

Circles and Angles:  
Some Activities  
for Young Learners

(and one task for  
more advanced  
learners)

1. Introducing compasses
2. Introducing protractors
3. Measuring angles

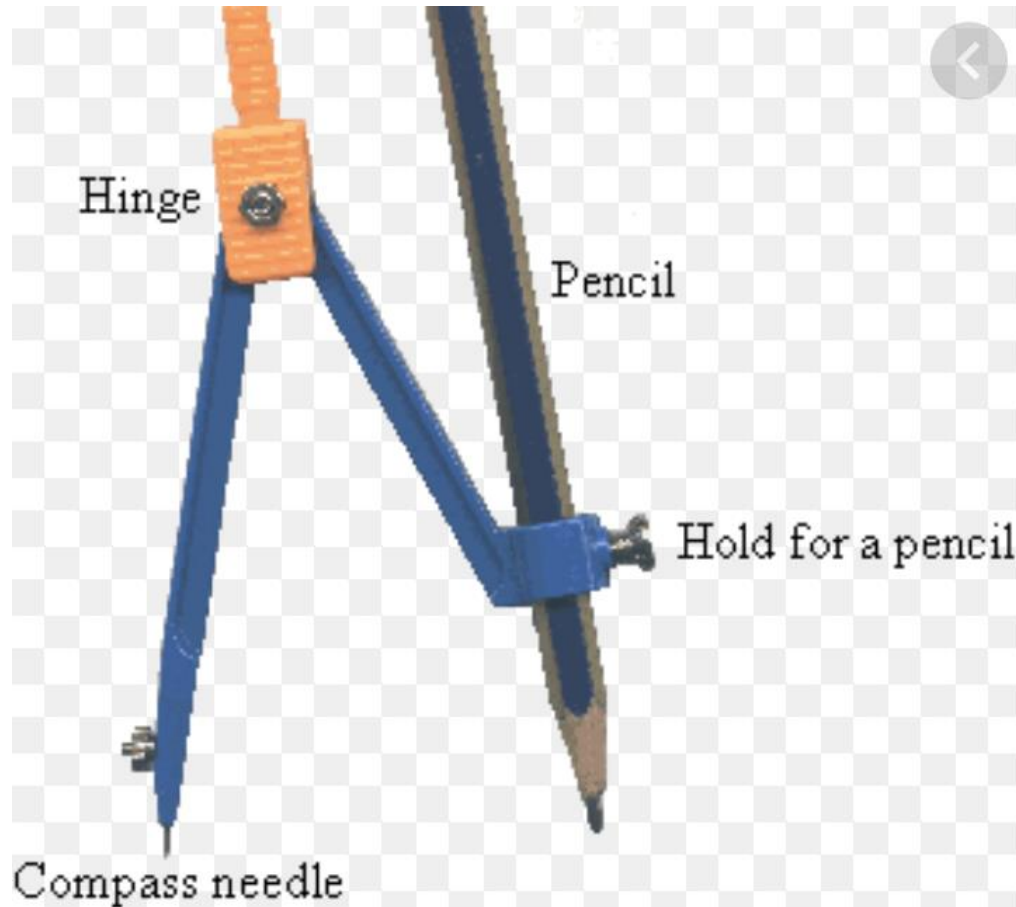
# 1. Introducing Compasses



Have you ever seen a tool like this before?

It is called a compass, and you use it to draw circles. You need to use it with care, because it has a sharp point.

(There are lots of versions of this tool. The one you have may not match this one.)



Here are the names of its parts.

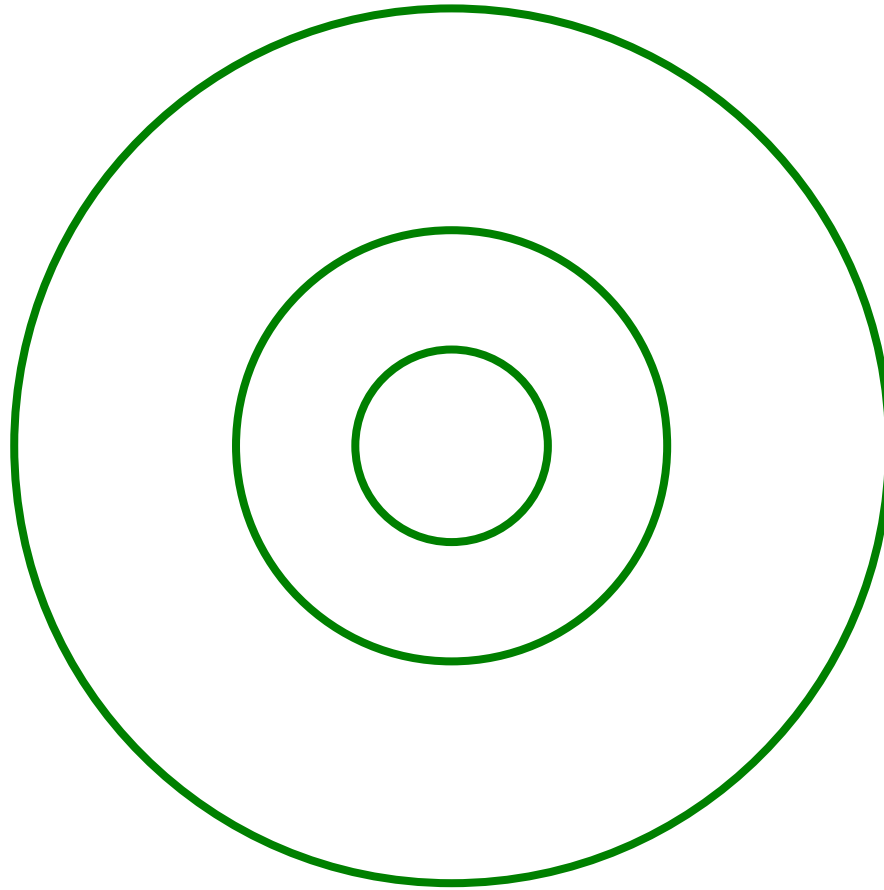
Here is a short video showing how to draw a circle with a compass.

