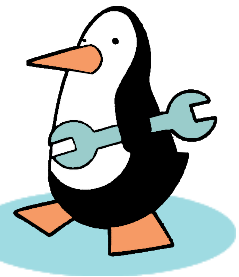
Showing patterns & trends



Types of data (information)

- **Variables:** what you measure in an experiment
  - 2 key types
  1. independent variable
     - predictable change: it only changes because we chose how it would change
     - X-axis
  2. dependent variable
     - measured variable
     - unpredictable change: we don't know how it will change until we do the experiment
     - Y-axis





Question

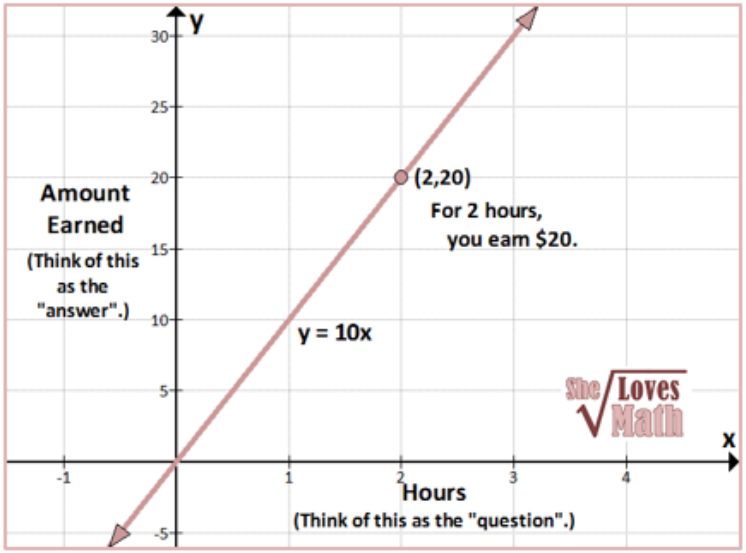
- **Which variable would you know ahead of time? Which could you set up on your graph without doing the experiment?**

Independent

INDEPENDENT VARIABLE

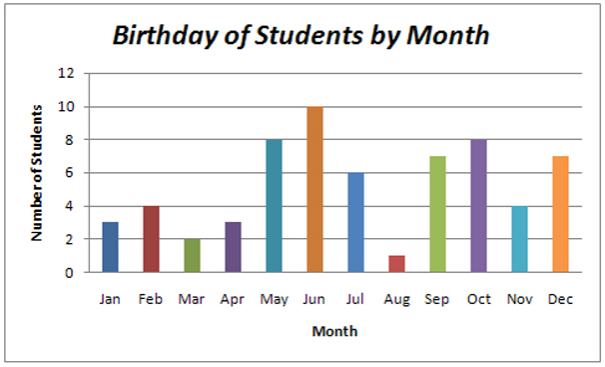
- In a “T” table, or data table, this variable is on the left side.
- On a graph, this variable goes on the X axis

x hours we work	*y* how much we make ($)
0	0
1	10
2	20
3	30
4	40

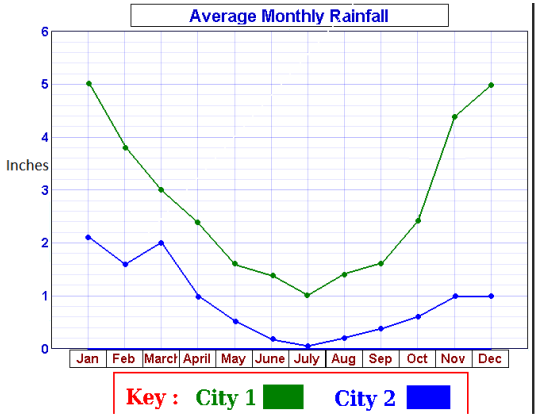


Which graph is best?

