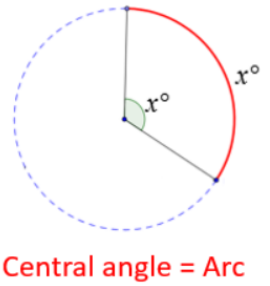
Use Inscribed Angles

Explore Inscribed Angles



Central angle = Arc

- Review Central Angles

The vertex of a central angle is at the center of the circle.
The angle measure of the central angle is congruent to the measure of the corresponding arc.

Today, we're going to explore angles in a circle. Let's review central angles. This is a very important concept as it directly relates to the arcs of the circle."

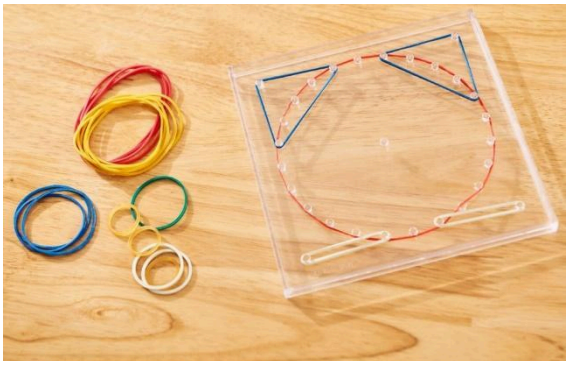
A central angle is an angle whose vertex is at the center of the circle. In this diagram, you can see two radii extending from the center to the circumference, forming an angle."

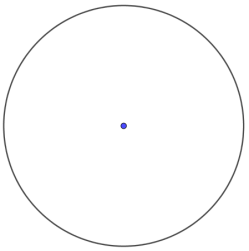
The measure of a central angle is equal to the measure of the arc it subtends. This means that if the central angle is 30 degrees, then the arc it spans is also 30 degrees.

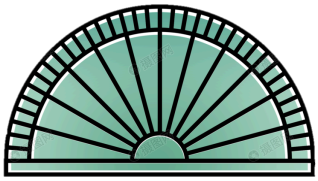
Let's look at an example. Suppose we have a central angle of 60 degrees, then the arc it subtends also measures 60 degrees because the angle measure and the arc measure are directly equal."
Take a look at this diagram. Try to imagine how the size of the arc might change if the central angle were to increase or decrease?"
Can anyone tell me what the arc would be if the central angle is 180 degrees? Yes, it would be a semicircle.

So, there's a direct relationship between the central angle and the arc it subtends; their measures are equal. Understanding this concept is very important when solving problems related to circles.

- Make a conjecture about how the measure of the new angles is related to the measure of the original angles.







Materials

- Worksheet
- Ruler
- Protractor

Today, we're going to explore how angles can change and relate to one another when we alter their configurations. We'll use some common classroom materials to experiment and make observations.

Each of you have a worksheet, a protractor, a ruler, and some rubber bands. We'll use these to form angles on your protractors and measure them.

Start by creating an angle using a rubber band. Place the rubber bands to form a clear angle, and measure this with your protractor.

Record the measure of the angle you've created. Now, adjust the rubber band to change the angle. Measure the new angle.

Based on your measurements, I want you to think about and write down a conjecture about how the measurement of the new angle relates to the original. For example, if you increase the angle by moving one rubber band, what happens to the measurement?

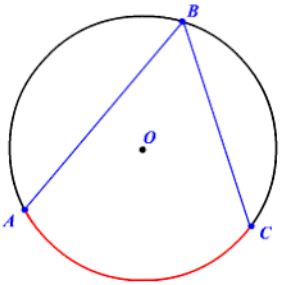
Group Discussion:
Let's discuss your findings. Did anyone notice a pattern in how the angle measurements changed when you adjusted the rubber bands?

Now, use your ruler to measure distances or use additional angles to test your conjectures further. See if your initial thoughts hold true when you experiment more rigorously.

To conclude, let's share our conjectures and see if we can come to a consensus on how the measures of angles relate when we alter them. What did we learn about angle measurements and their relationships today?

