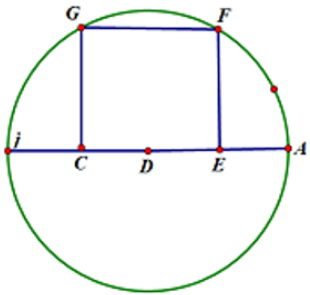# Warm up HW1 , Math 330, Fall 2014

Ayman Badawi
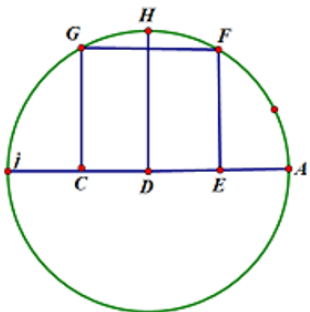
**QUESTION 1.** Make sure that your solution is readable.

Only unmarked ruler and a compass are allowed. See diagram. D is the center of the circle (D is the midpoint of IA). CLEARLY STATE the steps in order to construct the square FECG



**QUESTION 2.** Make sure that your solution is readable.

Only unmarked ruler and a compass are allowed. See diagram. D is the center of the circle (D is the midpoint of IA). CLEARLY STATE the steps in order to construct the rectangle FECG such that $|FE| = 1.5|CE| + 0.5|DH|$

**QUESTION 3.** Make sure that your solution is readable.

Consider the line segment CD. Given E is the golden cut point of CD. Just do one step in order to locate the golden cut point of CE.
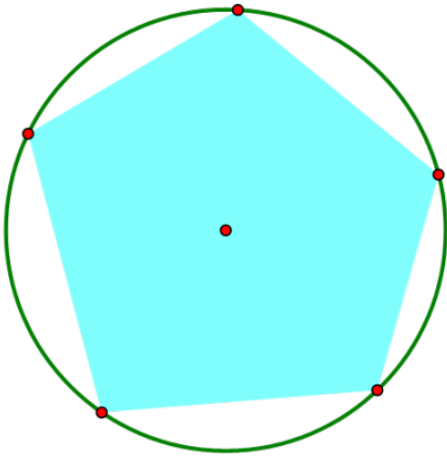
C •———————————•———————————• D
                          E

**QUESTION 4.** Make sure that your solution is readable.

Consider the line segment AB where D is the golden cut point of AB. Now, tell me how will you construct 72 degree angle?
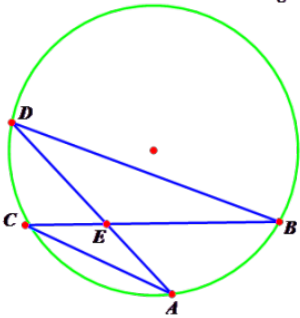
A •———————————•———————————• B
                          D

You may want to use the above to construct regular 5-gon as below. Tell me how?

**QUESTION 5.** Make sure that your solution is readable.

Consider the diagram below. Given degree measure of the arc (clock wise) DB = 200 degrees, the angle DEB = 115 degrees, the degree measure of the arc CD = 60 degrees. Find the degree measure of the arc BA, find the angles DBC, BDA, BCA, DAC

**QUESTION 6.** Make your solution readable.

Given the line segment AD. State clearly the steps you will do in order to split the line segment AD into 3 parts such that $|BC| = 2.5|AB|$ and $|CD| = 3/4|AB|$

A •——————•——————————————————•——•D
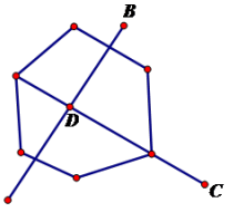               **B**                                      **C**

**QUESTION 7.** Make sure that your solution is readable

The below is regular 6-gon. How many reflections does it have?

What is the angle of rotation for R1? for R3? Note that D is the center point. Find (R3 O B), see B below.

Find (C O R_2), see C below.

**QUESTION 8.** Using a compass an unmarked ruler only:
   Can we construct a 40 degree angle? explain?

   Can we construct a regular 26-gon?explain.

   Can we construct a 75-degree angle? explain.

**QUESTION 9.** Can we tile a floor using regular 6-gon and regular 4-gon and regular 3-gon?

   We can tile a floor with regular 12-gon with other regular $n$-gon? Find all possible values of $n$?

**Faculty information**

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