

4th Grade Enhanced Math Unit 5

Building Conceptual Understanding of Angle Measurement

Standards

4.GSR.7: Investigate the concepts of angles and angle measurement to estimate and measure angles.

4.GSR.7.1-Recognize angles as geometric shapes formed when two rays share a common endpoint. Draw right, acute, and obtuse angles based on the relationship of the angle measure to 90 degrees.

4.GSR.7.2- Measure angles in reference to a circle with the center at the common endpoint of two rays. Determine an angle's measure in relation to the 360 degrees in a circle through division or as a missing factor problem.

Learning Goals

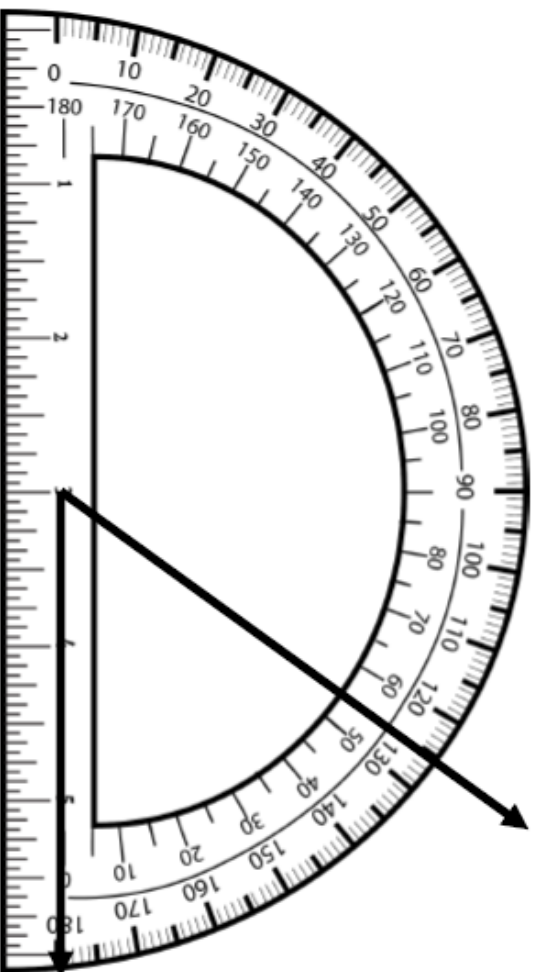
- I can compare angles and use unit angles to find how many of the unit angles complete a circle.
- I can determine whether an angle is acute, obtuse, or right using a known right angle.
- I can identify an angle within a geometric figure.
- I can use wedges as repeated units of measure to determine the size of an angle.
- I can use different pattern blocks to create angle measurements within a 360-degree measure as it relates to the circle.
- I can find the measure of an angle by using its fractional part of a circle.
- I can use missing factors or division to determine the angle measurement of different pattern blocks or angles in the real-world within a 360-degree measurement.
- I can approximate an angle's measure in relation to the 360 degrees in a circle (specifically a clock) through division or as a missing factor problem.
- I can use a protractor to accurately measure and draw angles.

Unit 5 Major: Friday, March 8th

date is tentative

Measuring Angles

You can use a protractor to help you find the measurement of any angle.



1. Line up the vertex of the angle at the center point of the protractor.
2. Make sure the bottom ray of the angle goes through the zero. You can measure angles using either side of the protractor.
3. Count up from the zero until the other ray intersects. This is the measurement of your angle.

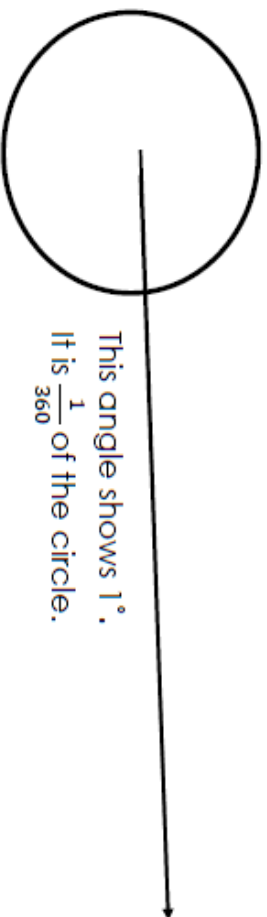
This angle has a measurement of 55°.

BE CAREFUL!

If you don't measure correctly, you might think this angle has a measurement of 125°. Make sure you always count up starting from the zero.

Illustrating Angles

An angle is part of a circle. Think of each circle being cut into 360 small pieces. An angle can be as small as 1 of those 360 pieces (it would have a measurement of 1°) and as large as all 360 pieces (it would have a measurement of 360°).



This angle shows 1°.
It is $\frac{1}{360}$ of the circle.

We can use equivalent fractions to help us convert angles to fractions.

360° of the circle is shaded.
1 whole circle is shaded.

$$\frac{360}{360} \div \frac{360}{360} = 1$$

$$360 \div 1 = 360$$

180° of the circle is shaded.
 $\frac{1}{2}$ of the circle is shaded.

$$\frac{180}{360} \div \frac{180}{180} = \frac{1}{2}$$

$$360 \div 2 = 180$$

90° of the circle is shaded.
 $\frac{1}{4}$ circle is shaded.

$$\frac{90}{360} \div \frac{90}{90} = \frac{1}{4}$$

$$360 \div 4 = 90$$

120° of the circle is shaded.
 $\frac{1}{3}$ of the circle is shaded.

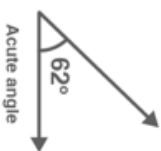
$$\frac{120}{360} \div \frac{120}{120} = \frac{1}{3}$$

$$360 \div 3 = 120$$

Types of Angles

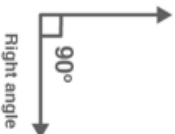
Acute Angle

An angle less than 90°



Right Angle

An angle exactly 90°



Obtuse Angle

An angle greater than 90° but less than 180°



Straight Angle

An angle that forms a straight line that is exactly 180°

