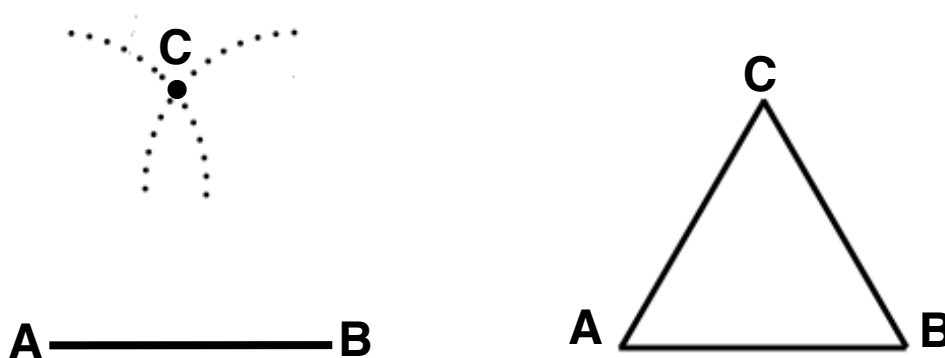


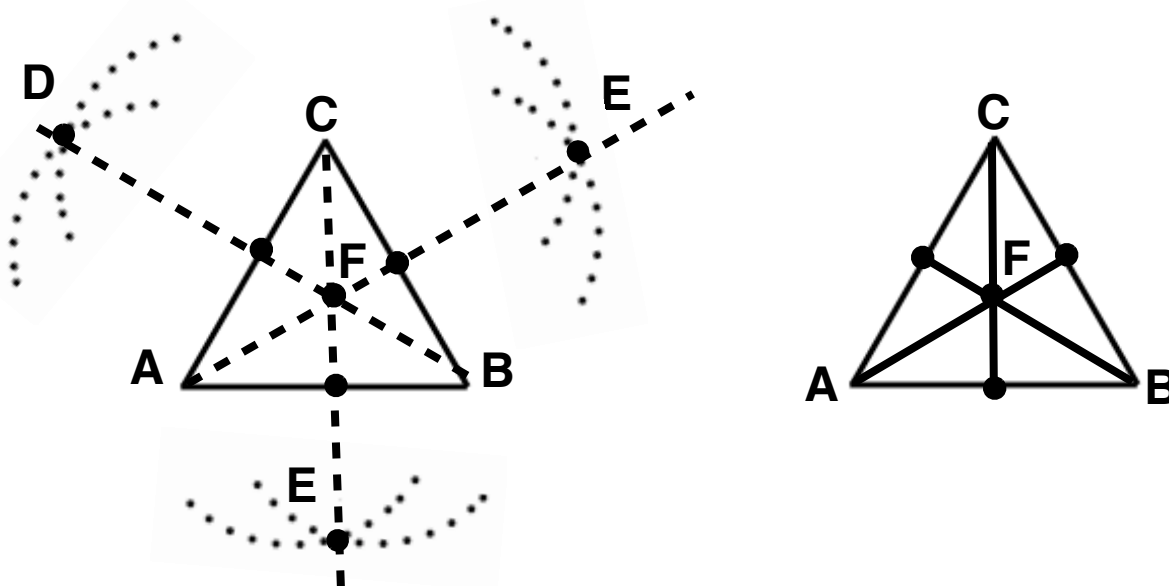
# Who is the Greatest ?

My students had learned about Albert Einstein, Steve Hawking and Marie Curie in their science class this year. They has a discussion as to which of the three made the greatest contributions in the field of science. I told them that we could use mathematics to create a a tool that would measure the contributions of each of the three people and answer that question.

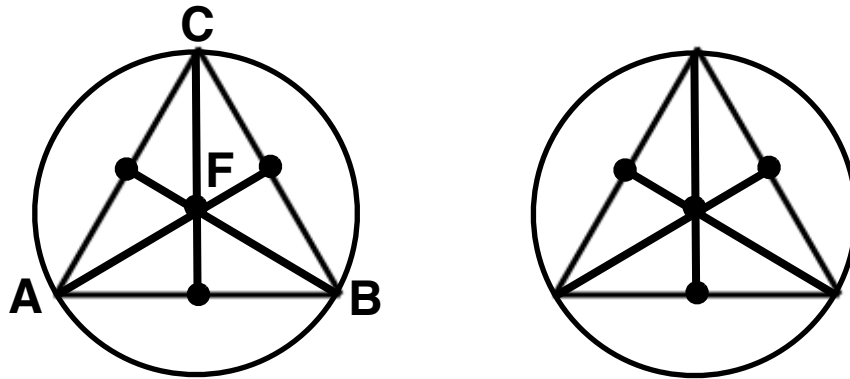
I drew a line segment on the whiteboard and labeled the end points A and B. A opened my compass to the length of segment AB and drew arcs from Point A and Point B. I labeled the point where the arcs intersect C. I drew the segments Ac And BC. This created an Equilateral Triangle ABC