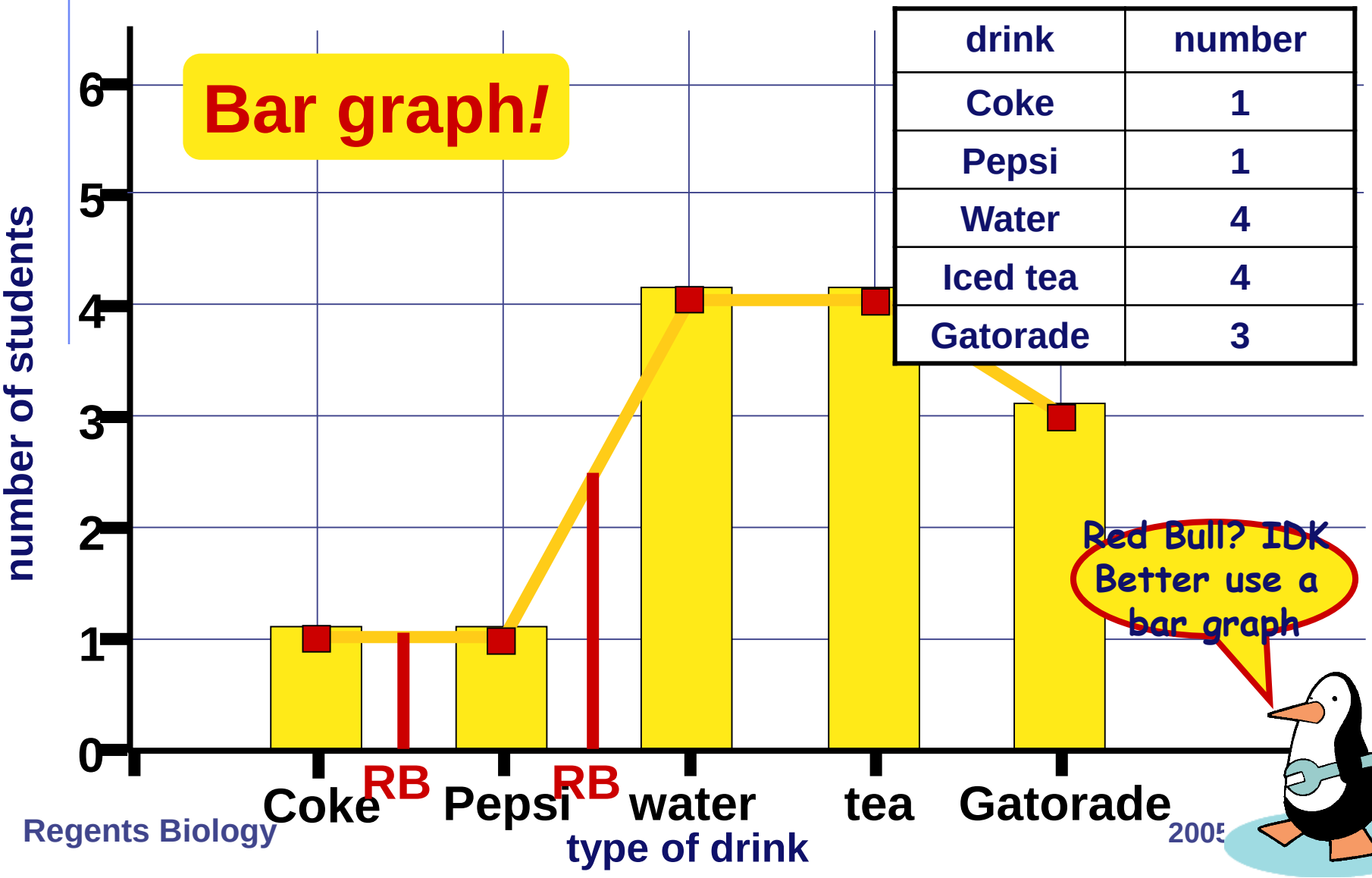
- **Bar-***compare* things between different groups



- **Line-** determine *relationships* between the two different things, look for patterns, make predictions