<https://www.youtube.com/watch?v=oYQbj0MWt2k>

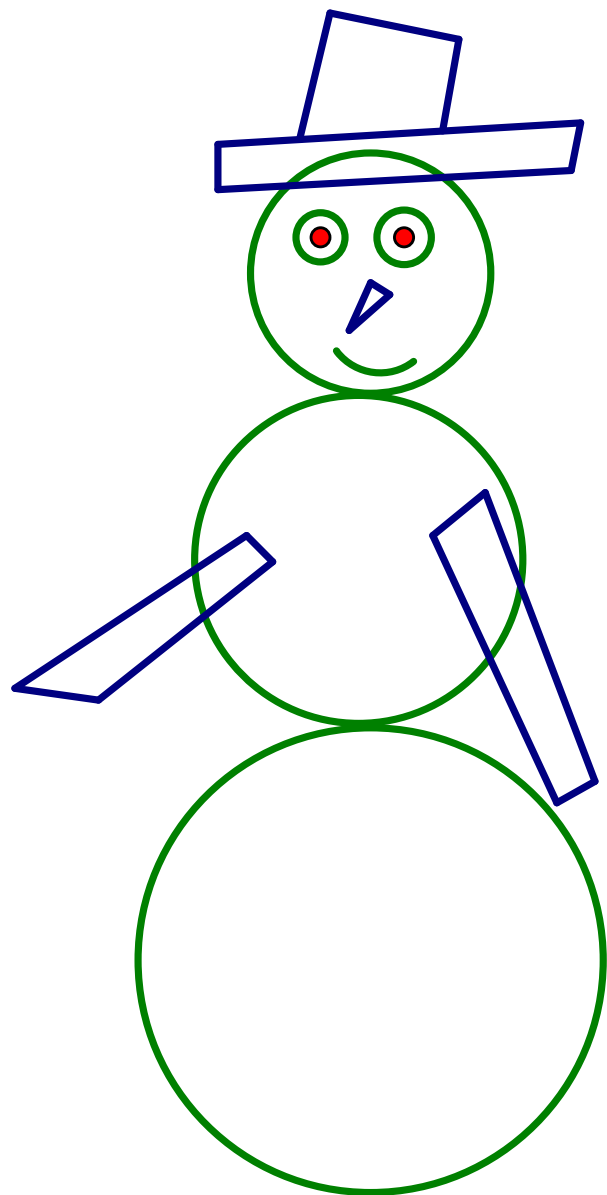
Now it's your turn to draw your own! Take some blank sheets of paper and try to draw a few circles. Practice until you get one or two that are nicely drawn.

You can put a dot on your paper to mark the center of your circle if you want. Then, you can swing the compass around to make a circle, or you can simply turn the paper around, holding your compass still.

Try to make several sizes. Do you see how to change the size? If the pencil is close to the needle, the circle will be small. If the pencil and needle are far apart, the circle will be big.



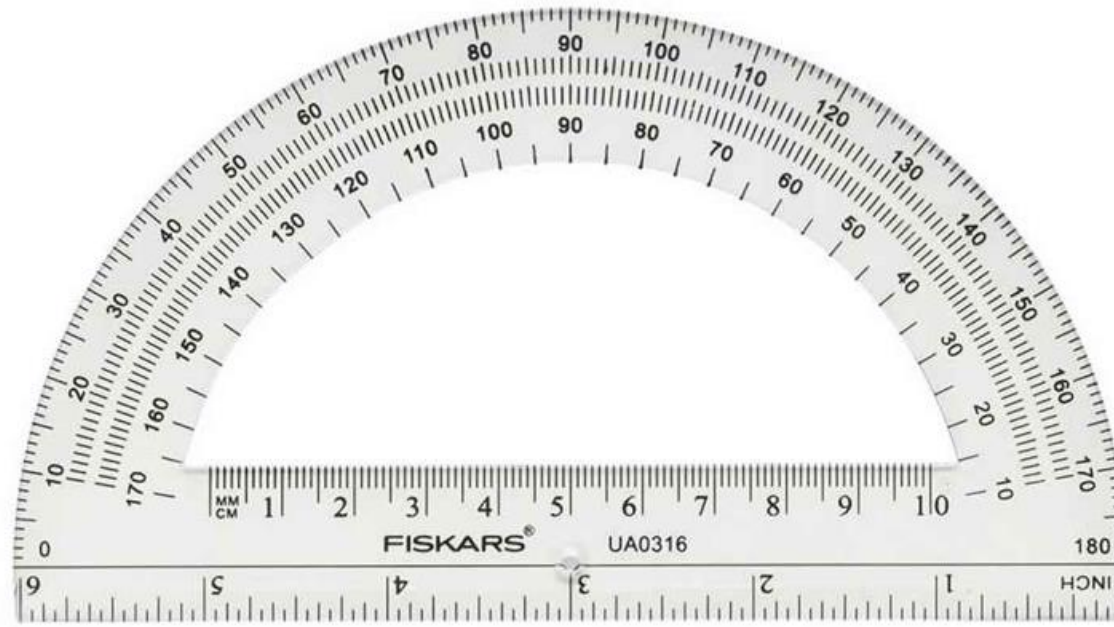
Here is a design for you to draw!



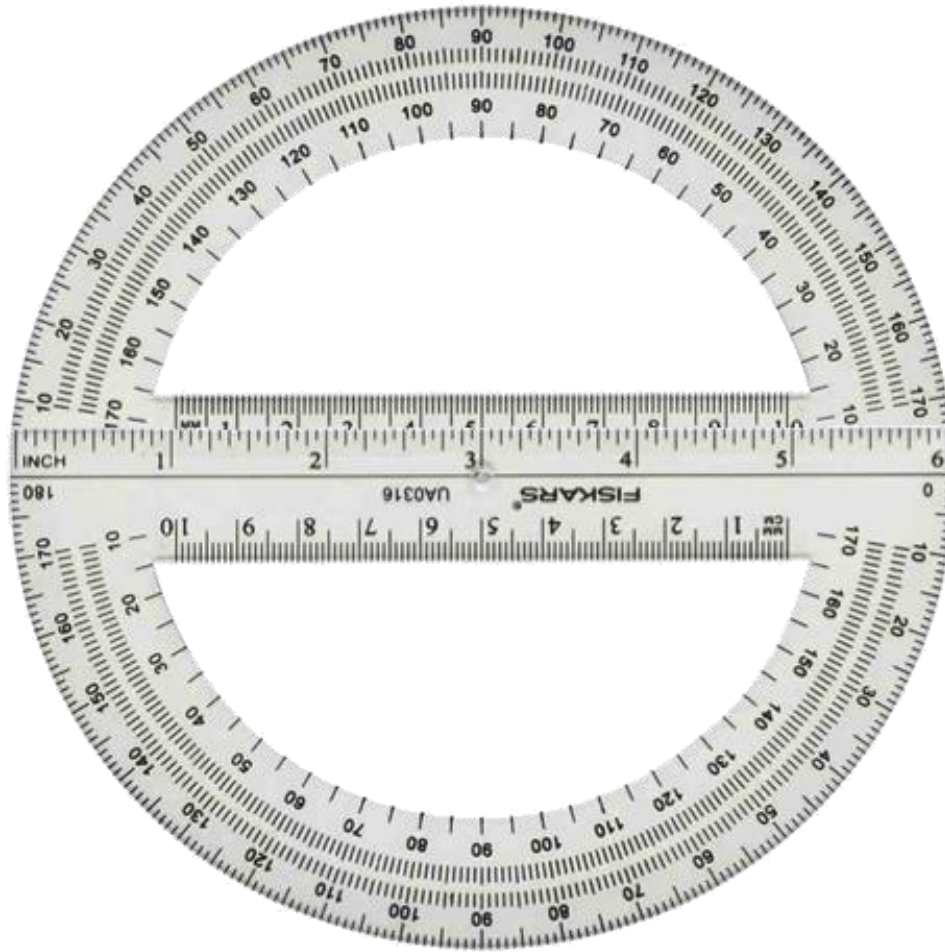
Here is a silly snowman.  
Can you draw one?



