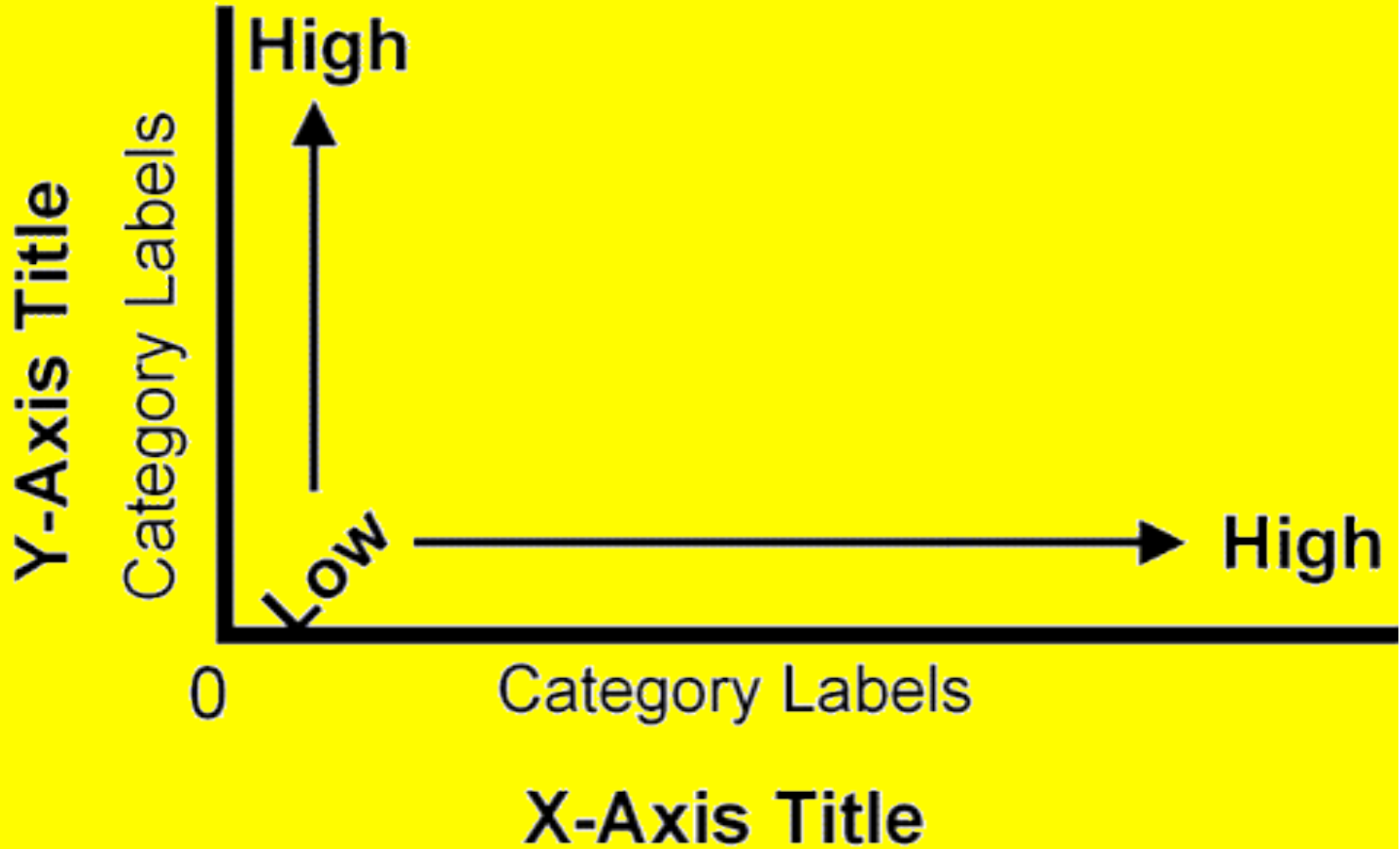


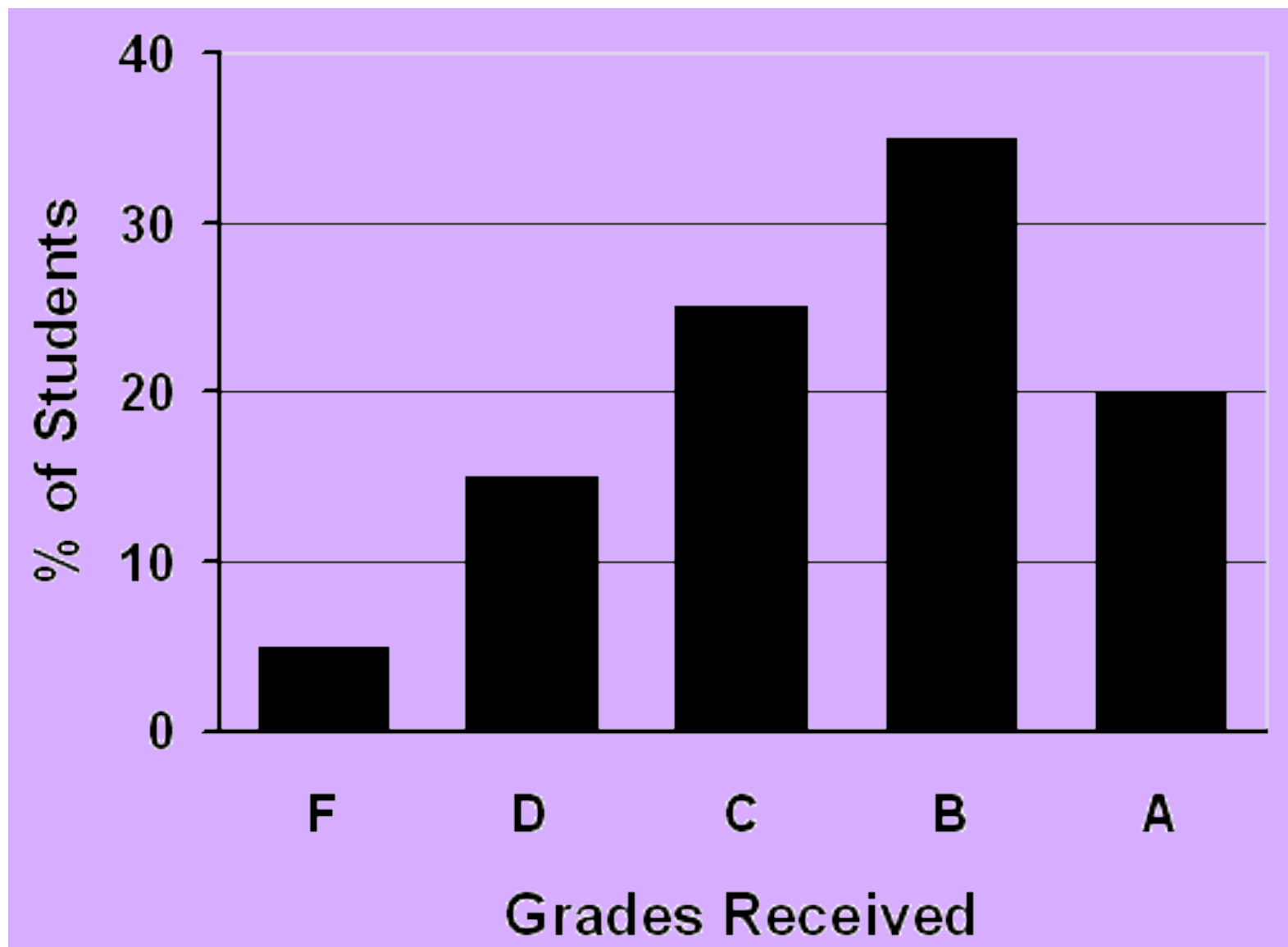
# Graphing Guidelines

- Write a descriptive title
- Label the x and y axis
- Provide units on x and y axis
- Use a ruler or a computer
- Use an even scale for numbering along the axis
- Spread out numbering (use as much of the paper as possible)
- Numbering does NOT need to begin with zero
- Color code data if more than 1 set of data is graphed
- Provide a key for color coding