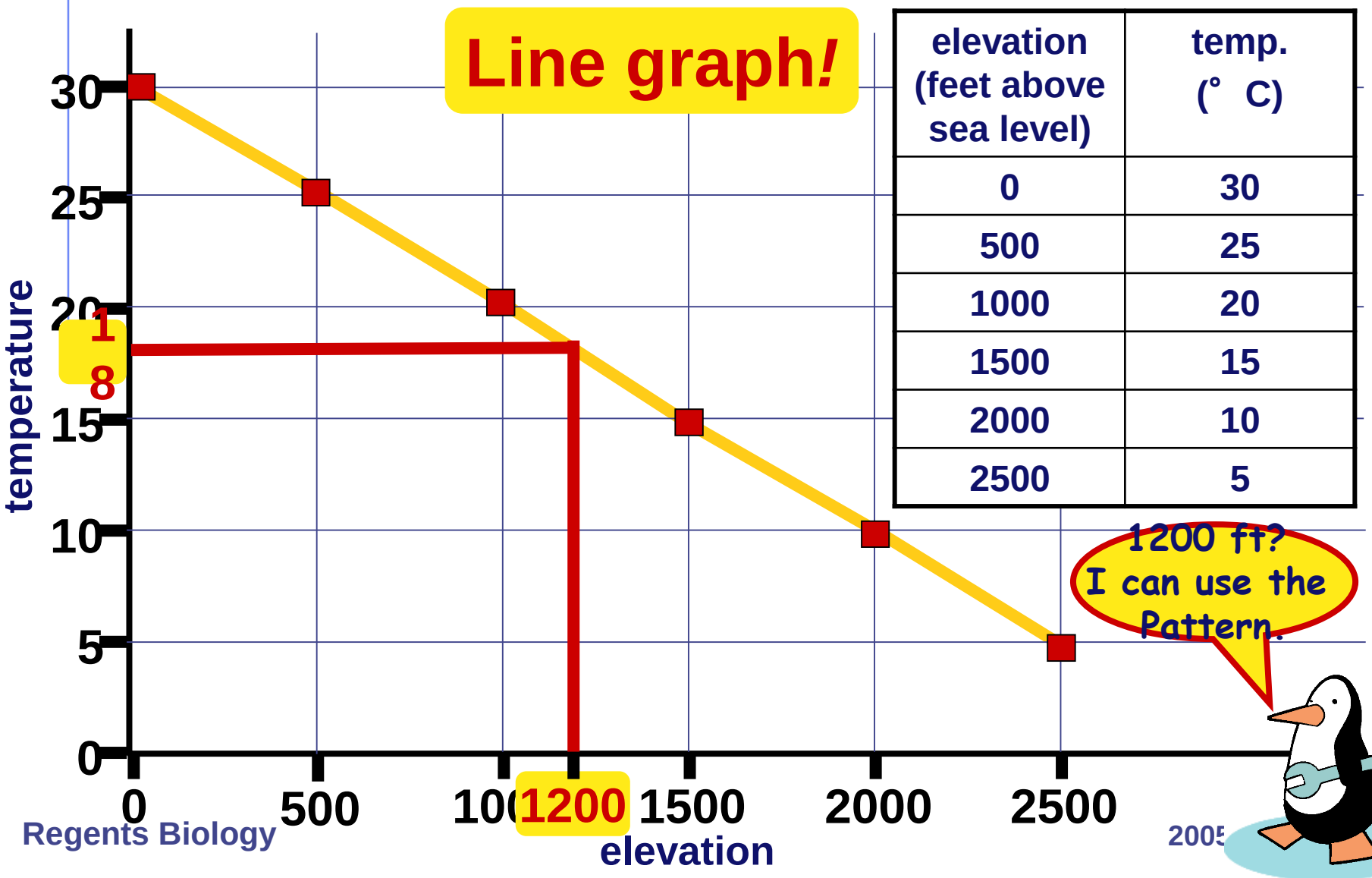
Which drink do you like best?



DEPENDENT VARIABLE

- Dependent variables are measured during the experiment, after you start following your procedures
- Second column in T chart
- On the y axis

How does elevation affect temperature?



elevation (feet above sea level)	temp. (° C)
0	30
500	25
1000	20
1500	15
2000	10
2500	5

How do you know which variable is which?

Independent

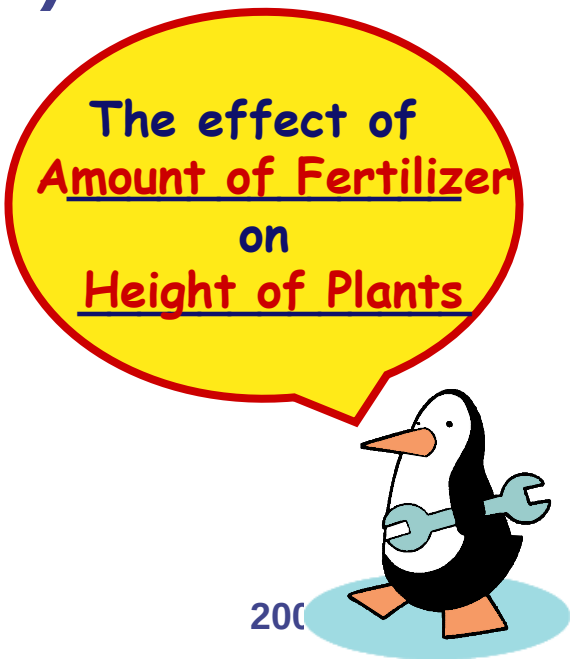
- Decided ahead of time
- Causes the changes
- First in the T chart
- X axis

Dependent

- Don't know ahead
- Dependent on the other variable
- Second in the T chart
- Y axis

