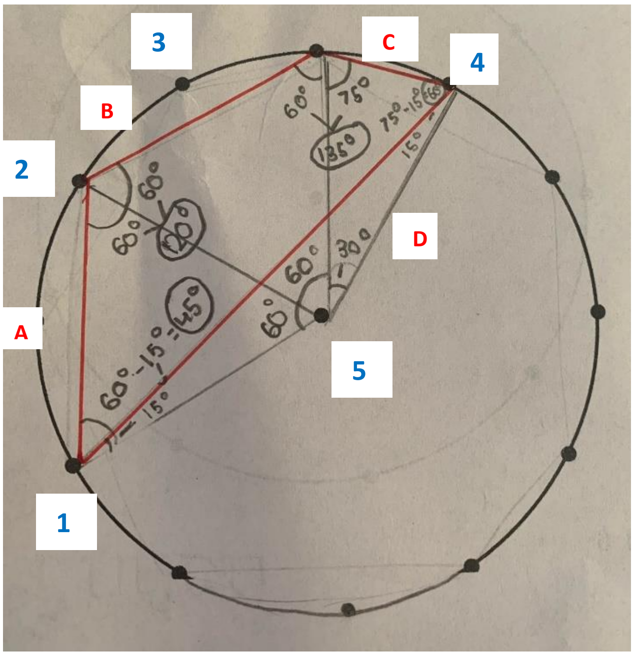
Cyclic Quadrilaterals Proof that the opposite angles still add upto 180° when the center of the circle is not within the quadrilateral.



A,B,C,D: Triangles

1,2,3,4,5: vertices

1. First I connected each vertice of the quadrilateral to the center point.
2. This made 3 isoceles triangles (A,B,C) + 1 another triangle outside the quadrilateral (Triangle D, vertices 154)
3. I calculated the angles at the center point : 60°, 60° and 30°
4. Using these angles I subtracted each of them from 180
   a. Triangle A: 180 – 60 = 120°
   b. Triangle B: 180 – 60 = 120°
   c. Triangle C: 180 – 30 = 150°
5. Then because the 2 base angles are identical as these are isoceles triangles, all I have to do is divide the balance by 2 to get:
   a. Triangle A: 120/2 = 60°,60°
   b. Triangle B: 120/2 = 60°,60°
   c. Triangle C: 150/2 = 75°,75°
6. Triangle D: I used the totals of the angles from the centre (150°) and subtracted them from 180 to get the equal angles of the triangle, which are° 15, 15.
7. Finaly we calculate the angles:

   a. Vertice 2: 60° + 60° = 120°
   b. Vertice 3: 60° + 75° = 135°

   a. Vertice 1: 60° – 15° = 45°
   b. Vertice 4: 75° – 15° = 60°

8. And now that we have found out all the angles for this quadrilateral, we can prove that opposite angles here also add upto 180, even when the

   Vertice 2+ Vertice 4: 120° + 60° = **180°**
   Vertice 3+ Vertice 1: 135° + 45° = **180°**