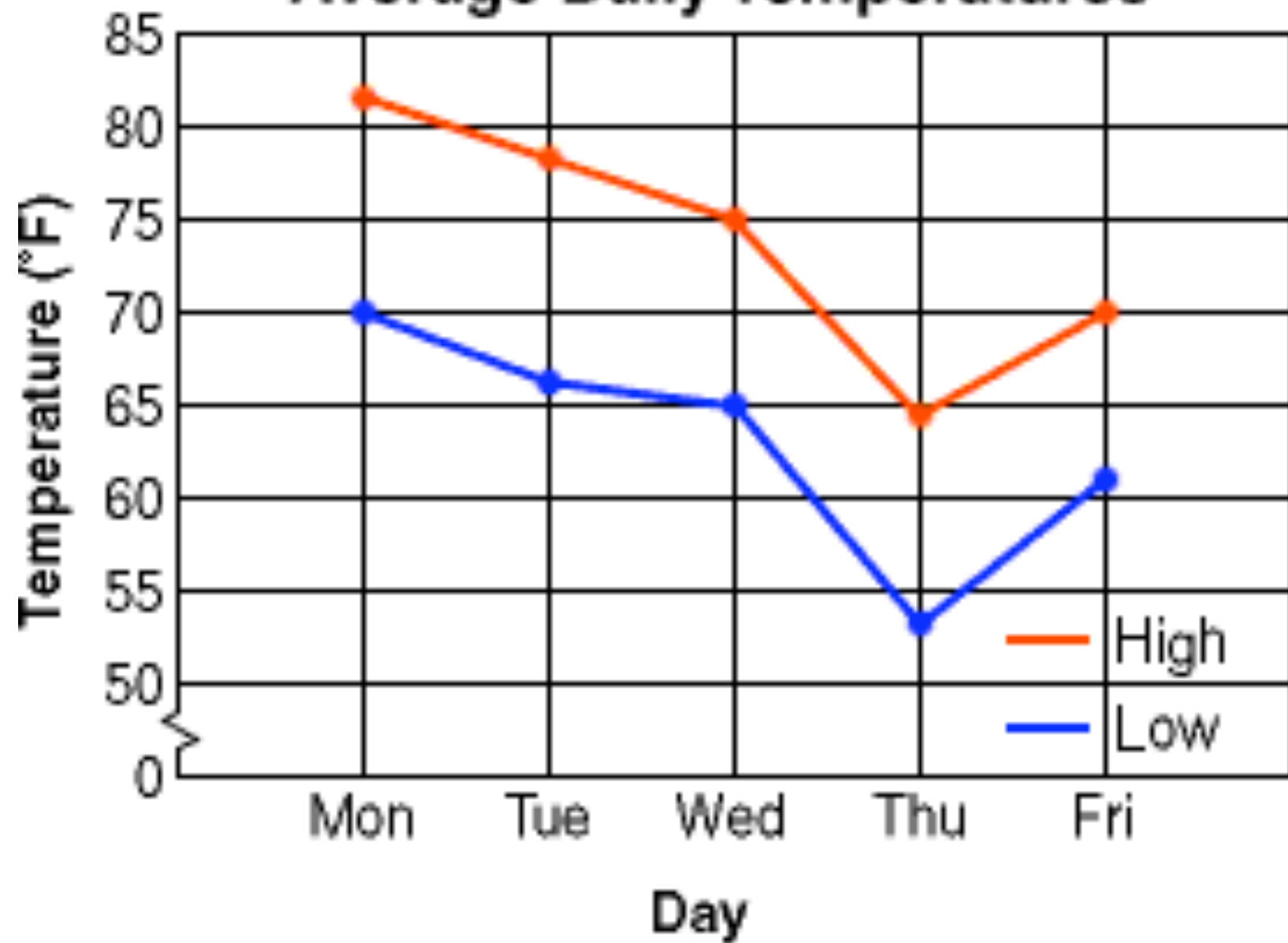
# Graph Title



# 1st Semester Chemistry Grades



### Average Daily Temperatures



# Inverse Vs. Direct Relationship

## **Inverse Relationship**

A relationship between two variables in which an increase in the value of one results in a decrease in the value of the other.

