***The heights of very tall structures can be measured indirectly using similar figures and proportions. This method is called indirect measurement.***

[***https://www.youtube.com/watch?v=QWcq4wToTlA***](https://www.youtube.com/watch?v=QWcq4wToTlA)

***Your assignment is to find the height of a tree, a light pole, or a building on campus.* Y*ou will calculate the height using* the shadow method!**

***Shadow Method*** *Shadow Reckoning: Go to your tree and measure the shadow cast by the tree. Then measure the length of the shadow of a student from your group, who stands by the tree (but not in it's shadow). Measure the student's height. Then draw a sketch of the tree and the student, label the sketch with the measurements, and calculate the height of the assigned object.*

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**Summary:**

**1. Fill out your group duty chart.**

**Outside: Calculate the height of the tree shadow, your teammate’s shadow, and your teammate’s height**

**2. Inside: Draw the tree/pole/building, the student, and both shadows on your paper.**

**2. Explain every step of your work; Set up proportions and label (MUST SHOW ALL WORK)**

**3. Write these explanations clearly and completely, including all of equations and any theorems that you use. This explanation will be part of your "picture".**

**4. Answer the questions #1-3**

*1. Explain why the triangles are similar, in each case.*

*2. How might these methods be useful in other situations?*

*3. Do you think this might be how people in earlier times might have measured objects too tall to measure directly?*

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|  | Group Names | Materials Collector | Recorder | Measurement Specialist | Artist (Draw Diagram) | Labeling/Accuracy Manager |
| 1 |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |

 EVERYONE MUST TURN IN WORK!!!

Picture: