Name:_____ Date:_____

Mr. Croom's Physics Chapter 2: One Dimensional Motion

Proportionality

In these 6 problems, you will determine the type of mathematical relationship that exists between the first (left) variable and the second (right) variable; in other words, in math terms, you will determine the first variable as a function of the second variable, and write an equation relating the two variables.

How do you find this relationship? Easy. Just follow the directions below.

1. First, calculate the **y/x ratio** (**constant of proportionality**) of each data set. If this number is not consistent for each data coordinate, then you do not have a directly linear data set.

2. To find the relationship, you must determine if the data set is directly related or inversely related.

3. After a direct or inverse relationship has been determined, you need to narrow your focus as to which exact type of relationship exists, i.e. regular direct or inverse, direct or inverse square, or direct or inverse square root. This is done by manipulating the data directly. Follow the example from class.

4. After the y/x ratio has been determined, graph the original data with the original relationship, then graph the new relationship, again according to the example from class.

1.

m	n
6	2
9	3
15	5
21	7
27	9
33	11
42	14
54	18

2.

r	s
8.3	0.6
3.6	1.4
2.3	2.2
1.2	4.1
0.9	5.5
0.6	8.5
0.2	25.0

3.

c	t
6.7	1.2
3.6	2.2
2.0	3.9
1.5	5.3
1.2	6.9
0.9	8.4
0.7	11.1
0.6	13.2

4.

m	v
3.1	2.5
4.6	5.3
6.1	9.4
7.7	14.6
8.5	18.0
10.2	25.9
10.8	29.1
11.6	34.3

5.

q	h
16.7	0.6
9.4	0.8
4.2	1.2
1.4	2.1
0.8	2.8
0.5	3.4
0.4	3.9
0.3	4.4
0.2	4.8

from Chapter 12: Graphic Interpretation of Data,
Terms, Tables, & Skills for the Physical Sciences by Bobby J. Woodruff, © 1966.