

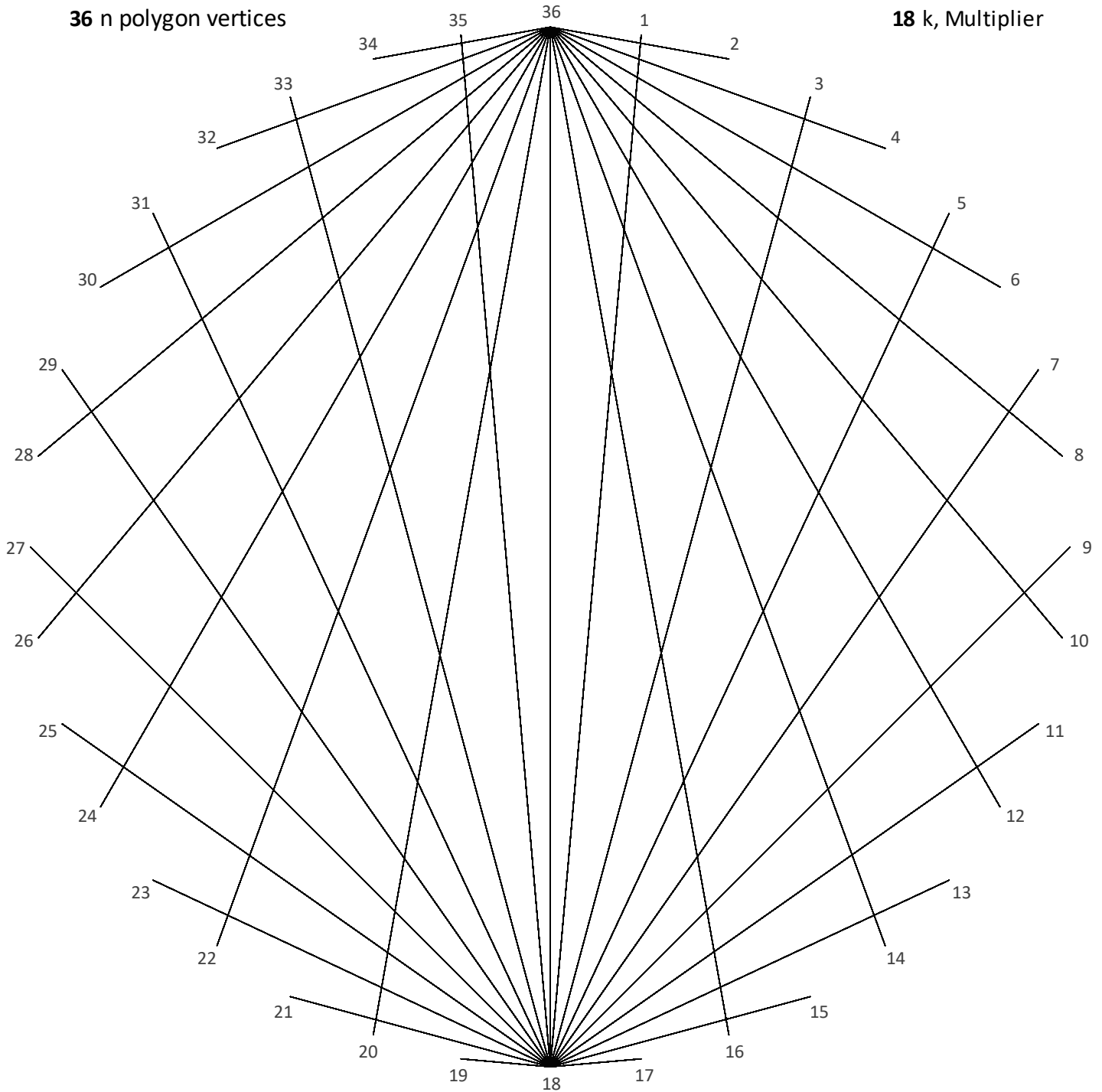
Names _____

Cardioid Group Project

Group _____

36 n polygon vertices

18 k, Multiplier



Organize into 6 groups to split up the workload. Label angles by number of arcs (so 2-36-4 is 2 arcs), not by degrees.
FACT: Given $n = 36$, an arc of 1 vertex is $180/36 = 5^\circ$. A) Find all angles in your given section of the image above. Feel free to use File 11 if that helps you in doing this problem. B) Do you see a pattern in sum of triangular and/or quadrangular arcs? C) Do you see a pattern in the angles in similar locations along a given ray from top or bottom?

- Group 1 does all angles between 35-1-18
- Group 3 does all angles between 3-5-18
- Group 5 does all angles between 7-9-18 and 13-15-18

- Group 2 does all angles between 1-3-18
- Group 4 does all angles between 5-7-18 and 15-17-18
- Group 6 does all angles between 9-13-18

D) If you finish early and have done File 6, can you see a pattern that allows you to easily determine how many internal intersection points are shown in the image above?

E) Use File 11 and check your answer to D) by examining internal intersections for $n = 34, k = 17$ and $n = 38, k = 19$.