

Name: \_\_\_\_\_

Partner (if you worked with someone): \_\_\_\_\_

# The Shadow Knows Project

In class you had the opportunity to experience how to find the height of tall objects by using proportions in “The Shadow Knows” activity. Now that you have had the experience in class to do this, you are now responsible for showing how you can use proportions on your own.

## GOAL:

Working individually or with a partner, (each person needs to turn their work in) you will find an object that is too tall for you to measure the height, use what you learned in “The Shadow Knows” activity and complete some measuring on your own. You should have a sketch, calculations, a table of measurements and a reflection paragraph when you are finished.

You need to find an object **NOT** on Stillwater Middle School grounds to complete this activity. The instructions are below in case you forgot what to do.

## Instructions:

- a. Select an object that you are unable to measure directly. (football goal post, a flagpole, height of your house, lamp post, or a tall tree)
- b. Measure your partner’s height [in inches] and the length of his or her shadow [in inches]. Record these measures in the table.
- c. Now measure and record [in inches] the length of the shadow of the object you have chosen to estimate the height.
- d. Sketch and label the similar triangles that are formed with the heights and shadows of both your partner and the object you are indirectly measuring.
- e. Use height to shadow ratios to determine the height of each object. Include all of your calculations and give an estimate for the height of your object. (Express your final answer in **feet** since you have taken your measures in inches.)

**Measurement Experience:**

What date did you do this activity? \_\_\_\_\_ What time did you measure? \_\_\_\_\_

Name of Object	Shadow Length of Person (inches)	Height of Person (inches)	Shadow Length of Object (inches)	Calculated Estimate for Height (feet)

**Sketch for Measurement:**

**Calculations for Measurement:**

**Reflection:** Reflect on this measurement experience. Write a one to two paragraph response below discussing whether your answer seems reasonable. Identify some possible causes for error.

**Bonus:**

While working on the project, if you want to create a video of you taking the measurements and discussing how to solve and work, you may do so. The video must include your partner, if you have one, to receive the 10 bonus points. You may email the video to your teacher or upload the video to YouTube and provide your teacher with the link. (Reflection may be verbal on the video if you choose.)

	5 points	3 points	0 points
Data Table	Written clearly with correct labels.	Sloppy writing or missing labels	Table is missing
Sketch	Sketch is drawn clearly and labeled.	Sketch is not clear or missing labels	Sketch is missing
Calculations	Calculations are accurate.	Errors found in the calculations	Calculations are missing
Reflection	Reflection is detailed with few to no errors.	Reflection seems to be written quickly and is missing information	Reflection is missing