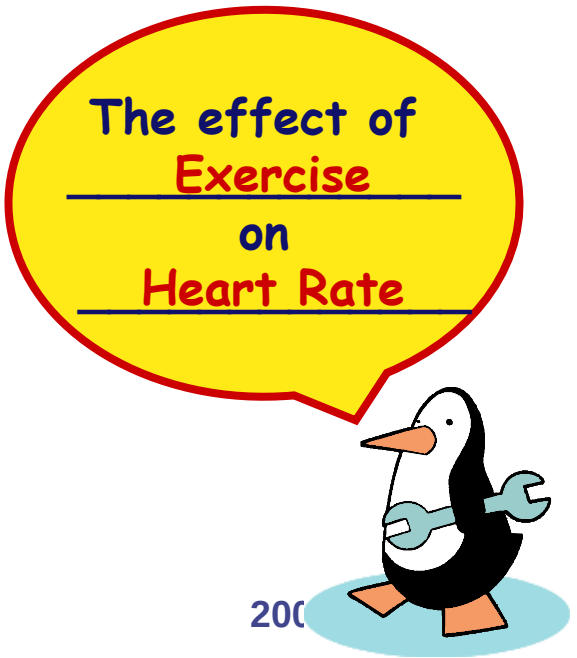
Examples of experiments 1

- How does fertilizer affect the growth rate of plants?
  - we set up an experiment testing different amounts of fertilizer on different plants & measuring the growth (height) of the plants:
    - dependent variable (Y-axis)?
      - height of plants
    - independent variable (X-axis)?
      - amount of fertilizer



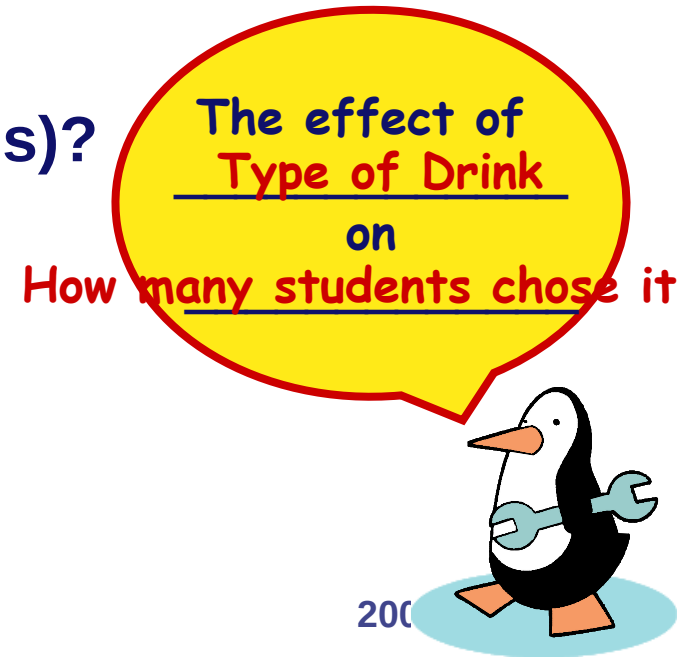
Examples of experiments 2

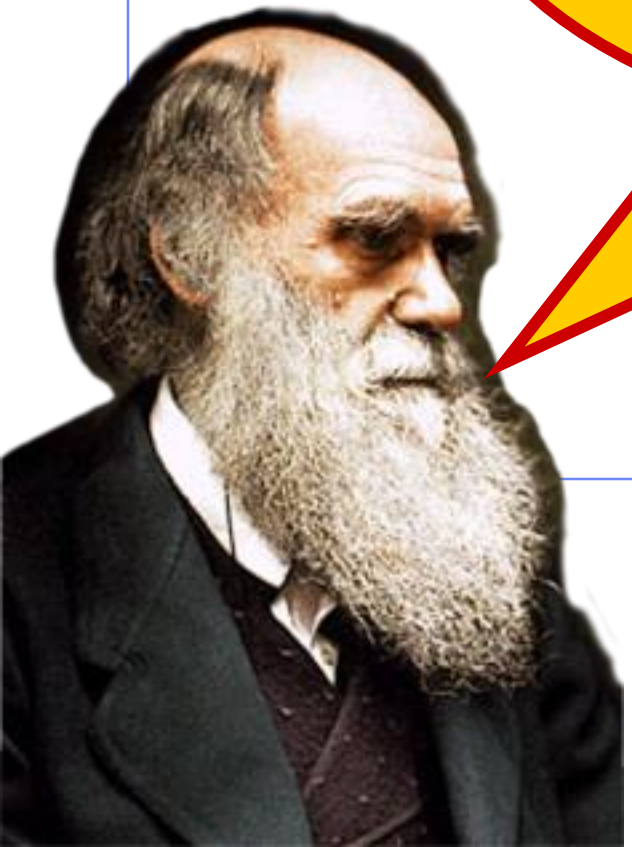
- **How does exercise affect heart rate of 10th grade student?**
  - **we set up an experiment testing different lengths of time of exercise (minutes) on the heart rate of students:**
    - **dependent variable (Y-axis)?**
      - **heart rate**
    - **independent variable (X-axis)?**
      - **minutes of exercise**



Examples of experiments 3

- **What's the favorite drink of students?**
  - we set up an experiment surveying students and asking which is their favorite drink :
    - dependent variable (Y-axis)?
      - number of students
    - independent variable (X-axis)?
      - type of drink





Any Questions??