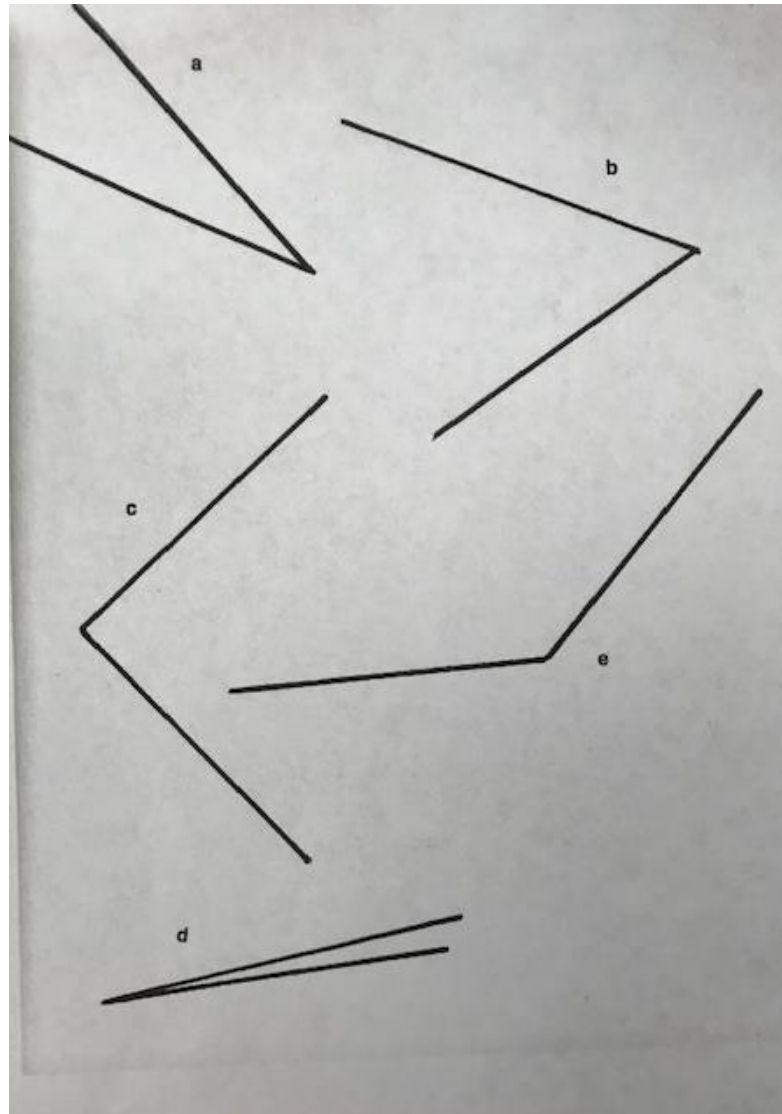
## 2. Introducing protractors



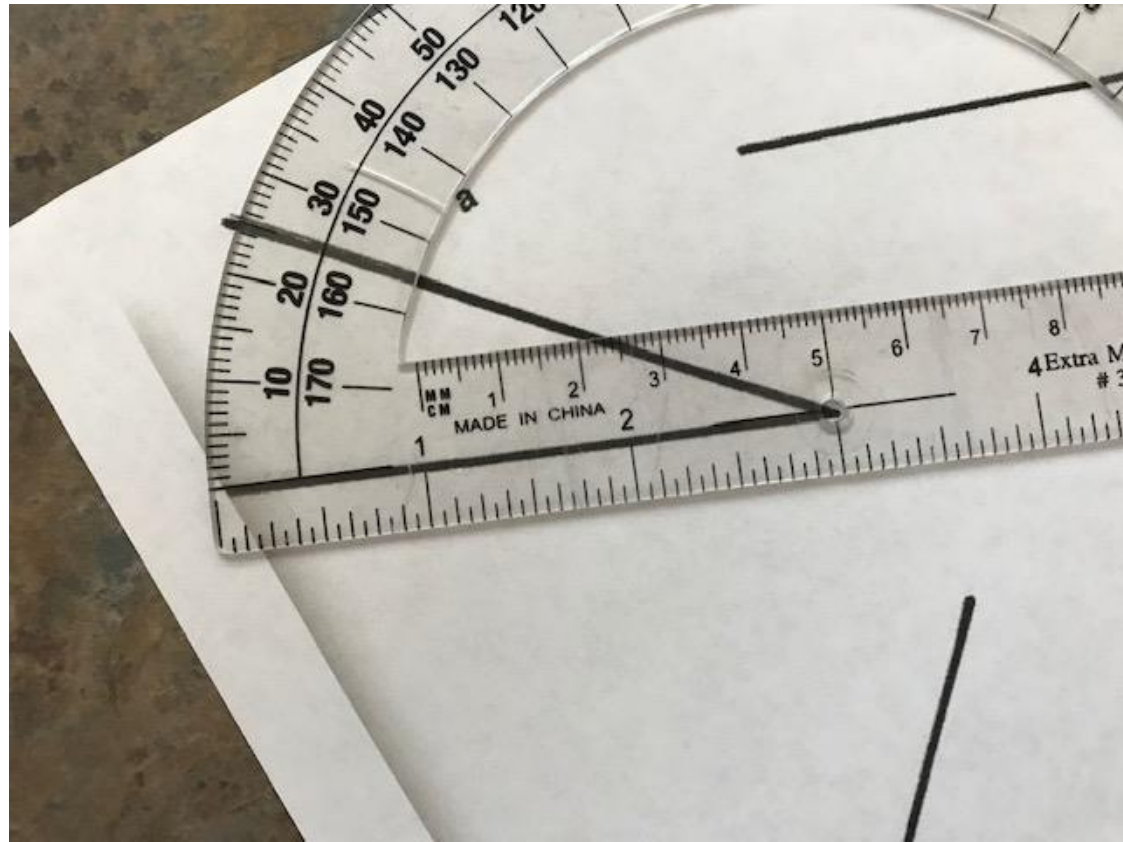
Now let's make a circle in a different way.  
Do you know what this tool is? A protractor!



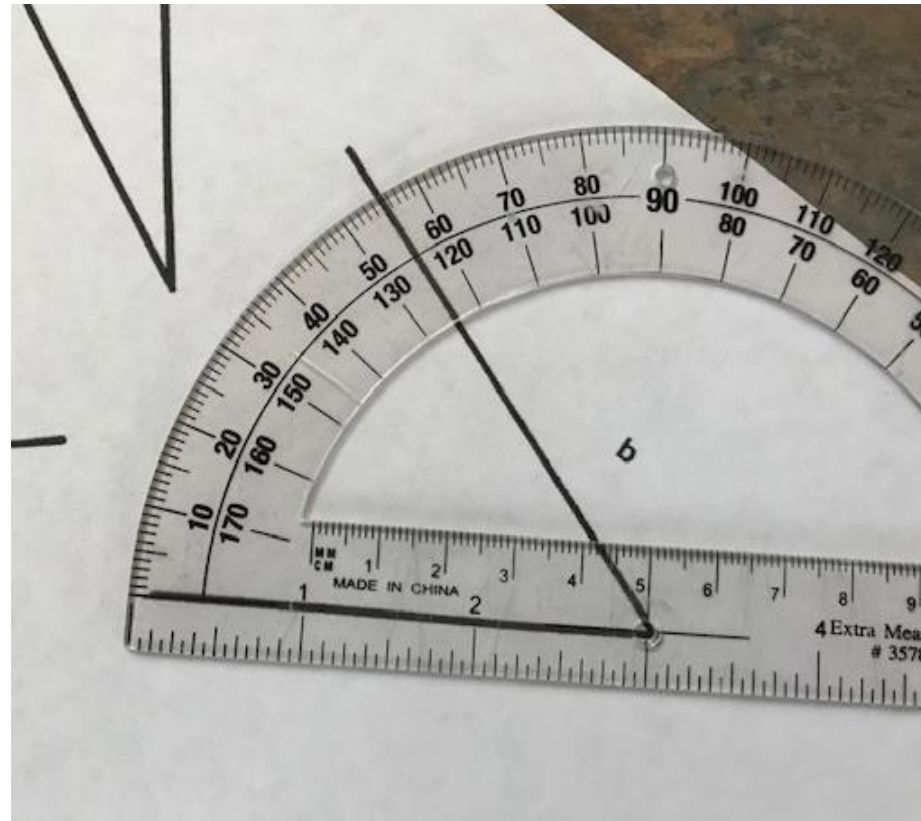
Using two protractors, I can make a circle!



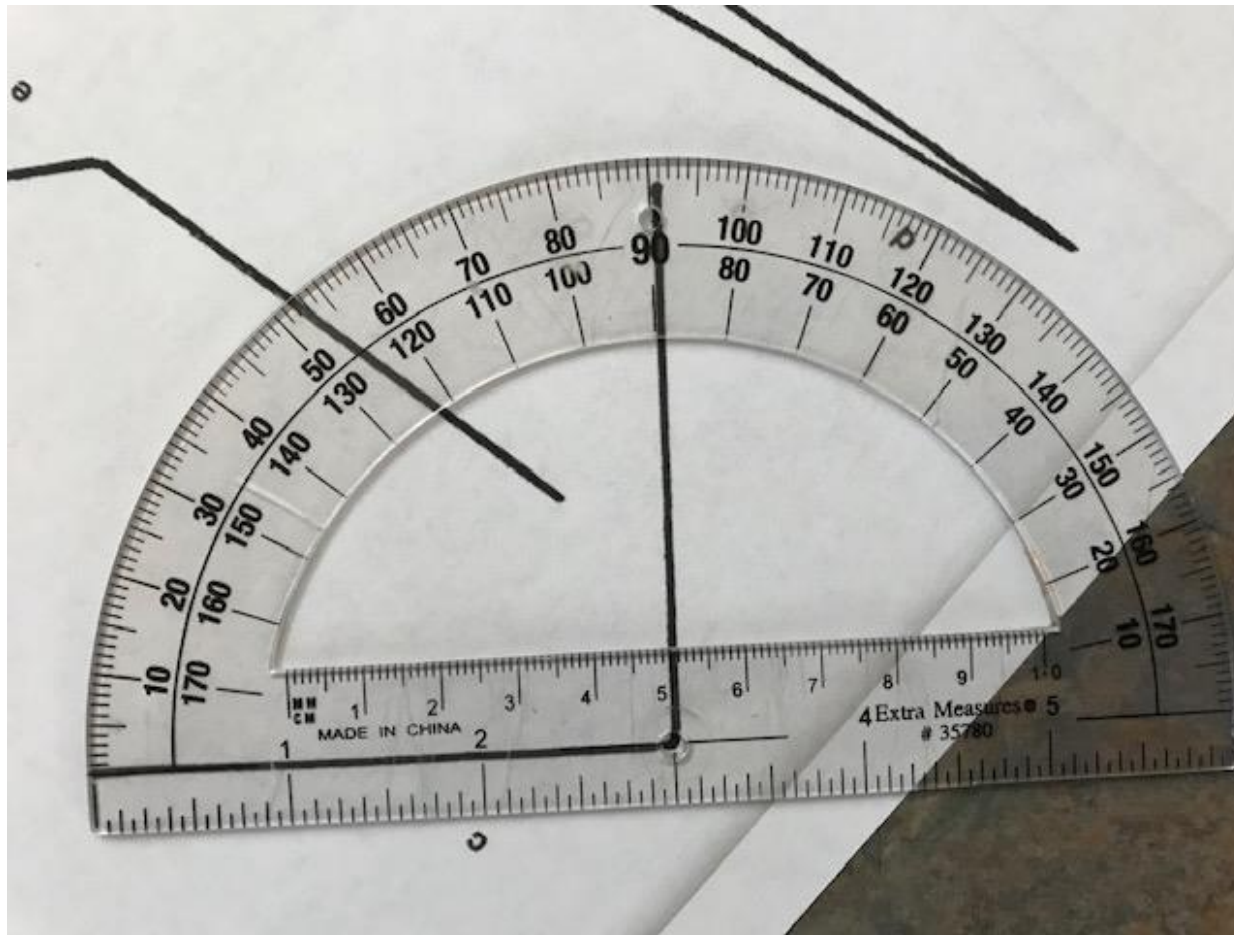
What else can you do with a protractor?  
You can measure angles! Let's try it! You will need a sheet with the five angles above. (You may just print the sheet.)



Angles are measured in degrees (not degrees of temperature, but degrees describing how “open” they are). Notice the scale on the protractor. It starts at zero degrees and goes to 180 degrees, or a half circle. What is the measure of angle a above?