- Construct inscribed angles of a circle

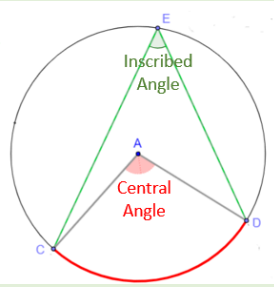
Step1
Draw a central angle and label the corresponding arc
Step2
Draw an inscribed angle by the corresponding arc
Step3
Measure both angles



Questions

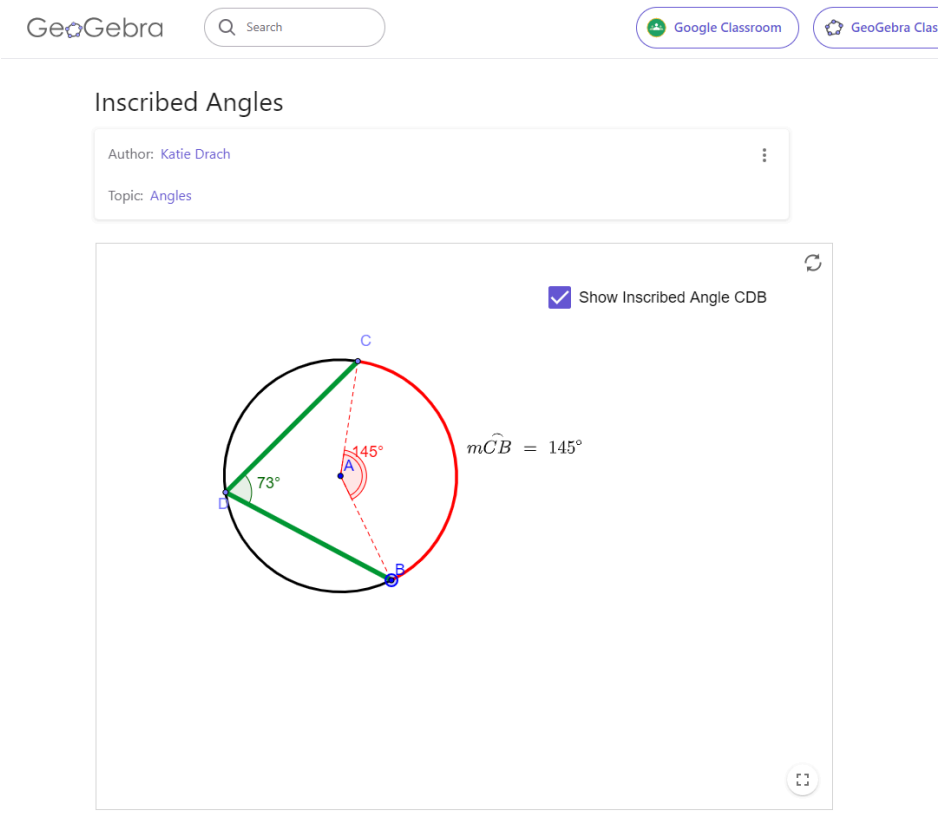
1. How are inscribed angles related to central angles?
2. What are inscribed angles?
3. What is meaning of inscribed in math?
   To draw on the inside of, just touching but never crossing the sides.

The vertex of an inscribed angles is on the circle, and its sides form chords of the circle.
The vertex of a central angle is at the center of the circle.



Complete the table

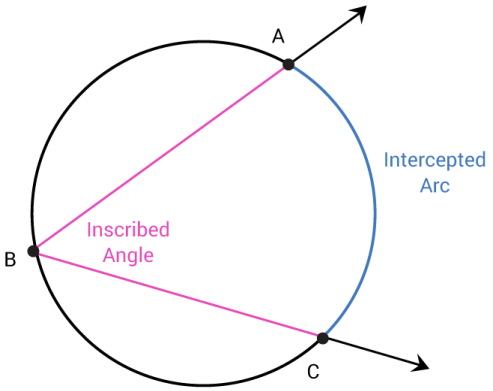
	Yours	Classmate1	Classmate2
Measure of an inscribed angle			
Measure of a central angle			
Ratio			



https://www.geogebra.org/m/Nn5GkkgJ

- Measure of an Inscribed Angle Theorem

An inscribed angle is an angle whose vertex is on a circle and whose sides contain chords of the circle. The arc that lies in the interior of an inscribed angle and has endpoints on the angle is called the intercepted arc of the angle.



$$\angle ABC = \frac{1}{2}\overset{\frown}{AC}$$

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THEOREM Measure of an Inscribed Angle Theorem The measure of an inscribed angle is one half the measure of its intercepted arc.

Proof: