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| **Problem 1 – Exploring a Triangle** | |
| Open the **Cabri™ Jr** file *TRIAN1*.  Measure the angles and side lengths of the triangle. Then drag vertex *BB*.  **1.** What kind of triangle is this? |  |
| **2.** Which measurements of the triangle change? Which measurements stay the same?  **3.** What word describes two triangles that have the same angles but different side lengths?  **4.** Drag point *BB* to complete the first three columns of the table. Calculate the other columns.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | ***A*** | ***B*** | ***C*** |  |  |  | | **2.0** |  |  |  |  |  | | **2.3** |  |  |  |  |  | | **2.5** |  |  |  |  |  | | **2.8** |  |  |  |  |  | | **3.0** |  |  |  |  |  | | **3.5** |  |  |  |  |  | | **4.0** |  |  |  |  |  |   **5.** How do the ratios for each of the similar triangles compare?  **6.** Write a conclusion about the ratios of the side lengths of similar triangles. | |
| **Problem 2 – Exploring Another Triangle** | |
| Open the Cabri™ Jr file *TRIAN2* and repeat the steps from Problem 1.  **7.** Is this triangle a right triangle? | |
| **8.** Is this triangle similar to the first triangle? Why or why not?  **9.** Are all right triangles similar? Why or why not? | |
| **10.** Drag point *BB* to complete the first three columns of the table. Calculate the other columns.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | ***A*** | ***B*** | ***C*** |  |  |  | | **2.0** |  |  |  |  |  | | **1.8** |  |  |  |  |  | | **1.6** |  |  |  |  |  | | **1.4** |  |  |  |  |  | | |
| **11.** How do the ratios of the side lengths of Triangle 2 compare to the ratio of the side lengths of Triangle 1?  **12.** Write a conclusion about the ratios of the side lengths of triangles that are similar and triangles that are not similar. | |
| **Problem 3 – Introducing the Trigonometric Ratios** | |
| Open the Cabri Jr file *TRIAN3*.  **13.** Measure the side lengths.  *A* = \_\_\_\_\_ *B* = \_\_\_\_\_ *C* = \_\_\_\_ |  |
| Calculate the trigonometric ratios for ∠*AA*.  **14.** sine ∠*AA* =  ≈ \_\_\_\_\_  **15.** cosine ∠*AA* =  ≈ \_\_\_\_\_  **16.** tangent ∠*AA* =  ≈ \_\_\_\_\_  **17.** What is the measure of angle *AA*? \_\_\_\_\_  Use the calculator commands **sin**, **cos**, and **tan** to check your answers. | |
| **Problem 4 – Calculating the Trigonometric Ratios of a Different Angle** | |
| Using the same triangle in Cabri Jr file *TRIAN3*, write and calculate formulas using the side lengths A, B, and C to find sine ∠*BB*, cosine ∠*BB*, and tangent ∠*BB*.  **18.** sine ∠*BB* =  ≈ \_\_\_\_\_  **19.** cosine ∠*BB* =  ≈ \_\_\_\_\_  **20.** tangent ∠*BB* =  ≈ \_\_\_\_\_  **21.** What is the measure of angle *BB*? \_\_\_\_\_  Use the calculator commands sin, cos, and tan to check your answers. | |

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| **Problem 5 – Finding Missing Side Lengths**  **22.** Write a formula that relates 63°, the opposite side, and the hypotenuse. Solve for *x*. | |
| **23.** Write a formula that relates 54°, the opposite side, and the adjacent side. Solve for *x*. |  |