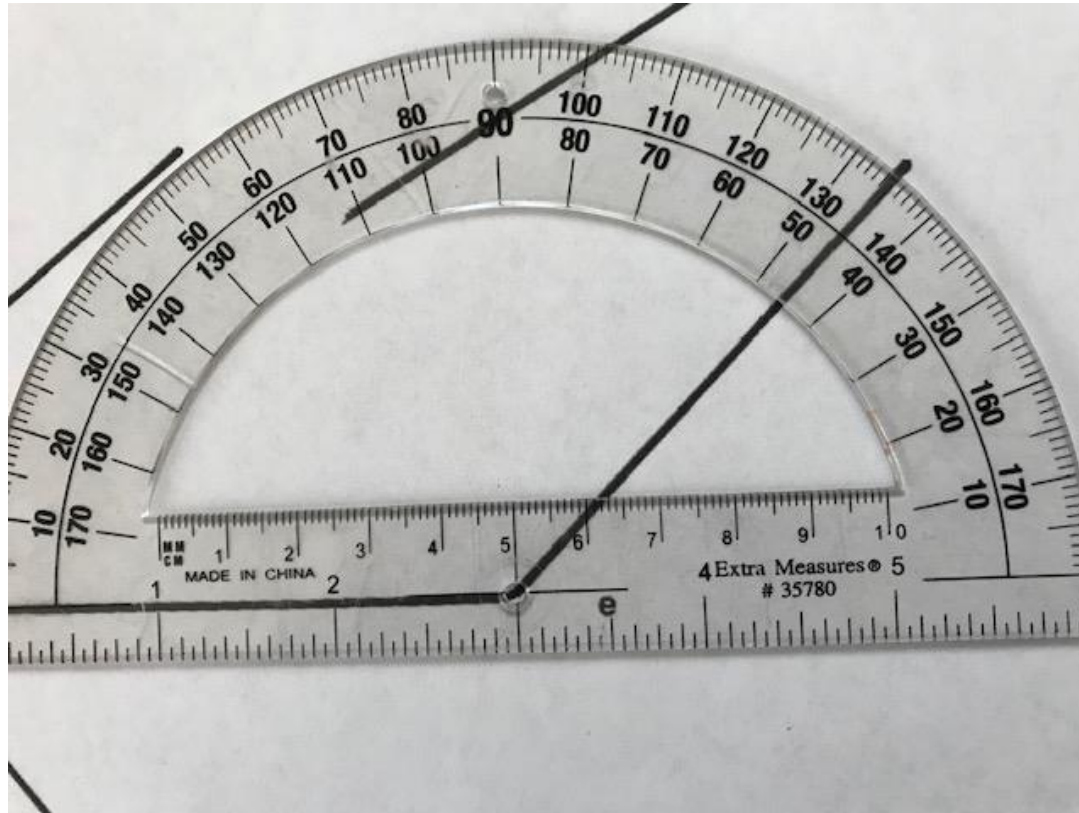
Here is angle b. What is its measure? (You don't have to write out the word "degrees". You can use the symbol  $^{\circ}$  instead. It's a small raised circle.)



Here is angle  $c$ . What is its measure? Notice that the corner of a piece of paper would fit in it! It has a special name: A right angle.



Here is angle d. It is a very narrow angle. Can you measure it?



And here is angle  $e$ . It is open more than a right angle. Can you measure it? Angles bigger than a right angle are called obtuse angles. Angles smaller than right angles are called acute angles.



Now it's your turn!

Draw some angles and measure them!

A challenge:

Can you draw an angle that opens more than  $180^\circ$ ?

Another challenge:

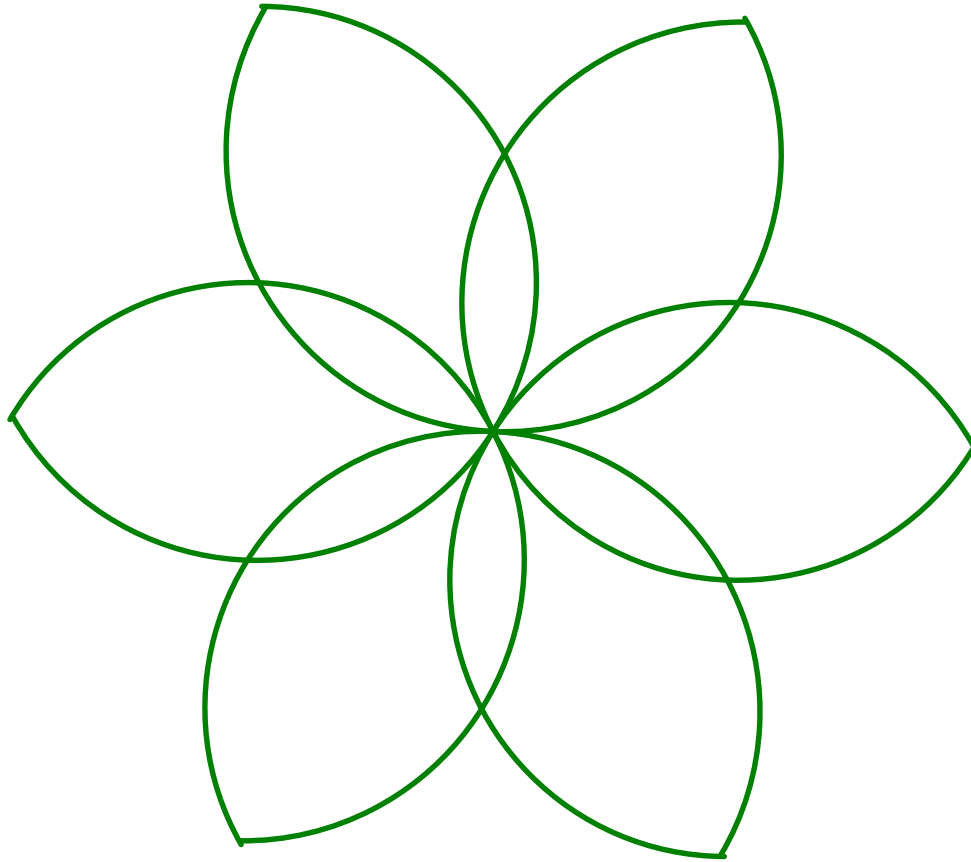
What does an angle of  $180^\circ$  look like? Can you draw it?

And finally—

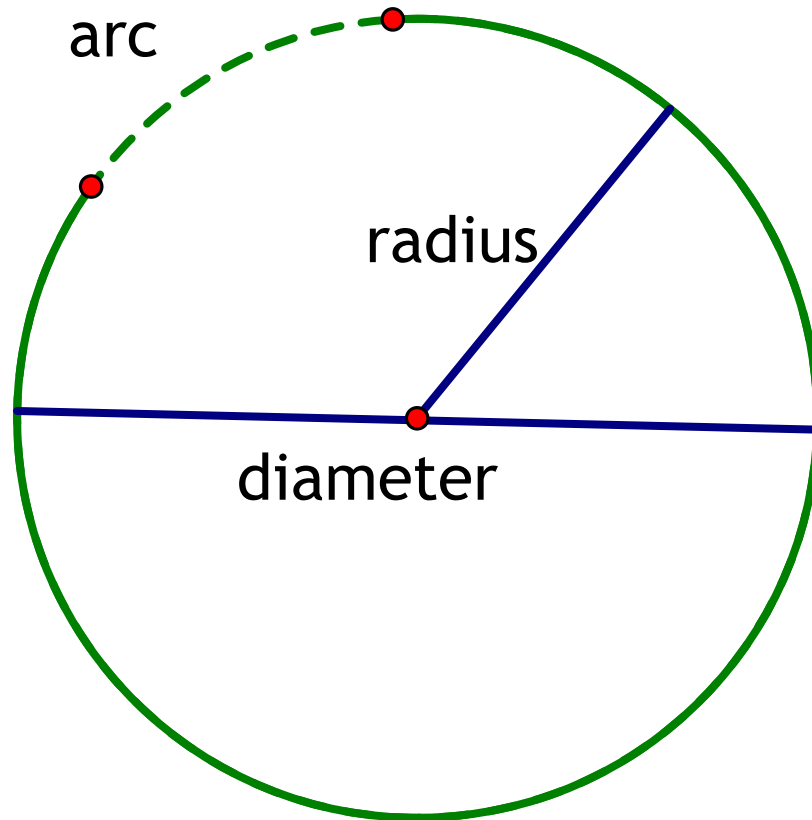
Do you remember what an acute angle is?