I then opened my compass more than the length the side of the triangle, I drew arcs from Point C and E and put a point E at the intersection of the arcs. I drew arcs from Point C and A and put a point D at the intersection of the arcs. I drew arcs from Point A and B and put a point E at intersection of the arcs. I then drew segments BD ,AE and t CE. Each of these segments are angle bisectors. as well as being bisectors of the sides they intersect. I put a point F at the intersection of the 3 angle bisectors. When I erased all the construction marks I was left with the equilateral triangle ABC

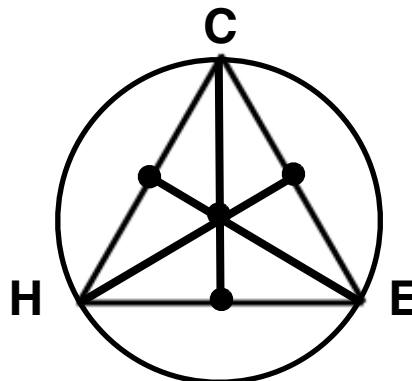


I used my compass to draw a circle with radius FC with the center a point F. This circle has the equilateral Triangle inscribed in it, I removed all the letters I used to help me construct the final diagram and that figure is shown below on the right.

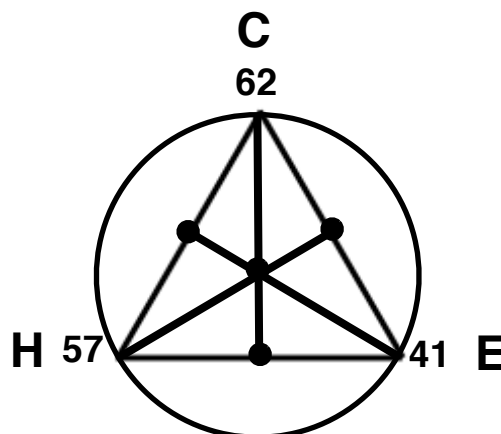


**We are now ready to determine which of the three made the greatest contributions to science.**

I asked my students to label one of the vertex points of the triangle H for Steve Hawking, one C and Maris Curie and one E for Albert Einstein in any order they liked. They chose the following order..



I then asked the students to pick any number they want to represent for Steve Hawking, Maris Curie and one Albert Einstein. They picked 57 for Steve Hawking, 62 for Maris Curie and 41 for Albert Einstein. Write these numbers next to the vertex letter the represents those people.

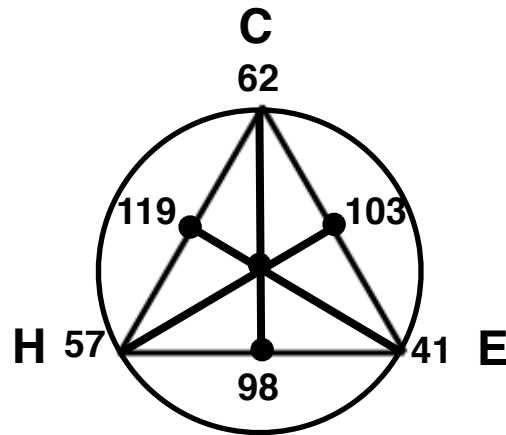


I then found a value for the points on the side of the equilateral triangle by adding the numbers on the endpoints of each side and writing that total beside each point

Add the two numbers that are at the points C and H and place them at the midpoint of segment CH

Add the two numbers that are at the points C and E and place them at the midpoint of segment CE

Add the two numbers that are at the points E and H and place them at the midpoints of segment EH



I then found the sums of the two numbers on the segment for each of the 3 scientists. That total would be the value of the contribution that each scientist made in the field of science.

The 2 numbers on the line segment for Steve Hawking total 160

The 2 numbers on the line segment for Einstein total 160

The 2 numbers on the line segment for Hawking total 160

**Steve Hawking = Maris Curie = Albert Einstein.**

Therefore we can conclude these three people are equal in the contributions they made in the field of science.

