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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.

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| --- | --- | --- | --- | --- | --- |
| ***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.

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| ***A*** | ***B*** | ***C*** |  |  |  |
| **2.0** |  |  |  |  |  |
| **1.8** |  |  |  |  |  |
| **1.6** |  |  |  |  |  |
| **1.4** |  |  |  |  |  |

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|  **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*. |  |