Physics **Newtonian Physics** **Mr. McMullen**

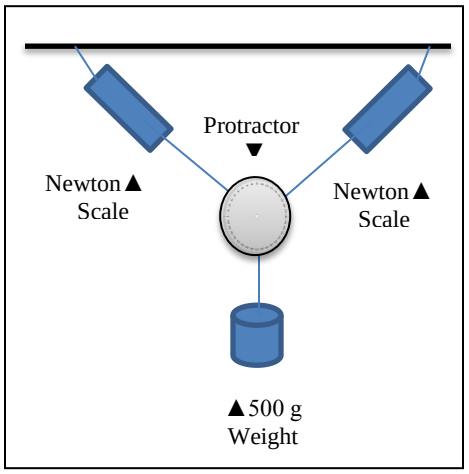
Names_____ _____ Date _____ Period _____

Newtonian Physics – Components of Force Vector Activity

During this minilab you will investigate the relationship between the angle of an applied force and the magnitude of one component.

Materials:

1 m of String	500 g Weight	2 Newton Scales
Protractor	Cross Bar and Supports	



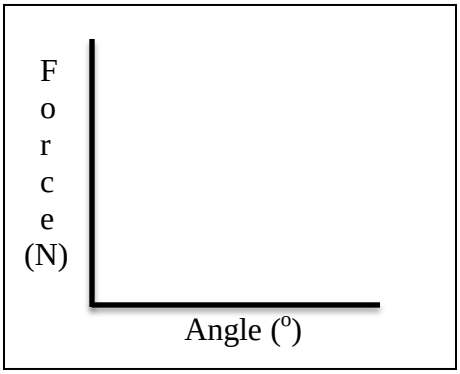
Procedures:

1. Attach the two newton scales to the cross bar using small pieces of string.
2. Stretch the scales out to the end of the cross bar.
3. Tie a piece of string from one newton scale to the other. This is the central string.
4. Attach a loop of string around the central string.
5. Attach the 500 g weight to the loop.
6. Place the protractor at the intersection of the central string and the loop. Zero of the protractor should be at this intersection.
7. Move the newton scales in until the angle of the central string reads 15^{o}.
8. Adjust the location of the weight until the two scales read the same.
9. Record the angle and the force read on a newton scale in the table below.
10. Move the scales further apart and record this new angle and reading on a newton scale. Remember the scales must read the same, adjustments of the weight on the string may be needed.
11. Repeat these procedures for a total of 8 readings. Some readings must be at an angle greater than 120^{o}. Be sure the scales have equal readings for each data point.

Hanging Weight = _____ g = _____N

Angle (^{o})	Force (N)

Draw a graph of the force versus the angle.



Interpretations:

How does changing the angle affect the force on each string?

_____

For what angle of the string were the forces on the string…

the least _____

the greatest _____

the same as the suspended weight _____

Explain how the arithmetic sum of the two forces can be greater than the load _____

_____

_____

Give some practical applications of this study_____