## **Direct Relationship**

A relationship between two variables in which they both increase or decrease in conjunction.

# Inverse Vs. Direct Relationship

## **Inverse Relationship**

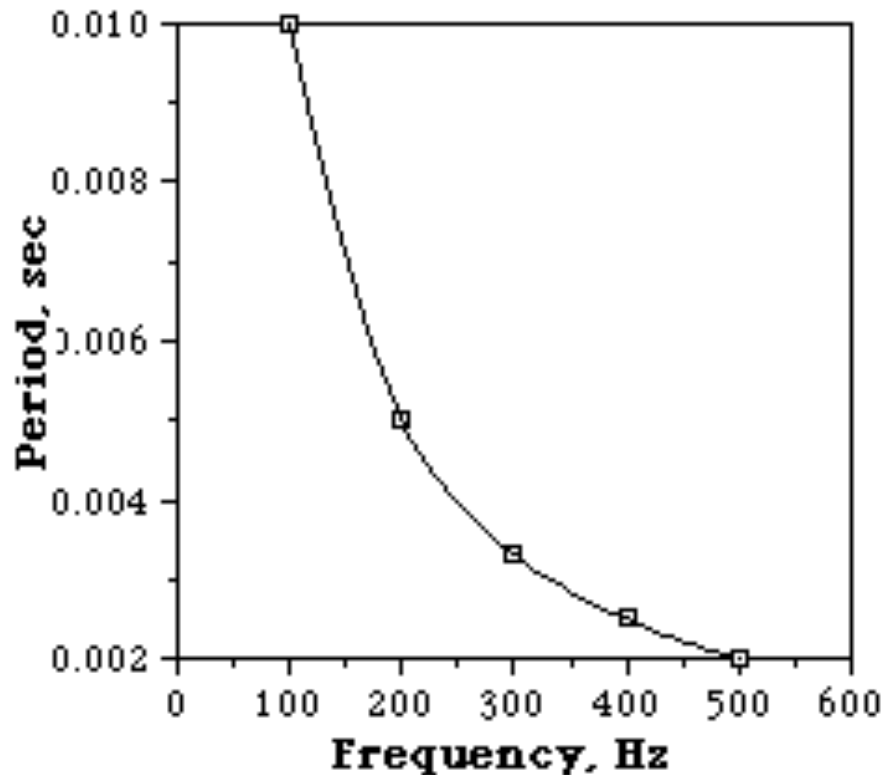
There is an inverse relationship between education and unemployment. That is to say that as education increases, the rate of unemployment decreases

## **Direct Relationship**

There is a direct relationship between age and risk for heart disease. The older you get, the more likely you have to have the disease, and the younger you are the less likely you are to get it.