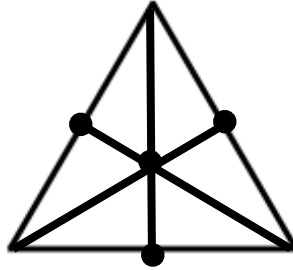
It is not surprising that their values are equal to each other. The triangle had 3 equal sides. The vertex of the triangle divided the circle into 3 equal arcs. A line segment divided the angles into equal angles and also divided the sides of the triangle into equal lengths. The figure we used had so many equal parts the numbers just had to come out equal.

**NOTE:** You could use 3 mathematicians if you wanted to. If you do that then why not include one of the department members and have them come out as an equal to the other 2.

**NOTE:** You could say that it took the constructions of Euclid to solve this problem that he contributed more than the other 3. His work is the foundation of many areas of math and science.

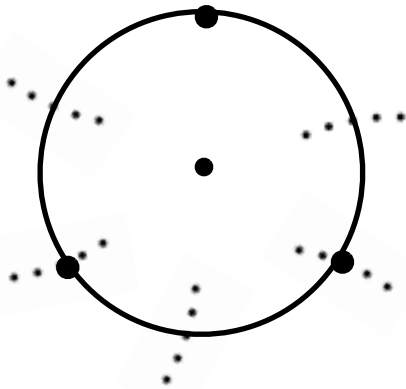
## I just want to do the magic trick

If you just want to do the trick , all you need is a figure that is a close approximation of the figure below.



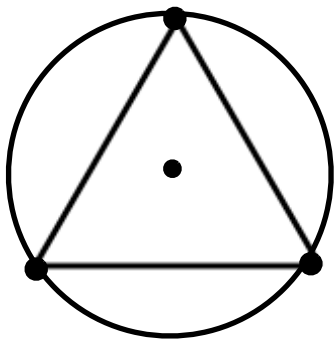
The following steps will approximate the exact construction. Just don't pass it off as exact.

1. Put a point on the board that will act as the center.
2. Use a string and a marker to make a circle.
3. Place a point on the circle at the top of the circle.
4. Use a string and marker. Start at the top point and mark off an arc the size of the radius 6 times around the circle. You will not return to the starting point but it will be close.
5. Put a point at every second arc on the circle. That gives you the 3 vertices of the equilateral triangle. Draw the triangle.

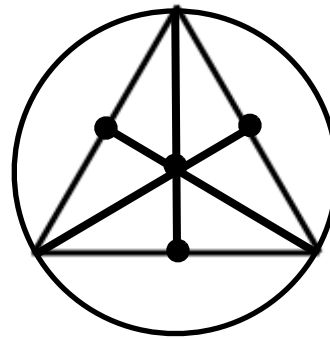


Start at a point at the top of the circle.  
From that point draw an arc the length of the radius that intersects the circle.

Do this 4 more times. Use every other arc to create the 3 points of the triangle.  
You will have 3 points around the circle almost an equal distance apart.



Use the 3 points on the circle to draw the triangle



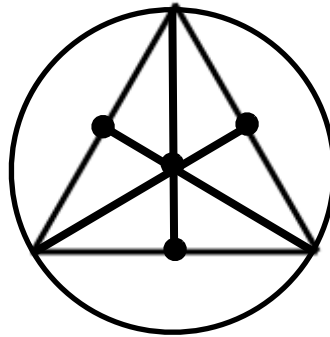
Use the vertex point and center point to draw the 3 bisectors

**Even that is too long, they will lose interest**

**I just want to do the magic trick**

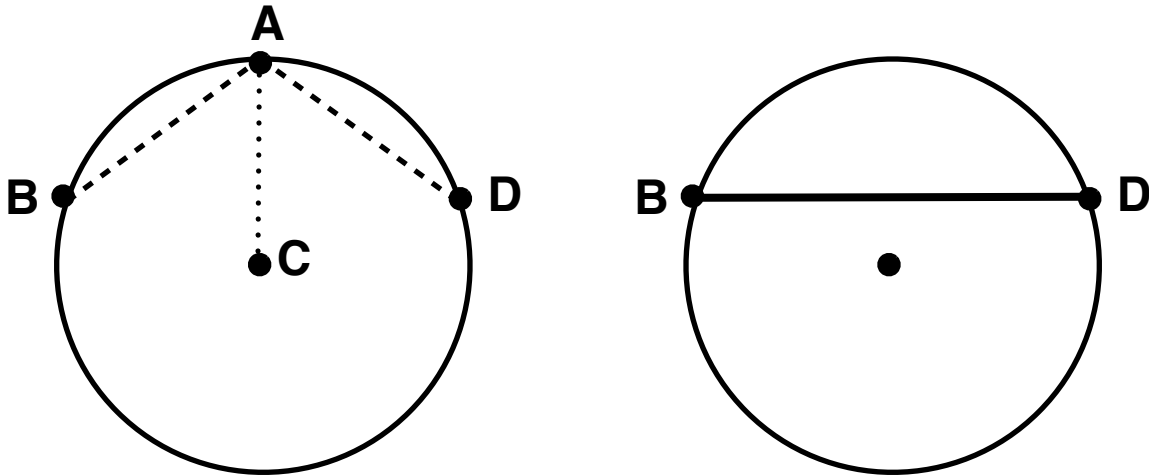
**Then just draw a close approximation to this figure.**

**But think of all the beautiful mathematics you are missing.**

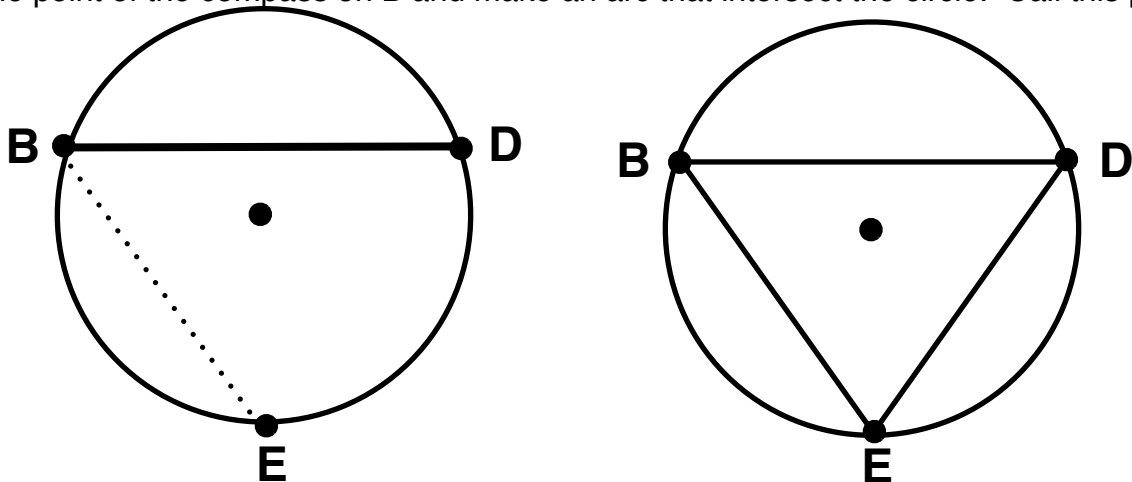


**Construction:**

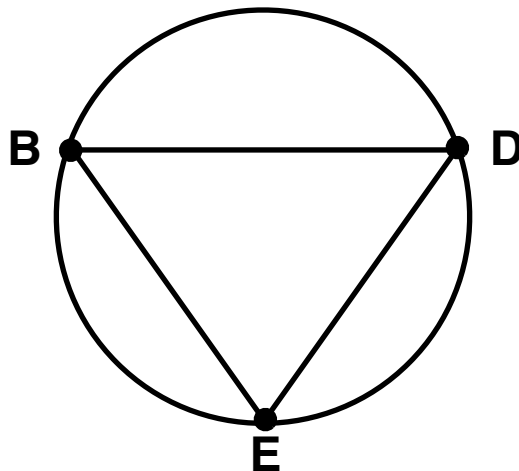
Label the center point you used to make the circle C. Label any point on the circle point A. Open the compass the same length as the radius. This is the distance from A to C. Place the point of the compass on A and make 2 arcs that intersect the circle. Call these points B and D. Draw a line from B to D to create segment BD. Erase the point A and the dotted lines used to find points B and D



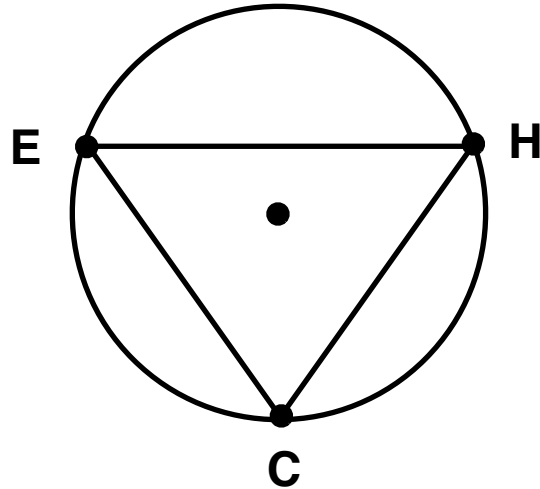
Open the compass to a opening the same length as segment BD. This is the distance from B to D. Place the point of the compass on B and make an arc that intersect the circle. Call this points E.



