Variation – Day 2
Assignment

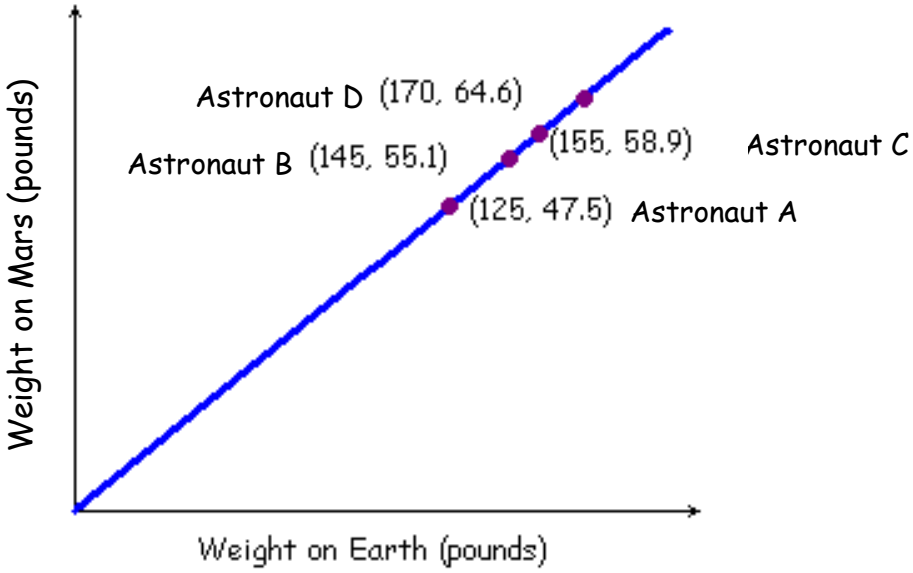
Name_____
Date_____Period____

It's a Weighty Matter

Did you know your weight is a factor of where you are standing? Every object in the universe with mass attracts every other object with mass. The amount of attraction depends on the size of the masses and how far apart they are. For two regular-sized objects, this gravitational pull is too tiny to really measure. But the pull between a very large object, like a planet, and a regular-sized object, such as yourself, can be easily measured.

How do we measure this gravitational pull? Simply stand on a scale! Scales measure the force of attraction between you and the planet. This force of attraction between you and the planet is called your weight.

This graph shows the relationship between weights on Earth and how they relate to corresponding weights on Mars.



1. What are the independent and dependent variables?

2. What does the ordered pair (155, 58.9) mean in words in this problem?

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3. Organize the data from the graph using the table below.

Name	**Weight on Earth** (pounds)	**Weight on Mars** (pounds)	**Ratio** $\frac{\text{Mars Weight}}{\text{Earth Weight}}$	**Ratio** (expressed as a decimal)
Astronaut A				
Astronaut B				
Astronaut C				
Astronaut D				

4. Is this a direct variation? Provide evidence that will validate your conclusion.

5. Complete this table.

Earth Weight (lbs)		1	2	2.5	**10**		50		100	*n*
Mars Weight (lbs)	1				**3.8**			32.3		

6. Write a rule using words and symbols that describe the relationship between the weight on Earth and the corresponding weight on Mars.

7. Before lift off, it was noted that Astronaut C had lost $4\frac{1}{2}$ pounds. What was his new weight? How will this change his weight on Mars?

8. If a Martian was discovered and found to weigh 475 pounds on his home planet, how much would the Martian weigh on Earth? Explain how you determined the Martian's weight on Earth.