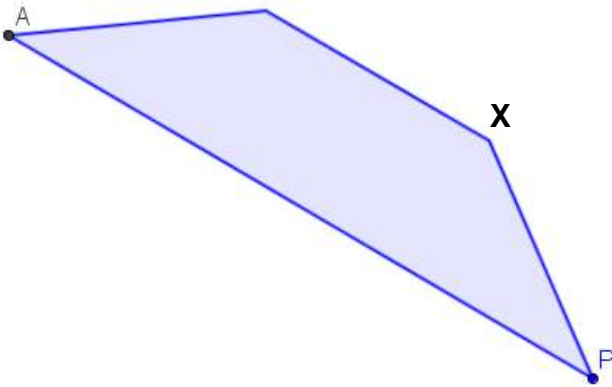


Dodecagon and Hexagon

First consider this shape in the dodecagon

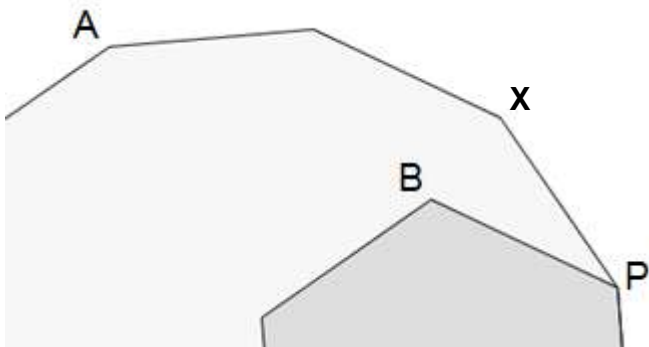


It has reflection symmetry so the angle at A is the same as the angle at P.

The internal angles of a regular dodecagon are $180 - \frac{360}{12} = 150^\circ$

The shape is a quadrilateral so the angle XPA is $\frac{360-150-150}{2} = 30^\circ$

Now consider the regular hexagon



The internal angle of a hexagon is $180 - \frac{360}{6} = 120^\circ$

The angle XPB is therefore $150 - 120 = 30^\circ$

This is the same as angle XPA so A, B and P lie on the same straight line.