Introduction to Angles and Measurement in Trigonometry

Introduction

Welcome to the world of trigonometry! Trigonometry is a branch of mathematics that deals with the relationships between the sides and angles of triangles. In this worksheet, we will explore the basics of angles and measurement in trigonometry.

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Understanding Angles

An angle is formed by two rays sharing a common endpoint, called the vertex. There are four types of angles: acute, right, obtuse, and straight.

- Acute angle: less than 90 degrees
- Right angle: exactly 90 degrees
- Obtuse angle: greater than 90 degrees but less than 180 degrees
- Straight angle: exactly 180 degrees

Measuring Angles

Angles can be measured using a protractor. The unit of measurement for angles is degrees, minutes, and seconds.

- 1 degree = 60 minutes
- 1 minute = 60 seconds

Trigonometric Ratios

Trigonometric ratios are relationships between the sides and angles of a right-angled triangle. The three basic trigonometric ratios are:

- Sine (sin): opposite side / hypotenuse
- Cosine (cos): adjacent side / hypotenuse
- Tangent (tan): opposite side / adjacent side

Real-World Applications

Trigonometry has many real-world applications, including:

- Navigation: calculating distances and directions
- Physics: calculating forces and motions
- Engineering: designing buildings and bridges
- Computer science: graphics and game development

Practice Questions

1. What is the measure of an acute angle?

2. What is the unit of measurement for angles?

3. What is the sine of a right angle?

Activities

1. Measure the angles in a triangle using a protractor.
2. Calculate the trigonometric ratios of a right-angled triangle.
3. Design a bridge using trigonometric principles.

Conclusion

In conclusion, angles and measurement are fundamental concepts in trigonometry. Understanding angles and trigonometric ratios is crucial for solving problems in various fields. We hope this worksheet has helped you understand the basics of angles and measurement in trigonometry.

Glossary

- Acute angle: an angle less than 90 degrees
- Right angle: an angle exactly 90 degrees
- Obtuse angle: an angle greater than 90 degrees but less than 180 degrees
- Straight angle: an angle exactly 180 degrees
- Trigonometric ratio: a relationship between the sides and angles of a right-angled triangle

Answers

1. a) less than 90 degrees
2. a) degrees, minutes, and seconds
3. b) 1