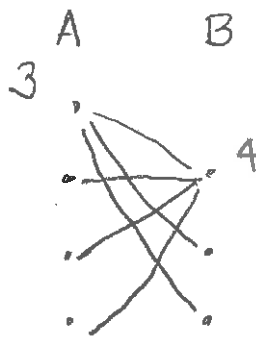
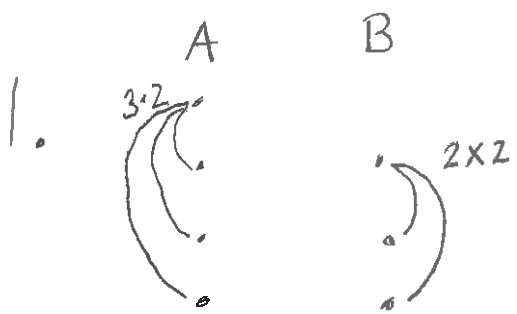


Work on the following problems. Your work must be written neatly on 8.5x11 inch paper with this sheet on the top of your write up or I will not grade your work. All necessary work must be shown for credit. Your work must represent the question asked. You may discuss this assignment with others, but all work turned in must be your own work. Your work is more important than the answer.

I have neither received nor given help on this project. Fluc Key  
 (Signature)

1. There are eight teams in League A and seven teams in League B. Every team is to play every other team in their league twice. Every team is to play each team in the other league once. (a) How many games does each team in League A play? (b) How many games does each team in League B play?
2. You have a 7-gon. (a) What is the sum of the degrees of all the angles inside the 7-gon? (b) Show that Euler's V,E,F formula is satisfied by the 7-gon. (c) What is the measure of each interior angle in degrees for a regular 7-gon?
3. You have a regular pentagon table and five friends. How many different ways can you arrange your friends around the table so that exactly one friend is on each edge of the table? Explain carefully your ordering around the table to make sure you have different arrangements.
4. You have an equilateral triangle each of whose sides have length one. Give the area and perimeter of this triangle exactly and then give a decimal approximation to the table that has the first two digits correct.
5. You have a square each of whose sides have length two. You divide this square into four equal squares each of whose sides is length one. You color the square in the bottom right orange. You divide each of the three remaining squares into four equal squares and color the bottom right square orange. You continue this process. What will be the area of the orange colored region at any step in the process? What is the limit of this process?



$$A \Rightarrow 6 + 3 = 9$$

$$B \Rightarrow 4 + 4 = 8$$

8 and 7

$$A \Rightarrow 7 \cdot 2 + 7 = 21$$

$$B \Rightarrow 8 \cdot 2 + 8 = 20$$

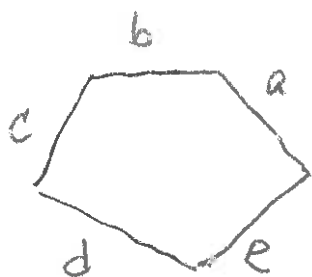
2. (a)  $(7-2)180 = 900^\circ$

(b)  $V = 7 \quad E = 7 \quad F = 2 \Rightarrow V - E + F = 2$

(c)  $\frac{900}{7}$

$$\begin{array}{r}
 128.571428 \\
 \hline
 7 \overline{) 9000000} \\
 \underline{7} \phantom{00000} \\
 20 \phantom{0000} \\
 \underline{14} \phantom{0000} \\
 60 \phantom{000} \\
 \underline{56} \phantom{000} \\
 40 \phantom{00} \\
 \underline{35} \phantom{00} \\
 50 \phantom{0} \\
 \underline{49} \phantom{0} \\
 10 \\
 \underline{7} \\
 30 \\
 \underline{28} \\
 2
 \end{array}$$

3.



$5 \cdot 4 \cdot 3 \cdot 2 \cdot 1$

or if rotations are the same

$\frac{5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}{5} = 4!$

4.



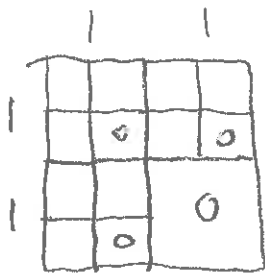
$$\text{Perimeter} = 3$$

$$\text{Area} = \frac{\sqrt{3}}{4}$$

X	$\frac{3+X}{1+X}$
1	2
2	$\frac{5}{3}$
$\frac{5}{3}$	$\frac{3+\frac{5}{3}}{1+\frac{5}{3}} = \frac{3}{3} = \frac{14}{8} = \frac{7}{4} \approx \sqrt{3}$

$$A \approx \frac{\frac{7}{4}}{4} = \frac{7}{16}$$

5.



$$0 \text{ area} = 1 + 3\left(\frac{1}{4}\right) + 3^2\left(\frac{1}{4}\right)^2 + 3^3\left(\frac{1}{4}\right)^3$$

$$0 \text{ area} = \frac{\left(\frac{3}{4}\right)^{4+1} - 1}{\frac{3}{4} - 1} \Rightarrow \frac{-1}{-\frac{1}{4}} = 4$$