

Teacher Notes : **Bret J. Gensburg**; Alliance, Ohio:

 [www.alliancemath.us](http://www.alliancemath.us)

**Subject:** Math

**Topic:** Central and Inscribed Angles of a Circle

**Title:** **Dr. Angle's Cure for Central and Inscribed Angles**

**Grade(s):** 7-12

**Cross-curricular link(s):** Non-specific

**Intended learning outcome(s)**

- The learners will be able to describe the relationship between a central and inscribed angle of a circle through self-discovery.

**Recommended usage:** Introduction/Main activity/Summary

**Notes:** To be done in conjunction with Cabri Geometry or Geometer's Sketchpad.

## **Lesson Introduction:**

This lesson was one of the first lessons that I developed with the SMART Board Interactive White Board. In geometry, many theorems and postulates are given to our students but how many are truly learned. To me, learning is best done through experience and discovery. This lesson allows the students to self-discover the relationship between central angles and inscribed angles of a circle. Every student's work will be different, but their result will be the same, and together you can develop a formal statement about these angles.

## **Resources/Materials:**

SMART Board Interactive White Board, Cabri Geometry (or Geometer's Sketchpad), TI-92 Calculators, TI-92 Emulator and a SMILE!

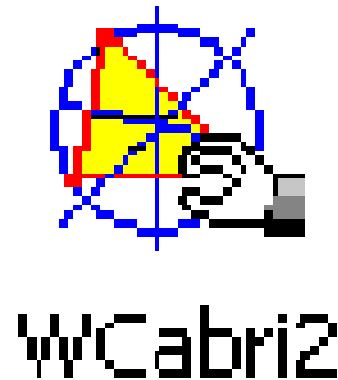
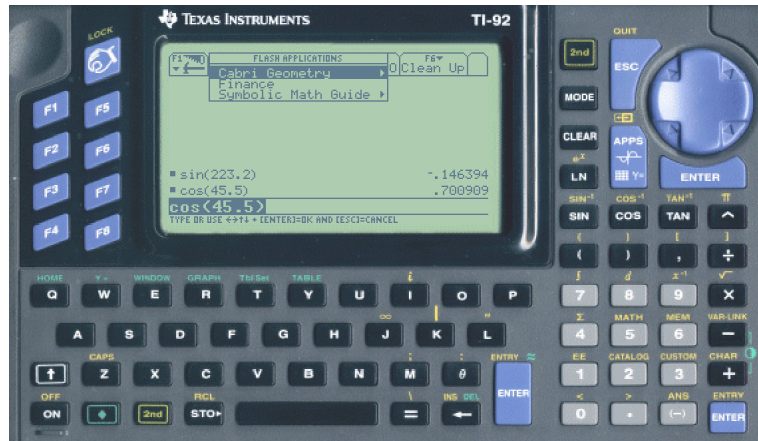
**Lesson Overview:**

I have always had better success with students remembering “Rules” of geometry when they are the one to tell them to me. Having that sense of ownership really involves the students. This lesson is designed to do just that. The students, in pairs, work together on the TI-92 Calculators while I am at the SMART Board. Sometimes, depending on their comfort level, I will have the students work out the SMART Board work too. Since each pair will have different numbers they can share what they see on their screens and come up with the relationship between the two types of angles. What is always fun for me to see is that it happens like popcorn. One group may get the idea, and pass it to another to check, and so on and so on. Soon they all have the idea, and it is much better than if I had stood and told them.

This lesson could not be even half as effective if I did not have the capabilities of the SMART Board, the TI Calculators, and Cabri. The SMART Board allows me to interact wonderfully with these programs on my computers. Since the numbers will change on the screen as we move the points around the circle, we can really test the “truth” of the relationship.

