

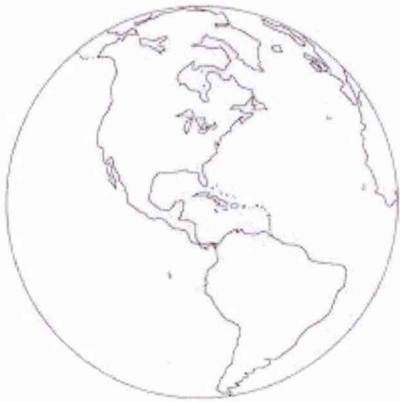
## WELCOME TO EARTH SCIENCE

Enclosed is the Accelerated Science summer homework. Please follow directions. The provided vocabulary words to be defined are commonly used in Earth Science but are often misinterpreted. Words can be found in the dictionary or online. Coming into class in September knowing what these words mean will be a tremendous help to you.

The math worksheet along with “Using Graphs to Analyze Data” will be counted as your first lab of the year. It is due on September 11<sup>th</sup> so any additional issues can be addressed during the first week of school.

Have a safe and happy summer. If you have any questions or concerns please check the Junior High School homepage under “Announcements”. You can contact the Junior High School with any additional questions.

Earth Science Teachers  
Longwood JHS



Absorb	
Abundant	
Apparent	
Axis	
Compare	
Component	
Composed	
Cyclic	
Deplete	
Deposit	
Duration	
Elevation	
Exceeds	
Expand	
Frequency	
Gradient	
Horizon	
Horizontal	
Hydrolysis	
Indicator	
Inferred	
Intensity	
Interface	

Marine	
Molten	
Occurrence	
Origin	
Parallel	
Parcel	
Phenomena	
Predict	
Radiate	
Random	
Reflect	
Refract	
Re-radiate	
Resistant	
Sequence	
Shallow	
Slope	
Solidification	
Spherical	
Subjected	
Undergone	
Variation	
Velocity	

A. Round the following numbers to the tenth place.

1.  $34.56 =$  \_\_\_\_\_

2.  $12.07 =$  \_\_\_\_\_

3.  $56.24 =$  \_\_\_\_\_

4.  $107.83 =$  \_\_\_\_\_

5.  $123.75 =$  \_\_\_\_\_

6.  $0.80 =$  \_\_\_\_\_

B. Use a calculator. Round answer to the tenth.

7.  $26.15 + 3.2 + 0.876 =$  \_\_\_\_\_

8.  $154.7 - 26.8 =$  \_\_\_\_\_

9.  $12.3 \times 0.14 \times 6.8 =$  \_\_\_\_\_

10.  $28 \div 35 =$  \_\_\_\_\_

11.  $19.2 \div 2.3 =$  \_\_\_\_\_

12.  $28.23 \times 2.4 =$  \_\_\_\_\_

C. Write the number represented.

13.  $5.0 \times 10^2 =$  \_\_\_\_\_

14.  $4.2 \times 10^0 =$  \_\_\_\_\_

15.  $7.4 \times 10^6 =$  \_\_\_\_\_

16.  $2.3 \times 10^{-3} =$  \_\_\_\_\_

17.  $3.91 \times 10^5 =$  \_\_\_\_\_

18.  $5.21 \times 10^{-2} =$  \_\_\_\_\_

D. Write the following numbers in scientific notation.

19.  $5400 =$  \_\_\_\_\_

20.  $720000 =$  \_\_\_\_\_

21.  $450 =$  \_\_\_\_\_

22.  $20 =$  \_\_\_\_\_

23.  $0.0078 =$  \_\_\_\_\_

24.  $0.5400 =$  \_\_\_\_\_

E. Solve for X. Round to the tenth.

25.  $\frac{4}{X} = \frac{12}{15}$

28.  $15X = 25$

26.  $\frac{X}{3.4} = \frac{13.5}{18.0}$

29.  $16 = 3X$

27.  $\frac{5}{7.2} = \frac{67}{X}$

30.  $\frac{6.8}{4.0} = \frac{X}{57.3}$

NAME: \_\_\_\_\_

DATE/PD: \_\_\_\_\_

## USING GRAPHS TO ANALYZE DATA

**Introduction:** Scientists study the way in which different objects and phenomena are related. They frequently plot line graphs of the data collected in order to understand the relationships between variables. The line graphs illustrate relationships or patterns. Line graphs can be classified as one of the following:

**Direct:** as the value of one variable increases, the other variable also increases

**Indirect:** as the value of one variable increases, the other variable decreases

**Cyclic:** as the value of one variable increases, the other variable repeats itself in a pattern at regular intervals

**Stable:** as the value of one variable increases, the other variable remains the same

**Objectives:** When this investigation is finished you will be able to:

1. construct a graph using an appropriate scale, given a set of data
2. describe the relationship between the variables of the graph
3. distinguish between the manipulated and responding variables

### Method:

1. Set up the axes, graph the data, and draw the line. The title of the graph has been provided to you.
2. Write a sentence to describe the relationship between the variables.
3. Describe the relationship between the variables as direct, indirect, cyclic, or stable based on the shape of the line graph.

### Questions:

1. What is meant by *variable*? \_\_\_\_\_

2. Contrast the manipulated variable to the responding variable (mention both variables in your response) \_\_\_\_\_

3. Which graphing relationship is best to make predictions? \_\_\_\_\_

4. Explain: \_\_\_\_\_

5. Why are graphs useful? \_\_\_\_\_

6. How is a direct relationship different from an indirect relationship? (mention both variables in your response) \_\_\_\_\_



1. RELATIONSHIP OF PRESSURE VERSUS VOLUME

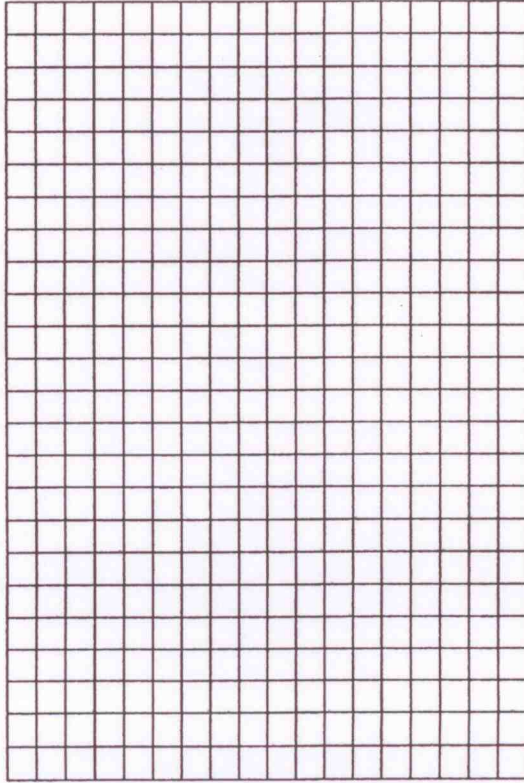
PRESSURE LBS/CM <sup>2</sup>	VOLUME CUBIC FEET
10	500
15	333
25	200
30	167
50	100
65	77
72	69
88	57
94	54
100	50

10  
15  
25  
30  
50  
65  
72  
88  
94  
100

ELAPSED TIME* (HR)	(MIN)	DISTANCE TRAVELED (MILES)
0	20	12
0	50	30
1	40	60
2	30	90
3	00	120
4	10	150
5	30	198
6	00	216
7	10	258

0  
0  
1  
2  
3  
4  
5  
6  
7

Pressure versus Volume



Pressure (Lbs/cm<sup>2</sup>)

