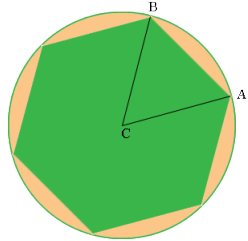
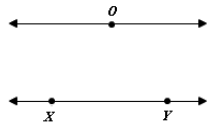
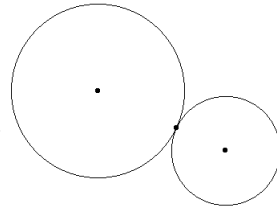


UW Math Circle - Homework 4



1. In class we showed how to construct equilateral triangles and 90° angles using only a compass and straight edge. Show how to construct a square using a compass and a straight edge. Now, show how to construct a regular hexagon (a *regular* hexagon is just a hexagon with all sides equal in length).

2. Given a circle with center O and radius R , construct a second circle that is tangent to the first (tangent means that the two circles touch in exactly one point).



3. Given points X , Y , and O that do *not* lie on a line:
 a) Construct any line parallel to XY .
 b) Construct a line parallel to XY that goes through O .

4. Challenge: *Suppose* you know how to bisect an angle. This means that given some angle ABC , you know how to construct the angle bisector of ABC . Using this, show how you can construct any regular 2^n -gon (a regular 2^n -gon is a polygon with 2^n sides which has all sides equal in length). A regular 16-gon ($n = 4$) is shown below.