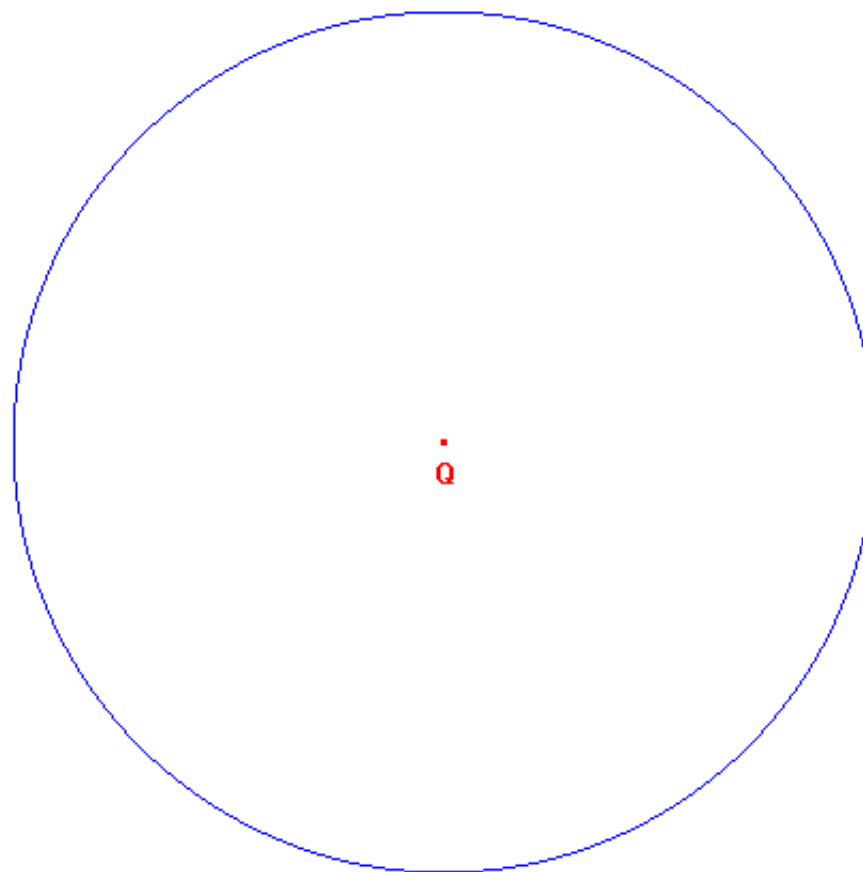
## Activity:

Together, each pair of students will operate a TI-92 calculator with the Cabri application on it. From the SMART Board, you could run the TI Emulator, however I like to use the actual full Cabri program from my computer.

