Objective

By the end of this lesson, you will be able to understand the basic concepts of trigonometry and apply them to solve problems.

Materials and Prep

- Pencil and paper
- Ruler
- Protractor
- Calculator (optional)

Before starting this lesson, make sure you have a good understanding of basic geometry concepts, such as angles, triangles, and the Pythagorean theorem.

Activities

1. Activity 1: Introduction to Trigonometry

Draw a right triangle on a piece of paper and label the sides as opposite, adjacent, and hypotenuse. Use the Pythagorean theorem to find the length of each side. Discuss how trigonometry is used to relate the angles and sides of a triangle.

2. Activity 2: Trig Ratios

Provide a set of different right triangles with various angles and side lengths. Ask the student to calculate the sine, cosine, and tangent ratios for each angle. Discuss the relationship between the ratios and the angle measures.

3. Activity 3: Solving Trig Problems

Present real-life scenarios where trigonometry can be applied, such as finding the height of a tree or the distance across a river. Guide the student through the process of setting up and solving trigonometric equations to find the unknown values.

Talking Points

- Trigonometry is the study of relationships between angles and sides of triangles. It helps us understand and solve problems involving triangles and angles.
- In a right triangle, we have three main trigonometric ratios:
 - *Sine (sin):* The ratio of the length of the side opposite the angle to the hypotenuse.
 - *Cosine (cos):* The ratio of the length of the side adjacent to the angle to the hypotenuse.
 - *Tangent (tan):* The ratio of the length of the side opposite the angle to the side adjacent to the angle.
- The trigonometric ratios can be used to find missing side lengths or angles in a right triangle. By knowing the value of one ratio and one side length, we can determine the value of the unknown side or angle.

• Trigonometry is used in various fields such as engineering, physics, and architecture. It helps in measuring distances, heights, angles, and determining the size and shape of objects.