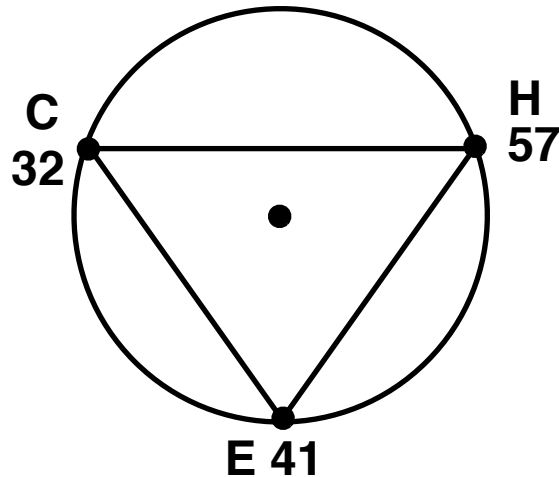
Erase all the letters and the dotted lines . We are now ready to determine which of the three had made the greatest contributions in the field.



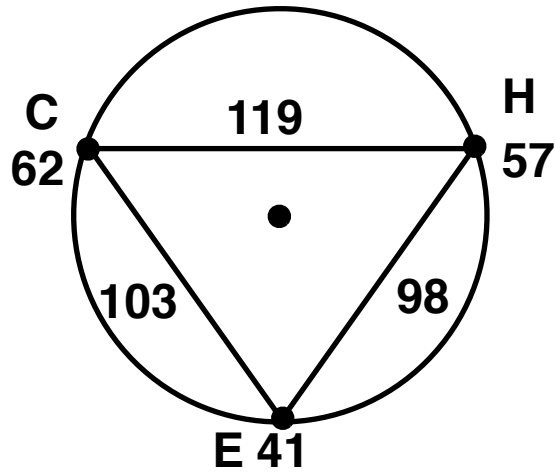
Label one of the vertex points of the triangle H for Steve Hawking, one C and Maris Curie and one E for Albert Einstein.



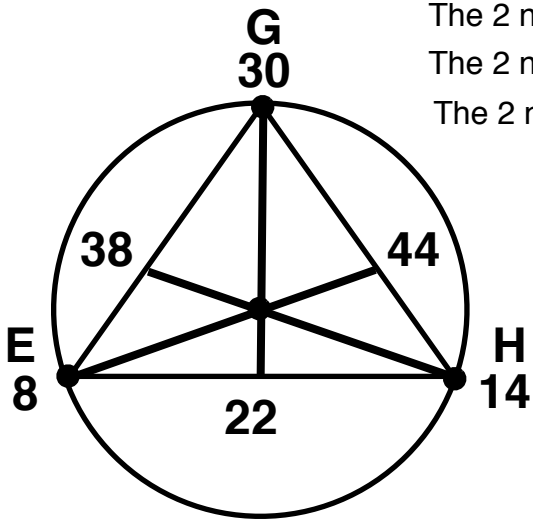
Ask the students to pick any number they want to represent for Steve Hawking, Maris Curie and one Albert Einstein. Lets say they picked 57 for Steve Hawking, 62 for Maris Curie and 41 for Albert Einstein. Write these numbers next to the vertex letter the represents those people.



Add the two numbers that are at the points C and H and place them at the midpoint of segment CH  
 Add the two numbers that are at the points C and E and place them at the midpoint of segment CE  
 Add the two numbers that are at the points E and H and place them at the midpoint of segment EH



Gauss



The 2 numbers on the line segment for Gauss has a total of 52

The 2 numbers on the line segment for Einstein has a total of 52

The 2 numbers on the line segment for Hawking has a total of 52

Therefore we can conclude these 3 mathematicians are equal in their mathematics ability

Gauss  
Euler  
Reimann  
Euclid  
Turing  
Fibonacci,  
Newton  
Pythagoras

Newton

**“To myself I am only a child playing on the beach, while vast oceans of truth lie undiscovered before me.”**

**Einstein**

Joseph Eitel