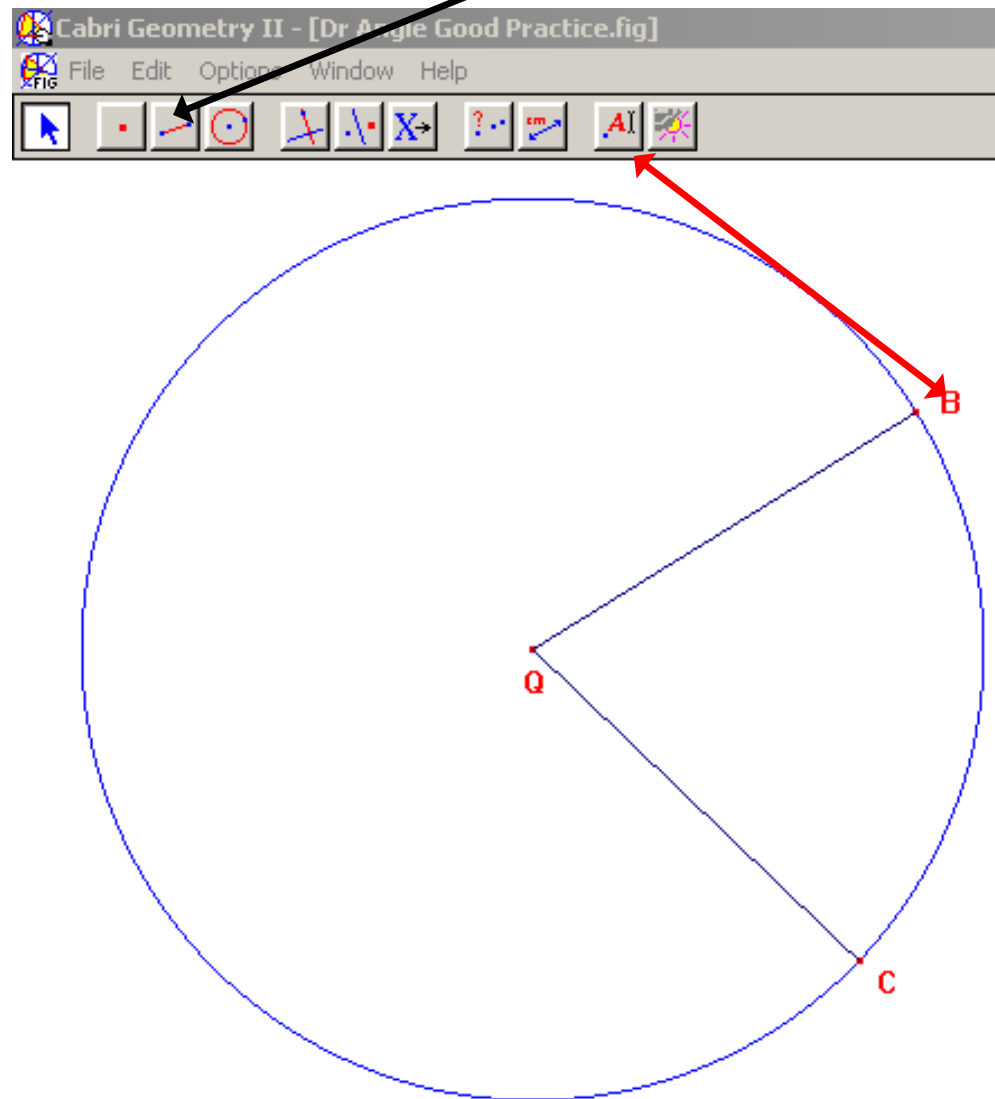




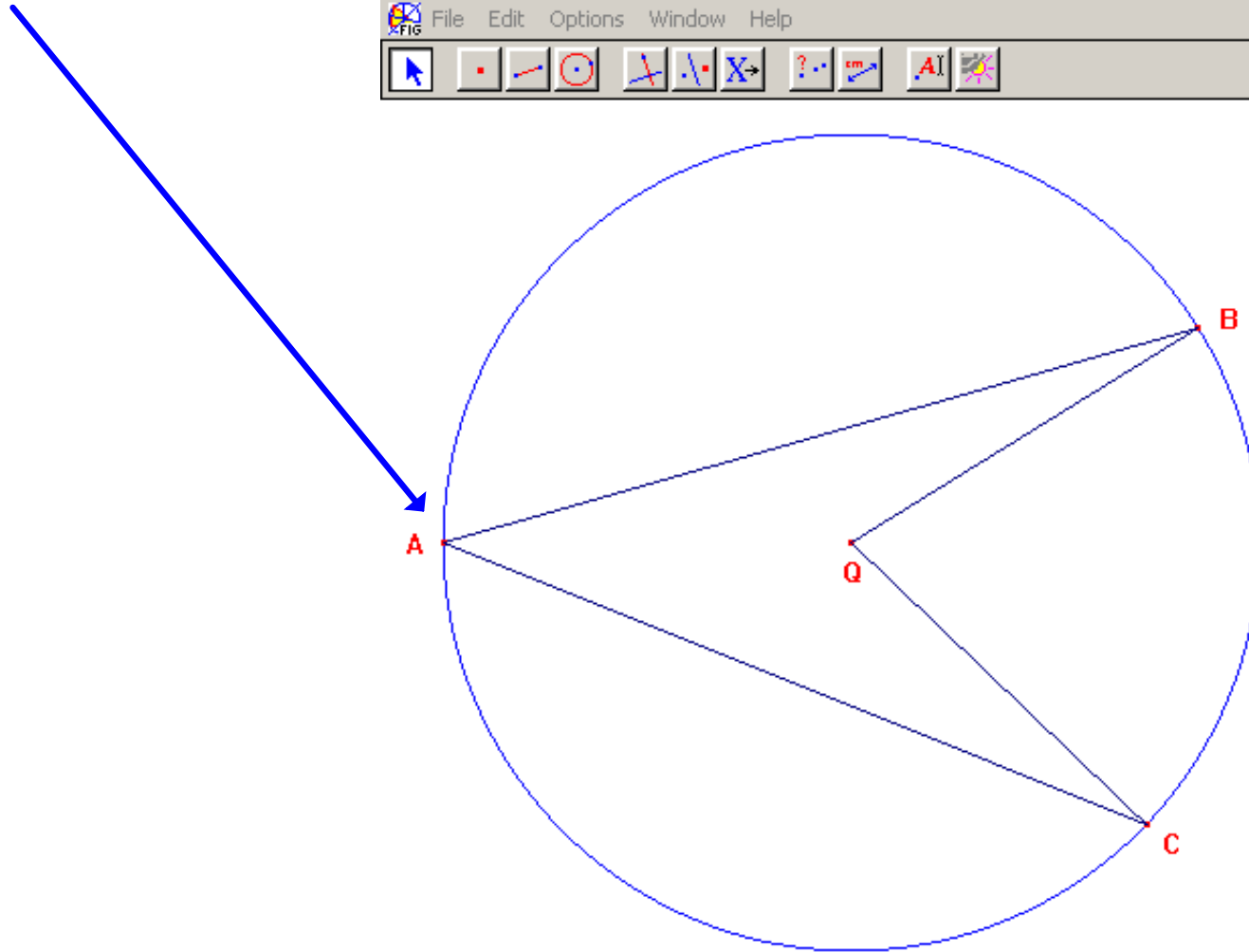
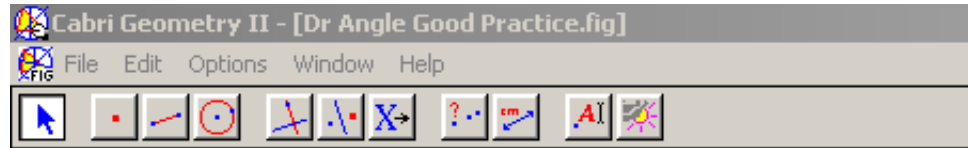
## Together Create a Circle.



