GEOMETRY – **Performance Task** TRIGONOMETRY Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_per\_\_\_\_\_\_

Due date \_\_\_\_\_\_\_\_\_\_\_\_\_ Partners names\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The Fairfield Museum is in the process of building a scale model of the town of Fairfield. They have asked the public to help verify the heights of several tall objects in town. With your group of 3, you will be in charge of finding the height of 3 different objects using 3 different trigonometric/similar triangle methods per object. To break up the work, each group member should find the height of each of the objects using a different method. You may choose any of the methods that we have discussed during our trigonometry unit, or you may use another method that you research and discover on your own. (See **Resource Links** below.)

You may choose buildings, houses, trees, flagpoles, etc. The choice is yours! However, the 3 objects that your group chooses should be in the same proximity so that you can collaborate as a group in the measuring process.

You will need to turn in:

INDIVIDUALLY

* The “Measuring Heights Worksheet” with all questions answered completely
* Include detailed diagrams and explanations! The more details the better.

AS A GROUP

* Group presentation. You may choose how you would like to convey the information that you discovered in the process of finding the heights of your objects. Your audience is the committee at the Fairfield Museum. They need to be convinced that you were thorough and accurate in your measuring technique, so as to be sure your reported heights of the 3 objects are acceptable for their scale model.
* You may choose to do a video, a PowerPoint, a display, a report, a website, etc.
* The group presentations will be displayed as stations around the classroom. Each group member will take a turn at their station representing their group.

**Resource Links**

<http://www.wikihow.com/Measure-the-Height-of-a-Tree>

*Your Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

*Partner(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

**Measuring Heights Worksheet**

**Object 1.** I am measuring: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Method: *(Please describe in detail the method you used to find the height of the object. Each group member should use a different method for this object. Also, each individual should use different methods for the 3 objects.)*

Diagram: *(Please draw a diagram that includes the triangles used in your method and label all relevant dimensions.)*

**Object 2.** I am measuring: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Method: *(Please describe in detail the method you used to find the height of the object. Each group member should use a different method for this object. Also, each individual should use different methods for the 3 objects.)*

Diagram: *(Please draw a diagram that includes the triangles used in your method and label all relevant dimensions.)*

**Object 3.** I am measuring: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Method: *(Please describe in detail the method you used to find the height of the object. Each group member should use a different method for this object. Also, each individual should use different methods for the 3 objects.)*

Diagram: *(Please draw a diagram that includes the triangles used in your method and label all relevant dimensions.)*

Process and Results:

* Most likely you did not get the exact same height for your object as the result of each method. Please analyze which method you feel was more accurate and describe your reasoning below. Include any mistakes you may have made and how you fixed them. Also explain how different your results were and why you think the two methods produced different slightly or hugely different results!

**Geometry Performance Task - Trigonometry**

*Scoring Rubric*

**Critical and Creative Thinking**

* Exploring and Understanding
  + 4 – Exemplary
    - The student provided a reflection on any decisions and adjustments made to improve the accuracy of the calculated height
    - The student provided an analysis and comparison of the effectiveness of the 2 methods
    - Correctly described 2 appropriate methods to find height and includes the rationale for the choice of method
    - diagrams are included with all relevant dimensions labeled
    - All calculations are complete with no significant errors
  + 3 – Achieving
    - Correctly described 2 appropriate methods to find height and includes the rationale for the choice of method
    - diagrams are included with all relevant dimensions labeled
    - All calculations are complete with no significant errors
  + 2 – Developing
    - Correctly described 2 appropriate methods to find height
    - diagrams are included with all relevant dimensions labeled
    - There are some errors in calculations (or calculations are incomplete), but the student demonstrated an understanding of both methods
  + 1 – Below Standard
    - student uses only 1 appropriate method to find height
    - student provided 2 different methods to find height, but with significant errors, omissions, or misconceptions in one or both of the descriptions
    - student has missing or incorrect calculations with major flaws in setup and/or diagrams
    - student did not provide descriptions to support calculations

**Communicating and Collaborating**

* Using Communication Tools
  + 4 – Exemplary
    - The possible reactions of the audience are considered and the presentation is customized to reflect a positive impact
    - Appropriate media is used for the audience
    - Presentation is complete in conveying the heights of the 3 objects and the methods used to determine the heights
    - Presentation is organized
    - Methods are convincing and without significant errors
  + 3 – Achieving
    - Appropriate media is used for the audience
    - Presentation is complete in conveying the heights of the 3 objects and the methods used to determine the heights
    - Presentation is organized
    - Methods are convincing and without significant errors
  + 2 – Developing
    - Appropriate media is used for the audience but presentation is incomplete in conveying the heights of the 3 objects and/or the methods used to determine the heights
    - Organization of presentation is lacking
    - Methods are unconvincing or contain errors
  + 1 – Below Standard
    - Choice of presentation media lacks consideration of the audience or is inappropriate for the audience, the Fairfield Museum committee
    - The presentation does not convey the heights of the 3 objects and the methods used to determine the heights
* Collaborating Strategically
  + 4 – Exemplary
    - Took a leadership role in group by organizing/delegating responsibilities
    - Encouraged participation from other group members
    - Followed directions to complete the task
    - Fulfilled group role
    - Needed no prompts to stay on task
    - Worked through issues with group members rather than asking teacher or other groups
  + 3 – Achieving
    - Followed directions to complete the task
    - Fulfilled group role
    - Needed no prompts to stay on task
    - Worked through issues with group rather than asking teacher or other groups
  + 2 – Developing
    - When prompted, participated in group
    - Demonstrated little consideration of roles of group members
    - Benefited from peer support outside of group
    - Prompted to participate in task 1 time
    - Asked teacher for clarification 1 time (rather than working through the issue with the group)
  + 1 – Below Standard
    - Expressed refusal to work in group role or demonstrated little or no evidence of participation in group role
    - Prompted to participate in task 2 or more times

Required clarification from teacher 2 or more times, rather than working through the issue with group members