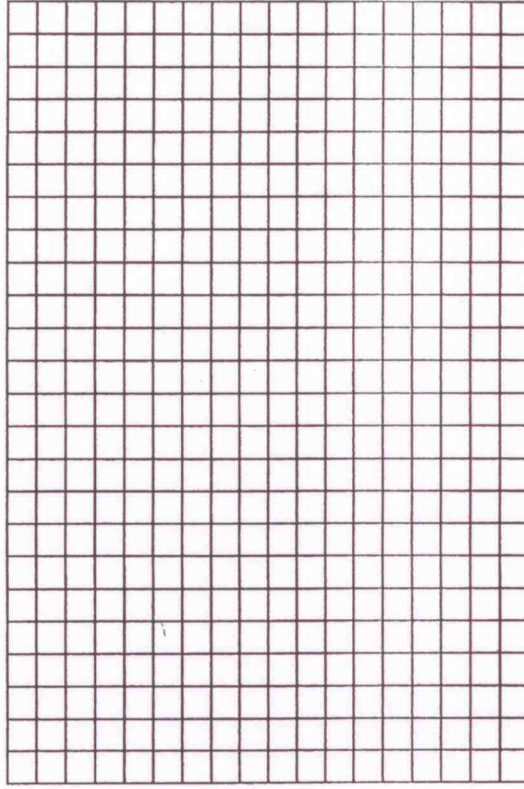
The manipulated variable is: \_\_\_\_\_  
 The responding variable is: \_\_\_\_\_

Write the relationship between the variables: As the manipulated variable increases, the responding variable \_\_\_\_\_

Type of Relationship: \_\_\_\_\_

2. RELATIONSHIP OF ELAPSED TIME VERSUS DISTANCE TRAVELED

Time versus Distance Traveled



Elapsed Time (Min)

The manipulated variable is: \_\_\_\_\_  
 The responding variable is: \_\_\_\_\_

Write the relationship between the variables: As the manipulated variable \_\_\_\_\_

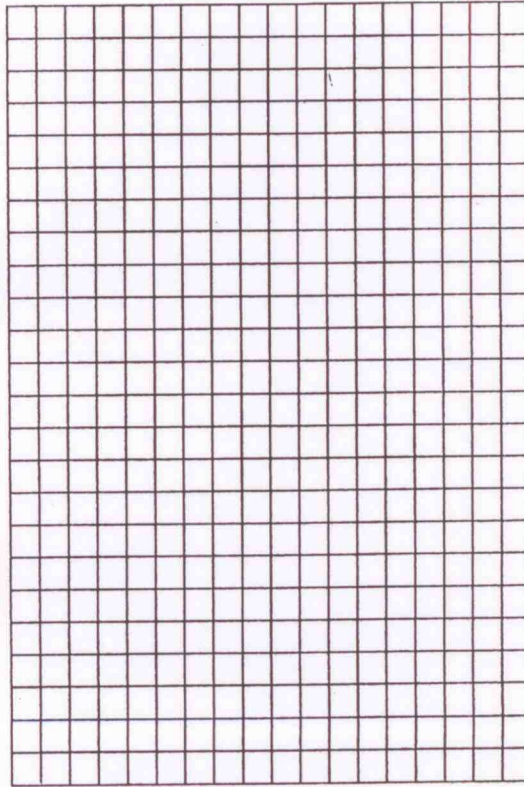
Type of Relationship: \_\_\_\_\_  
 (\*Hint: Convert the Elapsed Time from hours and minutes to minutes only)

3. RELATIONSHIP BETWEEN TIME OF DAY & TIDE HEIGHT

TIME* (HOUR:MINUTES)	TIDE HEIGHT (FEET)
-------------------------	-----------------------

Monday	9:00am	3
	12:30pm	10
	3:00pm	15
	6:30pm	6
	10:00pm	2.5
Tuesday	1:45am	9
	4:00am	16
	7:00am	8.5

Time of Day versus Tide Height



Tide Height (feet)

Time (hours:minutes)

The manipulated variable is: \_\_\_\_\_  
 The responding variable is: \_\_\_\_\_