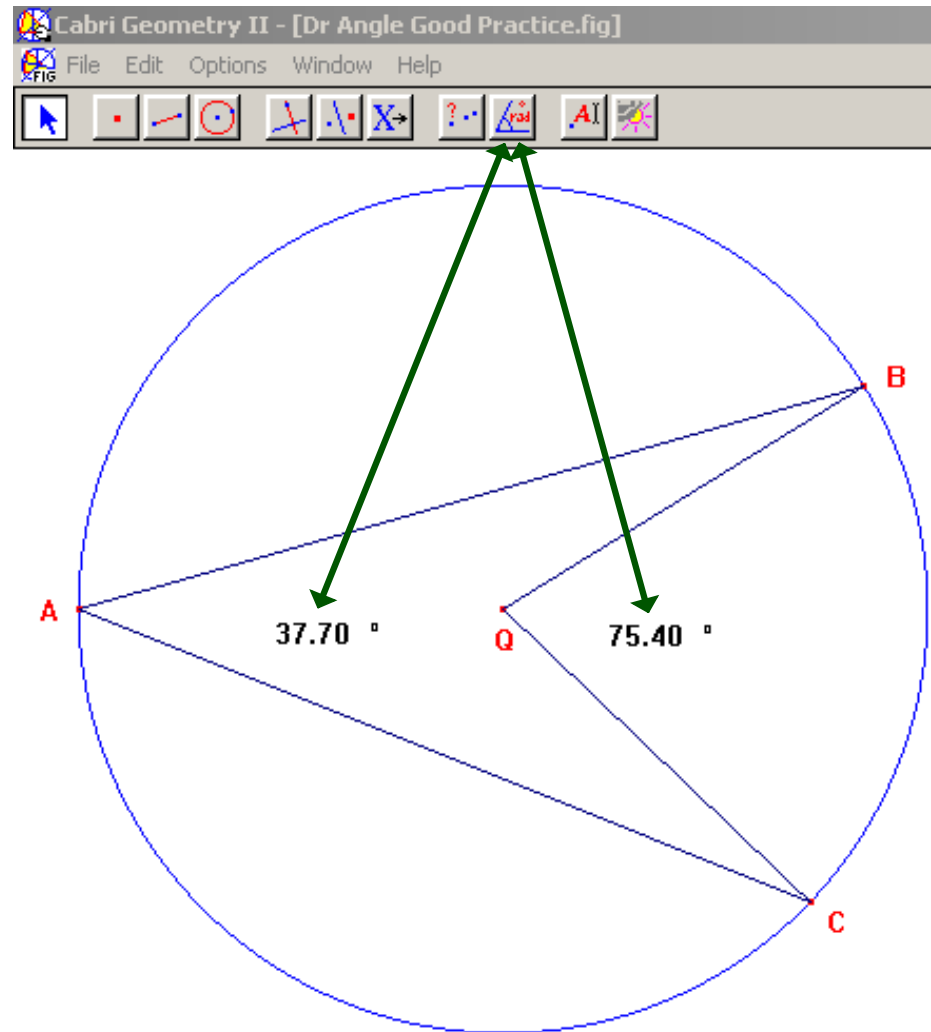
- **Form two segments, each a radius, forming a Central**



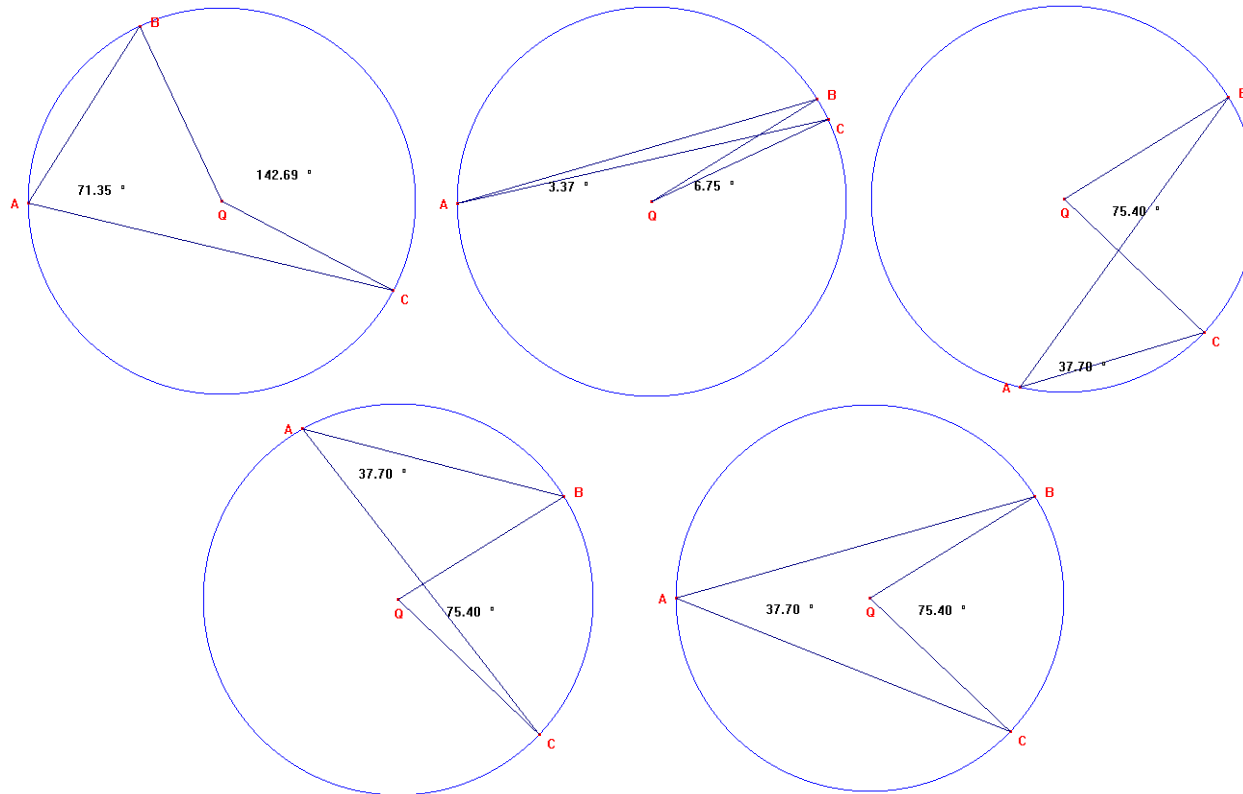
- **Form two more segments, both having a common endpoint with each other and separately having in common an endpoint with the original two segments and the circle. This is the Inscribed Angle.**



