Math 10 Trigonometry Project

Names: _____

What you are doing:

In pairs, using your new found knowledge of trigonometric ratios and other mathematical concepts, you need to complete the following tasks as per the directions throughout.

Before the Project

1. On a smartphone, at least one of the pair will have to download a clinometer app. (This will measure angles for you)
2. Set up a piece of paper to keep track of your measurements for all of the tasks. You will only have one chance to get all your measurements, so make sure to take extra care to ensure your accuracy and clarity.

In the Field:

1. Calculate the height of the totem pole in the atrium.
2. Calculate the height of the top of the windows above the office.
3. Calculate the height of the floor of the walkway above the middle of the multi-purpose room.
4.
    a. Calculate the height of the tree on the right when facing the front entrance of the school.
    b. Given this height, what would be the length of a guy wire from the top of this tree to the bottom of the planter for the tree to the left?
    c. **Calculate** the angle of inclination of this guy wire (i.e. do **not** measure it with your clinometer)
5.
    a. Calculate the height of upper D wing.
    b. From a point in the **centre** of the hallway in front of the library, calculate the distance from that point to the **bottom** of the totem pole.

In the classroom/at home:

1. For each measurement/diagram, the following items need to be completed
    a. Draw a diagram complete with all distances and angles
    b. Include clear and accurate calculations for any work you did.
    c. Explain any procedures you used for your measurements and/or calculations.
    d. Include appropriate units for each figure.
2. After you and your partner have completed all your calculations:
    a. Find another group to work with and compare **only one** of your calculations
    b. If your answers are not the same (which is likely), compare both sets of calculations and explain why you got different answers.
3. Find one other group and repeat step 2 for a **different** calculation.

After:

You and your partner need to complete a written reflection that includes, but is not limited to the following ideas:

- Discuss any difficulties you had completing this project.
  - o Why did you have these problems
  - o What did you do to deal with these issues?
- Did you learn anything new?
  - o Did this project help deepen your understanding of trigonometry?
- What did you like or not like about this project?
- What would you do differently if you did this project again?
- What would you like to see changed in this project?

Special Notes:

- You **must** use trigonometry to find all the required values. You may only measure distances on the ground!
- You may do the following tasks in any order.
- Please remember as you make your way to the various locations to be quiet and respectful of other classes in session.
- *Since you will be measuring the angle from your eye level, you will need to adjust your calculations to reflect this!*

Assessment:

You will be assessed using a 4 point scale on the following three areas (see attached rubric):

1. The **accuracy** of your work. Did you follow the correct procedures for each task? Did you use the correct trig ratio and put your values in the correct place?
2. The **clarity** of your work. Is it clear how you completed each task? Is your work neatly laid out? Are your answers easy to find and with proper units?
3. The **quality** of your reflections. Were you able to come up with reasonable explanations as to why your answers differed from other groups? Were you able to demonstrate what you learned from doing this project?