How about an obtuse angle?

An extra credit problem for more advanced learners

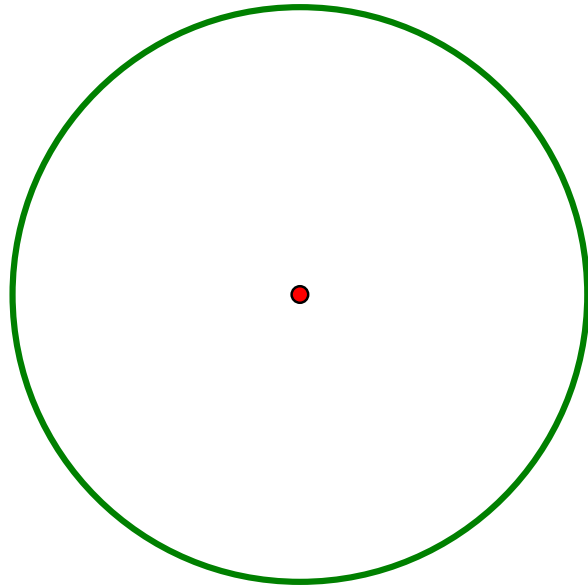


Here is a "flower" with six petals. Can you draw it? Let's do it step-by-step! Warning: It is tricky!



circumference  
(border of a circle)

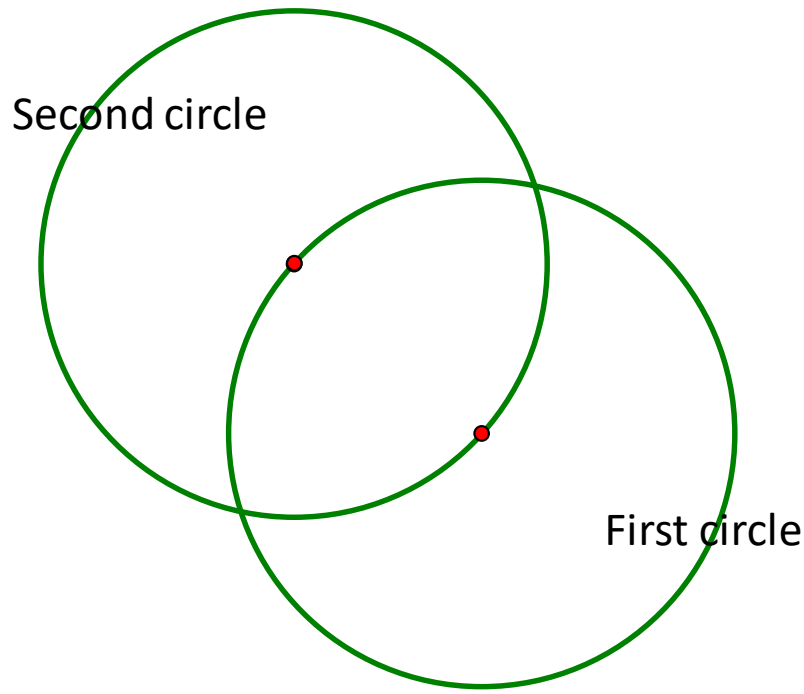
First, here are some parts of a circle: diameter, radius, circumference, and arc.



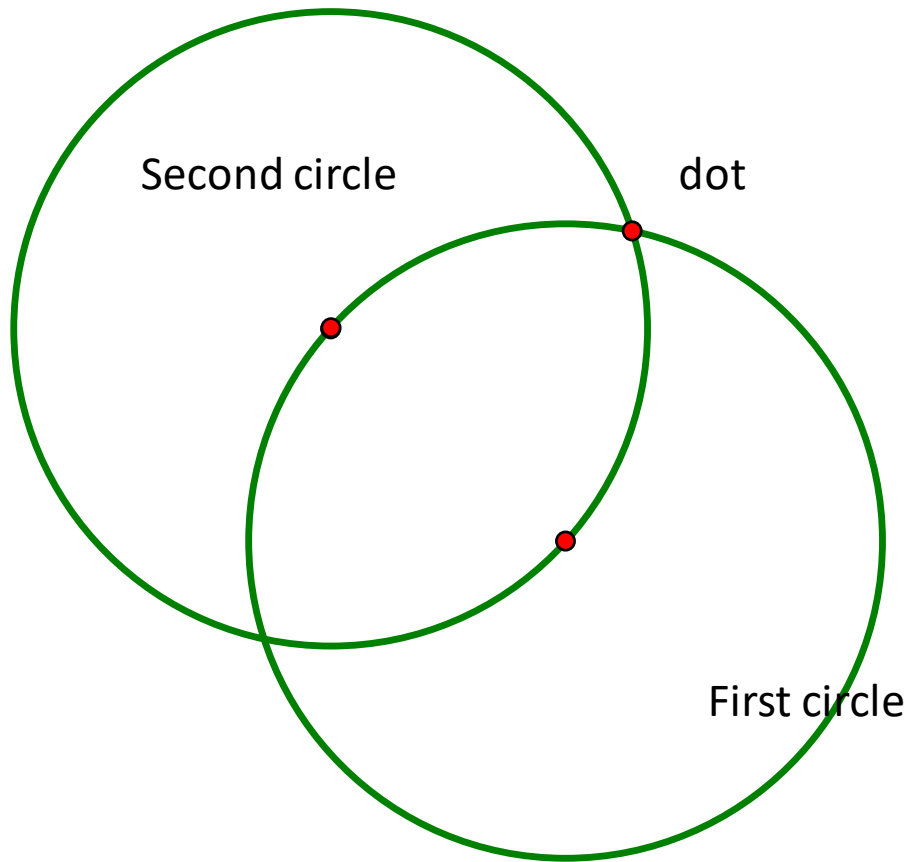
Now let's make the flower.

Step 1.