- Use the measuring feature to calculate the degree measurement of the Central Angle.
- Repeat for the measurement of the Inscribed Angle

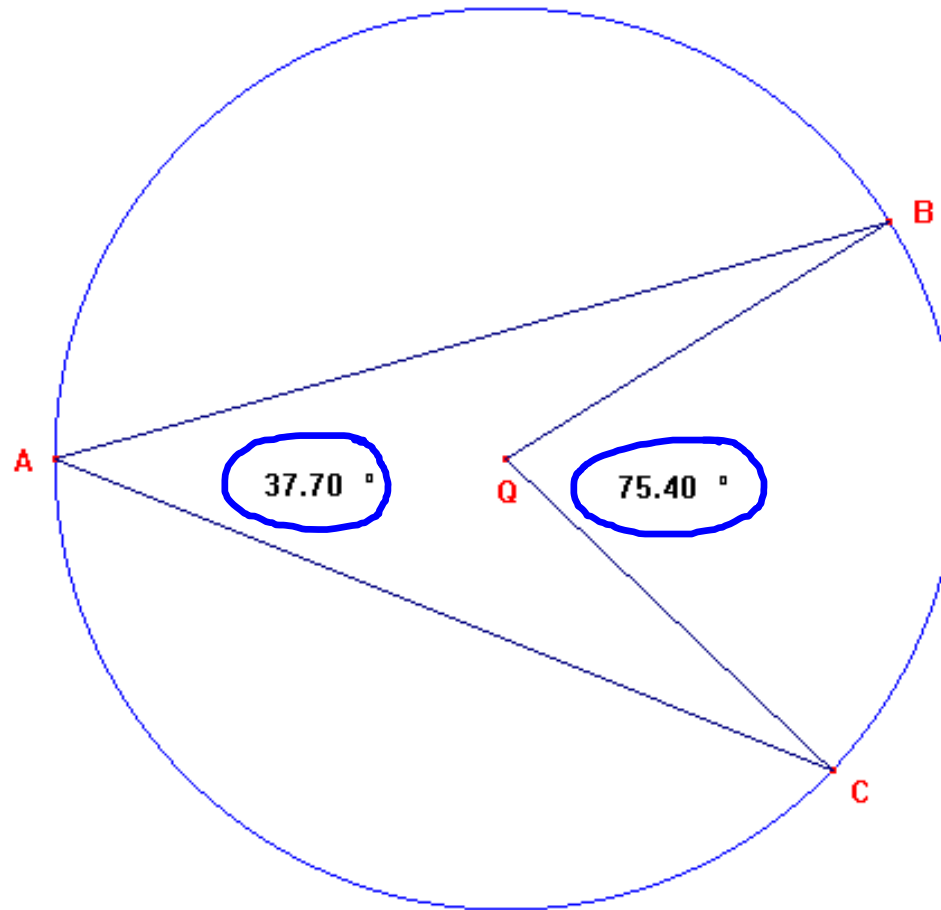


- Allow the students to explore on their own by moving any of the three points on the circle. Allow them to move the size of the circle. Let them develop the idea that the Inscribed Angle is half the Central Angle.

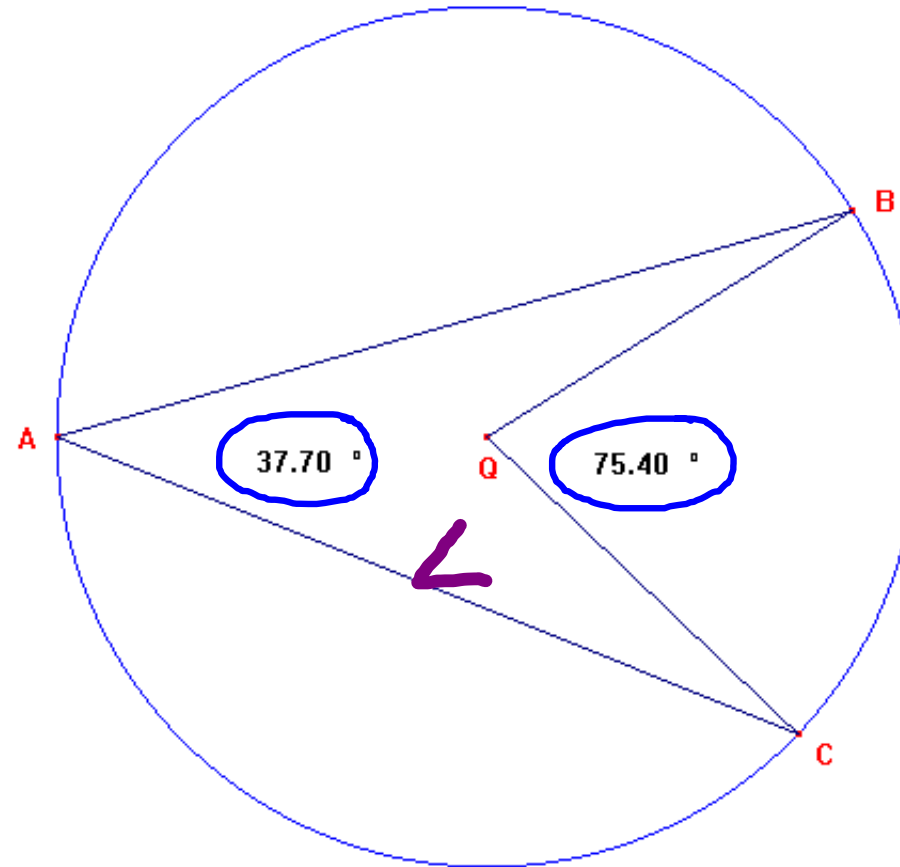


I like to take screen shoots of the circle as it changes with the measurements and save these screen shots in my SMART Notebook file. In note book we can write down what we learn and document the lesson. This is so powerful, because I save all my class notes to my website. This way anyone who may have missed that day can see everything that happened and still feel a part of the class and learn the material.

**So where does Dr. Angle come into the picture.  
In SMART Notebook I will circle the two angle measurements**



**I will then make the math symbol to represent angles because we are talking about angles.**



**I will hint to my students that we will be working more with Central and Inscribed Angle and the Arc created on the Circle. I will then draw the Arc Symbol used in math (upside down) and like magic, Dr. Angle appears.**

