



Problem 1 – Exploring a Triangle

- Describe triangle ABC .

Drag vertex C (the white point) on page 1.2.

- Do the angles of triangle change? Do the side lengths of the triangle change?
- What word describes two triangles that have the same angles but different side lengths?

Capture at least 10 sets of values for a , b , and c (*the captured data is stored on page 1.5*).

- How do the ratios in columns D-F for each of the triangles compare?
- Write a conclusion about the ratios of the side lengths of similar triangles.

Problem 2 – Exploring Another Triangle

Repeat the steps from Problem 1 on pages 2.2 and 2.3.

- Is Triangle 2 a right triangle?
- Is Triangle 2 similar to Triangle 1?
- Are all right triangles similar? Why or why not?
- How do the ratios of the side lengths of Triangle 2 compare to the ratio of the side lengths of Triangle 1?
- 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

Measure to find the values of sine $\angle A$, cosine $\angle A$, and tangent $\angle A$ on page 3.3.

- sine $\angle A =$ _____
- cosine $\angle A =$ _____
- tangent $\angle A =$ _____
- What is the measure of angle A ? _____

Use the calculator commands **sin**, **cos**, and **tan** to check your answers.

Problem 4 – Calculating the Trigonometric Ratios of a Different Angle

Write formulas using the side lengths a , b , and c to find sine $\angle B$, cosine $\angle B$, and tangent $\angle B$. Use the formulas to complete the ratios on page 4.2 by **clicking** twice on each ratio. Then calculate them with the **Calculate** tool.

- sine $\angle B = \frac{\text{---}}{\text{---}} = \text{_____}$
- cosine $\angle B = \frac{\text{---}}{\text{---}} = \text{_____}$
- tangent $\angle B = \frac{\text{---}}{\text{---}} = \text{_____}$
- What is the measure of angle B ? _____

Use the calculator commands **sin**, **cos**, and **tan** to check your answers.

Problem 5 – Finding Missing Side Lengths

Write a formula that relates 63° , the side opposite, and the hypotenuse on page 5.1. Solve for x .

Write a formula that relates 54° , the side opposite, and the adjacent side on page 5.2. Solve for x .