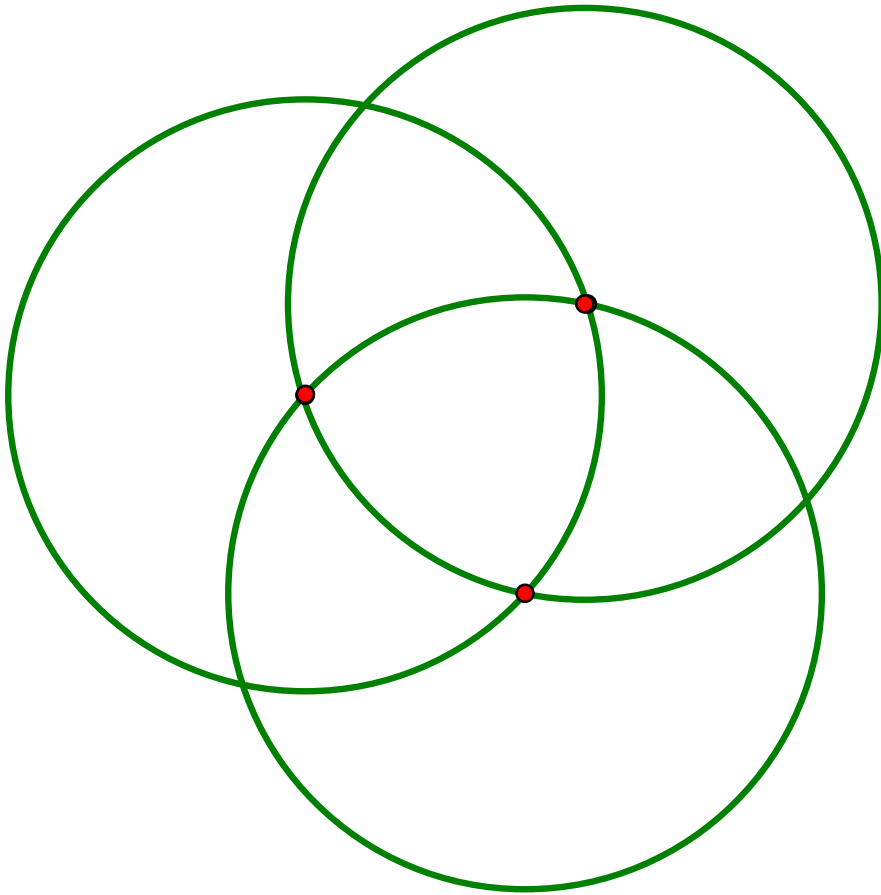
Set the radius of your compass to 3 inches. Put a dot in the center of a piece of paper, and draw a circle centered at the dot. Be sure to keep the same radius on your compass!



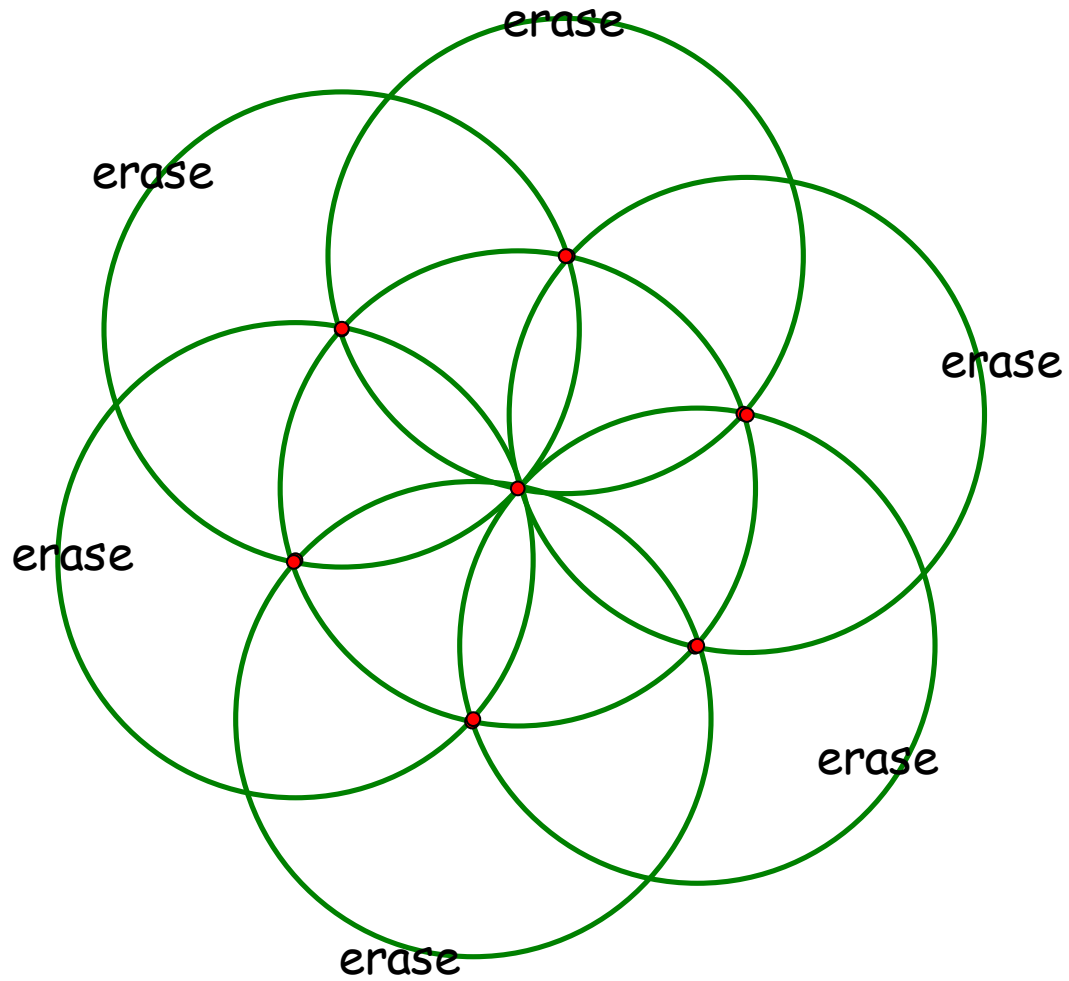
Step 2. Put a dot on the circumference of the circle you drew, and use the dot as the center of your second circle, with the same 3 inch radius.



Your next circle, with a radius of 3 inches, should be centered at the dot.