Write the relationship between the variables: \_\_\_\_\_

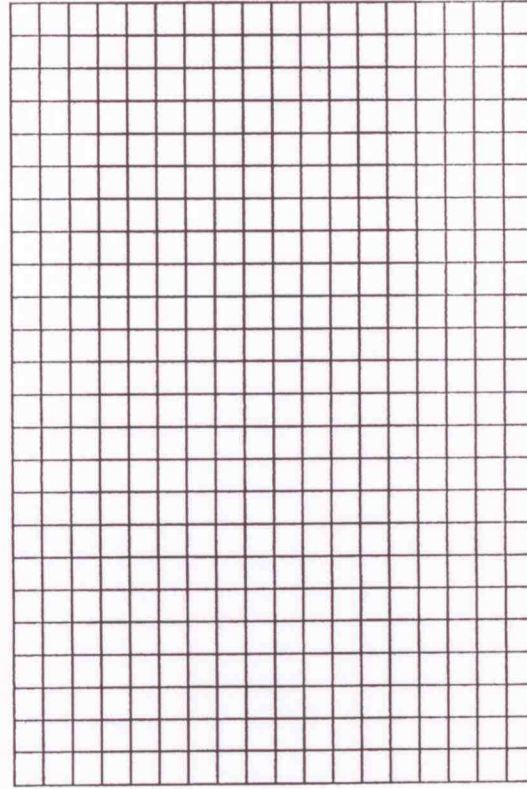
Type of Relationship: \_\_\_\_\_  
 (\*Hint: Time is continuous from am of the first day to am of the second day)

4. RELATIONSHIP BETWEEN ELEVATION AND AIR TEMPERATURE

ELEVATION (Km)	AIR TEMPERATURE (°F)
-------------------	-------------------------

0 (surface)	85
2	73
4	60
6	47
8	33
10	20
12	6

Elevation versus Air Temperature



Elevation (Km)

The manipulated variable is: \_\_\_\_\_  
 The responding variable is: \_\_\_\_\_

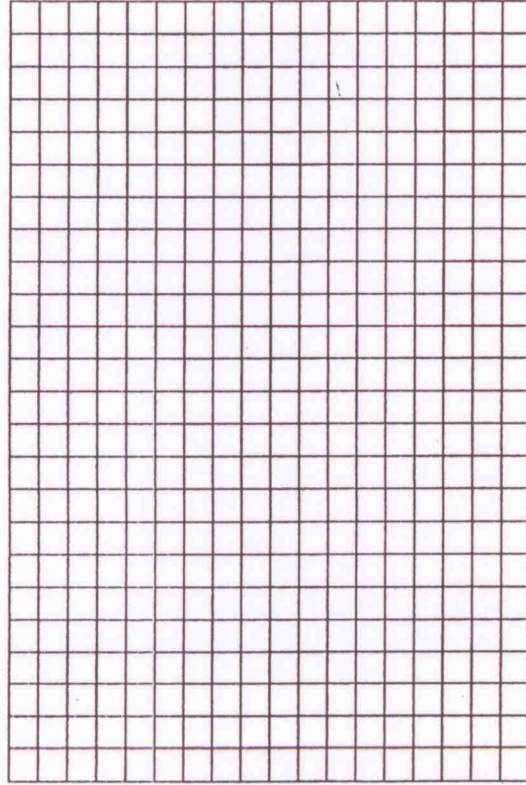
Write the relationship between the variables: \_\_\_\_\_

Type of Relationship: \_\_\_\_\_

5. RELATIONSHIP BETWEEN MONTH & TILT OF EARTH'S AXIS  
EARTH'S TILT\*  
(°)

January	23.5
February	23.5
March	23.5
April	23.5
May	23.5
June	23.5
July	23.5
August	23.5
September	23.5
October	23.5
November	23.5
December	23.5

Month versus Earth's Tilt



Earth's Tilt (°)

Time (month)

The manipulated variable is: \_\_\_\_\_

The responding variable is: \_\_\_\_\_

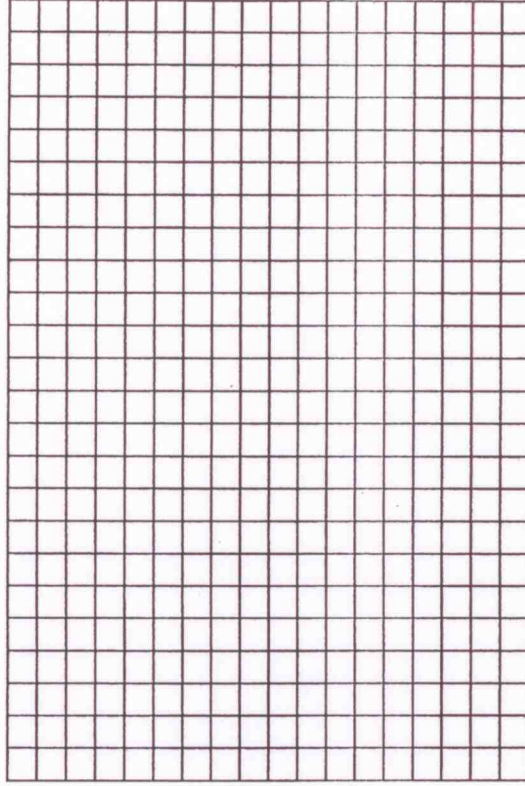
Write the relationship between the variables: \_\_\_\_\_

