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

1. First I connected each vertex of the quadrilateral to the center point.
2. This made 3 isosceles 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 isosceles 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. Finally 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 up to 180, even when the

\[
\text{Vertice 2 + Vertice 4: } 120° + 60° = 180° \\
\text{Vertice 3 + Vertice 1: } 135° + 45° = 180°
\]