Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Chapter 8 Right Triangles and Trig Project

Trig River Project

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| A colorful drawing of mountains with a wide river running flowing at the bases. |
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| **Summary**  Students learn about and use a right triangle to determine the width of a "pretend" river. Working in teams, they estimate of the width of the river, measure it and compare their results with classmates. |

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**Learning Objectives**

After this activity, students should be able to:

* Use right triangle trigonometry and angle measurements to calculate distances

**Materials List**

Each group should have: Trig River Worksheet, protractor, 1 piece of string (6-inch long), pencil, tape measure or meter stick (groups can share)

**Procedure**

Use your knowledge of Trigonometry to find out the distance across the river. You may use the chart below as a reminder:

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| Right triangle trig |
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***On Project Day***

1. Identify the Far Edge Marker. Normally this would be a natural object at the edge of the opposite side of the river.
2. Directly across from the marker, find the Zero Edge Marker (see Figure 1).
3. Measure your distance to the zero edge marker.
4. Make sure you have all required materials: Trig River Worksheet, protractor, 1 piece of string (6-inch long), pencil, tape measure or meter stick (groups can share).
5. Make an estimate of how wide the river is and record it at the top of your worksheet.

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| A drawing of a "pretend" river, usiing classroom desk as the banks, illustrating how to prepare to use angles to determine the width of a river. |
| Figure 1. Set up for angle measurement. |

1. Lay the protractor with the center point on the middle of the tape and the zero angle pointing toward the Zero Edge Marker (see Figure 2).
2. Hold the protractor in place while another person places one end of the string on the center point of the protractor and aims the other end at the Far Edge Marker. Read the angle the string passes over on the protractor and record it on the worksheet.
3. Partners switch jobs and record a second measurement on their worksheet.
4. Complete the worksheet calculations. (Leave the markers in place.)
5. On the back of the worksheet, compare your estimate to the actual measurement.

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| A drawing of a "pretend" river, usiing classroom desk as the banks, illustrating how to use angles to determine the width of a river. |
| Figure 2. Angle Measurement |

**Activity Extensions**

Using the following website, have students complete the navigation example using trigonometry: <http://www.staff.vu.edu.au/mcaonline/units/trig/ratios.html>.

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

Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Trig River Worksheet

1. Estimate the distance across the Trig River (in cm): \_\_\_\_\_\_\_\_\_\_
2. Your distance from the Zero Edge Marker (in cm): \_\_\_\_\_\_\_\_\_\_
3. 1st Angle Measurement: \_\_\_\_\_\_\_\_\_\_
4. 2nd Angle Measurement: \_\_\_\_\_\_\_\_\_\_
5. Find the average of these two angle measurements: \_\_\_\_\_\_\_\_\_\_\_\_\_



1. Which of the trigonometric ratios will help us find the distance across the river? Circle one.
   1. Sine b.Cosine c. Tangent
2. Create and solve the equation needed to find the distance across Trig River.
3. The distance across Trig River (in cm) is: \_\_\_\_\_\_\_\_\_\_\_\_\_
4. Compare your estimate with your answer in number 8. Does your answer make sense?

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