Type of Relationship: \_\_\_\_\_  
(\*Hint: Plan your graph so the data is centered)

6. RELATIONSHIP BETWEEN # OF BASEBALLS AND TOTAL WEIGHT  
# OF BASEBALLS  
(#) TOTAL WEIGHT  
(OUNCES)

1	5
2	10
3	15
4	20
5	25
6	30
7	35

Number of Baseballs versus Total Weight



Total Weight (ounces)

Baseballs (#)

The manipulated variable is: \_\_\_\_\_

The responding variable is: \_\_\_\_\_

Write the relationship between the variables: \_\_\_\_\_

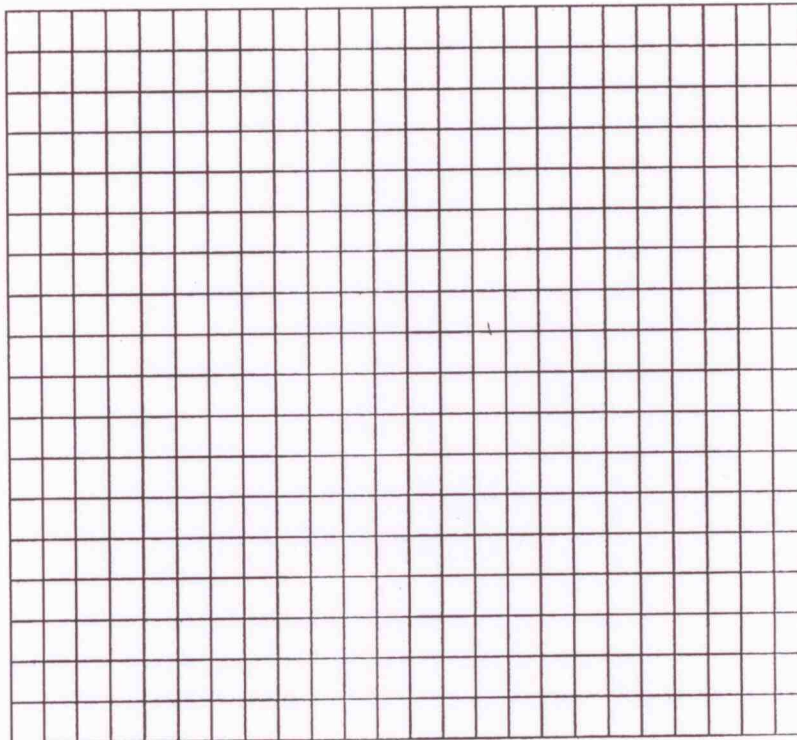
Type of Relationship: \_\_\_\_\_



## CONSTRUCTING A LINE GRAPH

- \_\_\_\_\_ Write a title above the graph (Use both the manipulated and responding variables)
- \_\_\_\_\_ Label each axis with the name of the variable and the appropriate units
- \_\_\_\_\_ Set up the axis with an equal interval (like a ruler) that includes all the values for the data
- \_\_\_\_\_ Plot the data with a dot
- \_\_\_\_\_ Draw a smooth line connecting the data points

<b>Temperature versus Number of Frog Croaks</b>	
<b>Air Temperature (°C)</b>	<b>Frog Croaks per Minute</b>
22	12
23	14
24	15
26	16
28	17
31	21
32	26



