



Angles and Classification

Curriculum connections

Australian:

Year 3

- Identify angles as measures of turn and compare angle sizes in everyday situations. (ACMMG064)

USA Common Core:

Grade 4

- CCSS.MATH.CONTENT.4.MD.C.5. Recognise angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:
- CCSS.MATH.CONTENT.4.MD.C.5.A. An angle is measured with reference to a circle with its centre at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through $1/360$ of a circle is called a "one-degree angle," and can be used to measure angles.

Lesson Overview

Students investigate the concept of angles, recognising them as a measure of rotation, and explore the different types of angles.

Lesson Objectives

1. Students load the 360° protractor image as a background.
 - Show students how to draw two arms to make an angle. This initial angle can be any size.
 - Line one arm of the angle up with the protractor at 0° .
 - Explain that an angle is a measure of rotation, and demonstrate how the angle changes to be bigger or smaller as the arm is rotated towards or away from the other.
 - Demonstrate how to measure the size of the angle using the protractor.

2. Ask students to draw an angle on their device.
 - Make sure one line is at 0° . Move the other arm so it is somewhere somewhere between 1 and 89° .
 - Ask some of the class what their angle is and what they notice about how it looks.
 - Explain that an angle less than 90° is called an acute angle. Describe an acute angle as the smallest type of angle.
 - Ask students to look around the room to see if they can see any examples of acute angles.
3. Repeat the above step for right, obtuse, straight, reflex angles and revolutions.
4. Open the angles worksheet and instruct students to draw an angle so one arm is horizontal on the iPad, at 0° .
 - Instruct the class to move one arm of the angle a specified number of degrees. What object are they looking at now?
 - Ask them what type of angle they would need to create to look at x object.
 - Do you need to turn more degrees to look at x object or y object?
 - You can also use addition and subtraction here: e.g. "Turn 30 degrees. Turn an extra 45 degrees. What object are you looking at now?"; "How many more degrees to you have to turn so you are looking at x?"
 - Also a chance to introduce estimation: e.g. "About how many degrees are between the objects x and y?"
 - You can also ask students to classify the angles between objects.

Resources

- iPads with Shape Lab installed.
- Angles worksheet.

Extension

- Think about the angles in regular shapes and all forms of triangles. What angles are in a square and a rectangle? What angles can be in a triangle? Are the angles in rectangles/squares always the same? What about triangles? Or hexagons etc.? Do you think these angles are important for the shape? (can go into shape classification)