# Inverse Relationship

## Physics Graph



## Graph is a downward curve

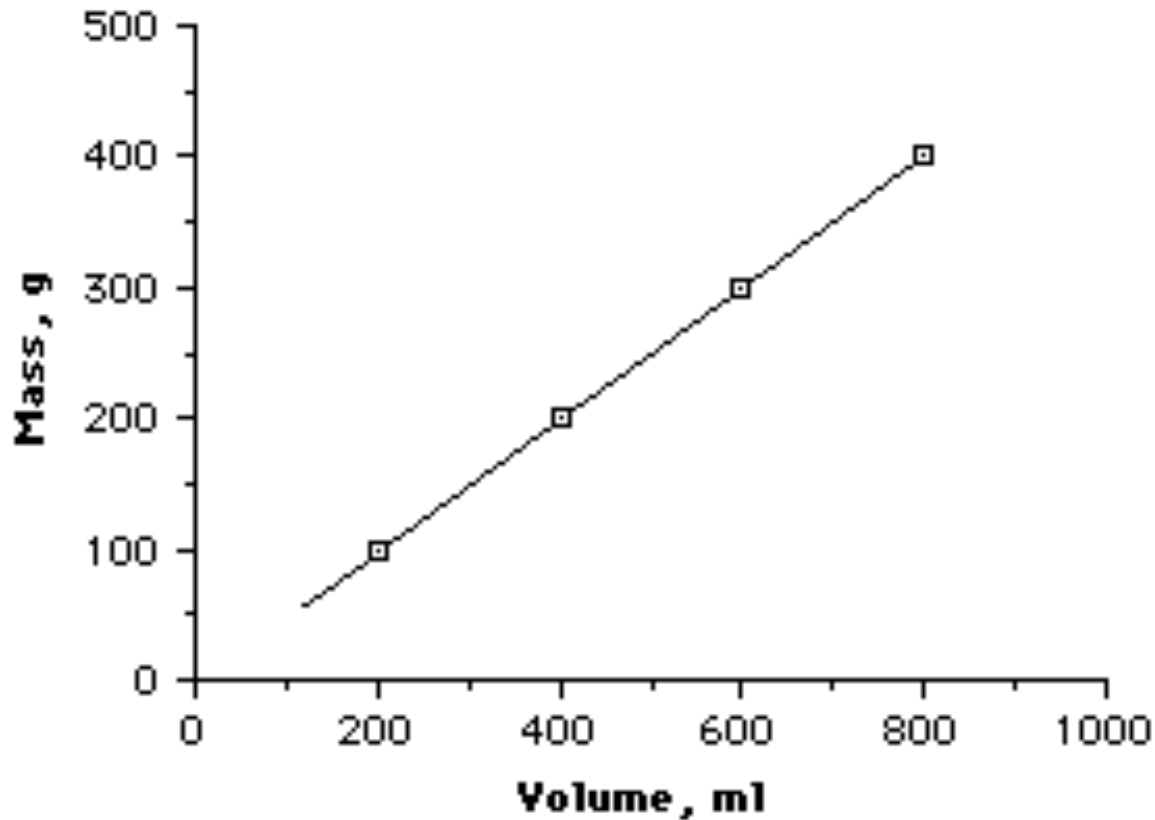
**For an inverse relationship, when we double the value of one variable, the other variable is reduced to half its former value.**