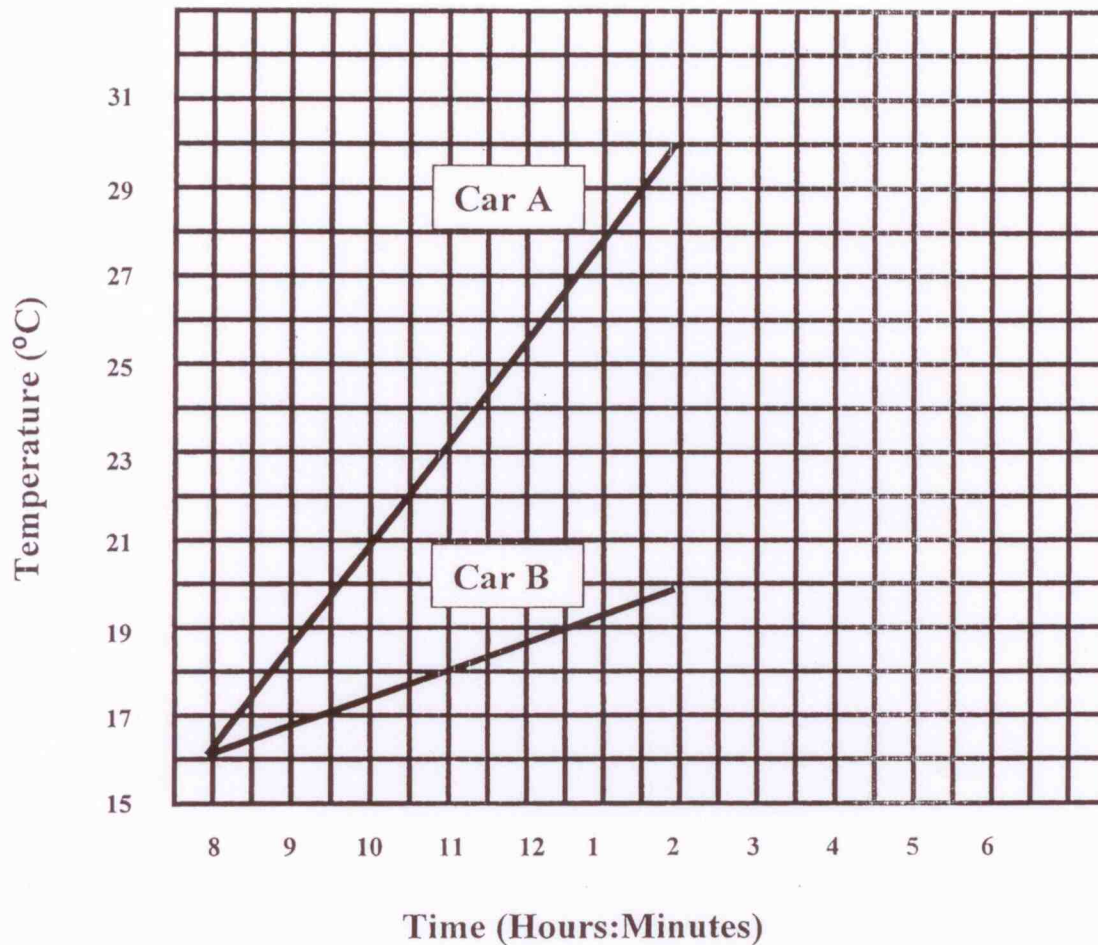
The responding variable in this investigation is: \_\_\_\_\_

Write a statement that explains how temperature affects the number of frog croaks per minute: \_\_\_\_\_

\_\_\_\_\_

**Interpreting a Graph:** The graph below shows the temperature changes inside two cars that were parked in the Sun from 8:00am to 2:00pm. The interior of Car A is black and the interior of Car B is white.

**Time in Sun versus Interior Car Temperature**



- How many degrees did the temperature change inside the car with the black interior? \_\_\_\_\_
  - How many degrees did the temperature change inside the car with the white interior? \_\_\_\_\_
  - Which car had the greatest rate of temperature change? \_\_\_\_\_
  - Explain how can you tell from the graph which car had the greatest rate of change: \_\_\_\_\_
- 
- For Car A, calculate the rate of change from 11:00am to 2:00pm  
(show equation, substitution, and final answer to tenths with correct units for all problems)
  - For Car B, calculate the rate of change from 11:00am to 2:00pm
  - According to the graph, which color is the best absorber of solar energy? \_\_\_\_\_