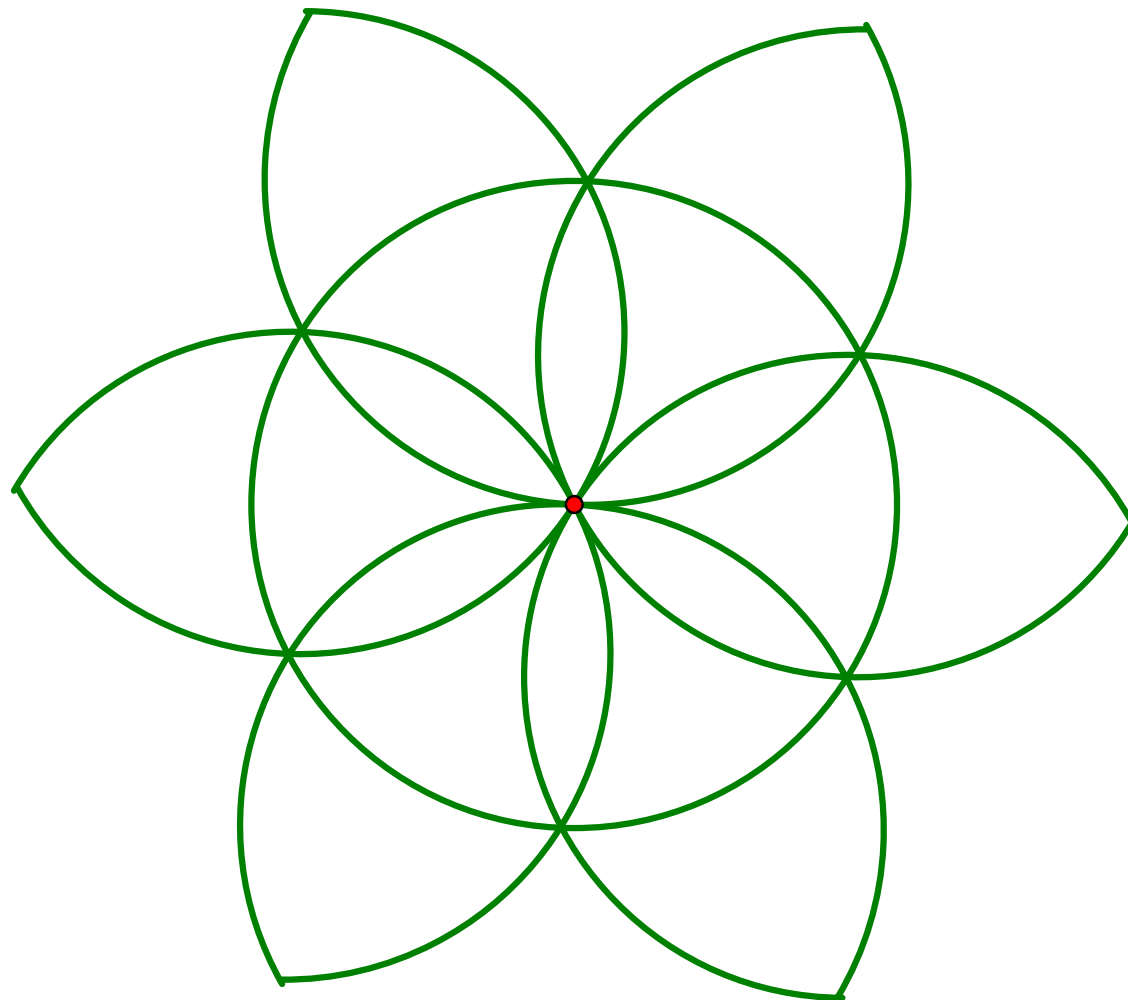


Continue this pattern until ....

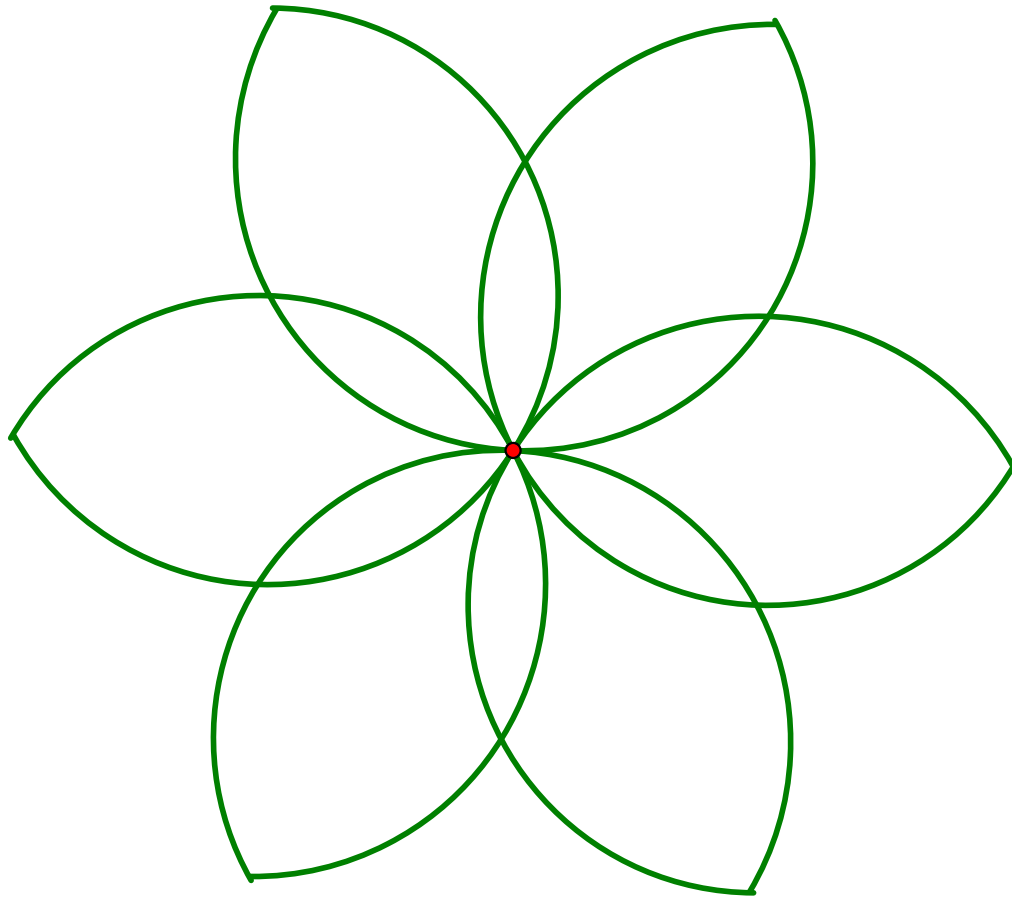


Now you need to erase the outer arcs of all six circles!

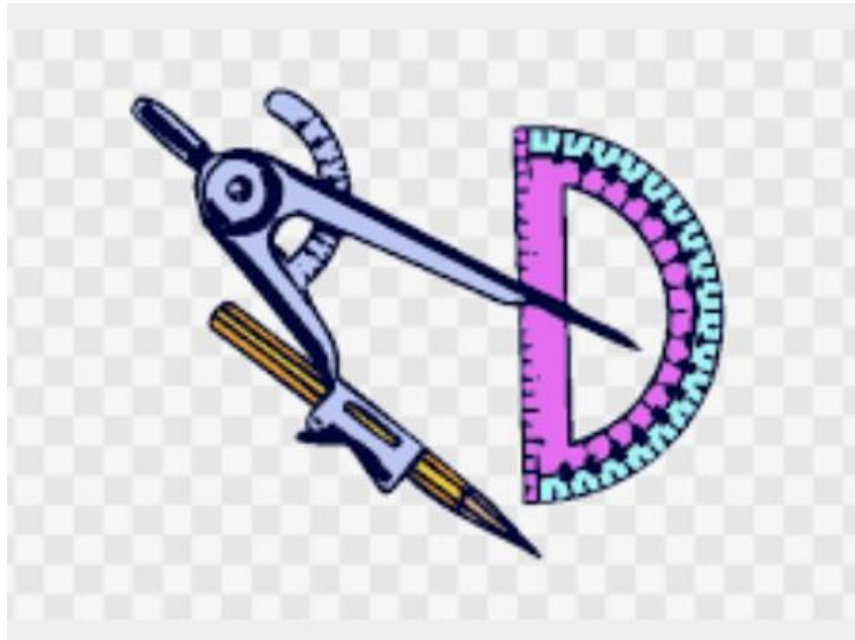




Finally, erase the circle.



That's it! Now you can color!



The End!