**When one value is tripled, the other is reduced to a third.**

**If we reduce the size of one variable to a fourth, the other becomes four times larger.**

# Direct Relationship

## Density



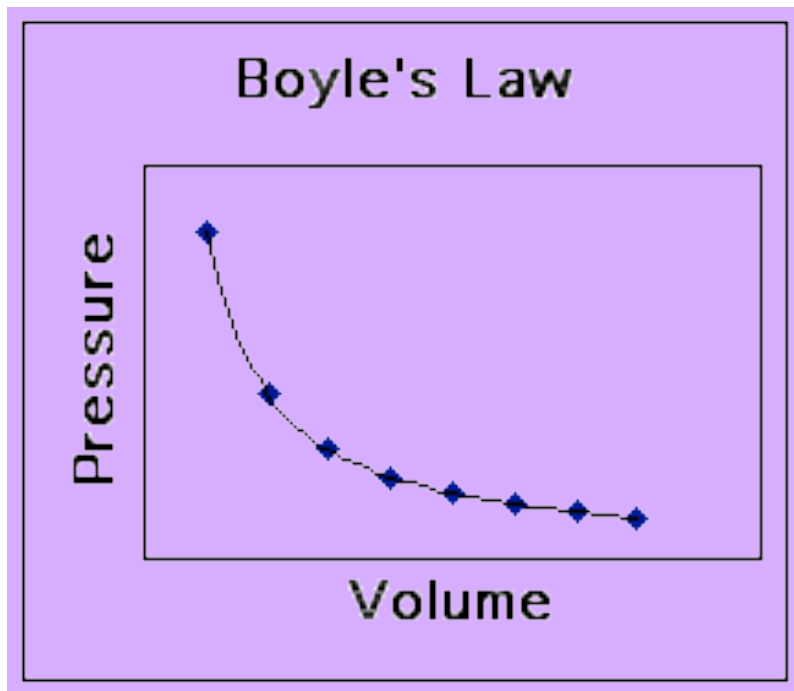
**Graph is a straight line**

**For a direct relationship, when we double the value of one variable, the other variable doubles, also.**

**When one value is tripled, the other variable is tripled.**

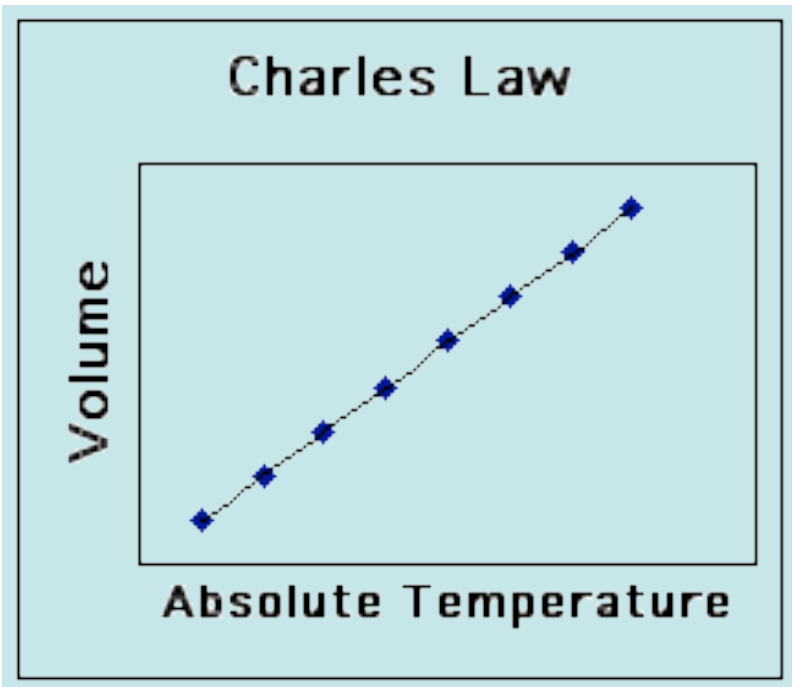
**If we reduce the size of one variable to a third, the other is also reduced to a third.**

# Inverse or Direct?



- **Inverse relationship**
- **Graph is a downward curve**
- **As Volume increases, pressure decreases**

# Inverse or Direct?



- **Direct relationship**
- **Graph is a straight line**
- **As Volume increases, absolute Temperature increases**

# Dependent Vs. Independent Variables

- Independent variables are those that are manipulated
- dependent variables are only measured or registered.
  
- Independent Variable = what you are testing, what you are in control of or what you manipulate
- Dependent Variable = what you are measuring

# Dependent vs. Independent Variables

How does the independent variable affect the dependent variable?

or

How does  $x$  affect  $y$ ?

On a graph,  $y$  always depends upon  $x$ .

$y$  is the dependent variable

$x$  is the independent variable

# Sample Problem #1

An experiment that tests how quickly different temperatures will dissolve sugar cubes.

- Identify the dependent and independent variables
  - Dependent -rate of dissolving
  - Independent - temperature
- How would the variables be placed on a graph?
  - x axis = temperature
  - y axis = rate of dissolving

# Sample Problem #2

An experiment that explores how different colors impact plant growth.

- Identify the dependent and independent variables.

Dependent - rate of plant growth

Independent - color

- How would the variables be placed on a graph?

x is the color

y is the rate of plant growth

# Sample Problem #3

How does the temperature of a chemical reaction change over time?

- Identify the dependent and independent variables.  
Dependent = temperature of a chemical reaction  
Independent = time
- How would the variables be placed on a graph?  
x axis is time  
y axis is temperature of the chemical reaction

# Now do Chem Skills Ws #9

## Graphing

