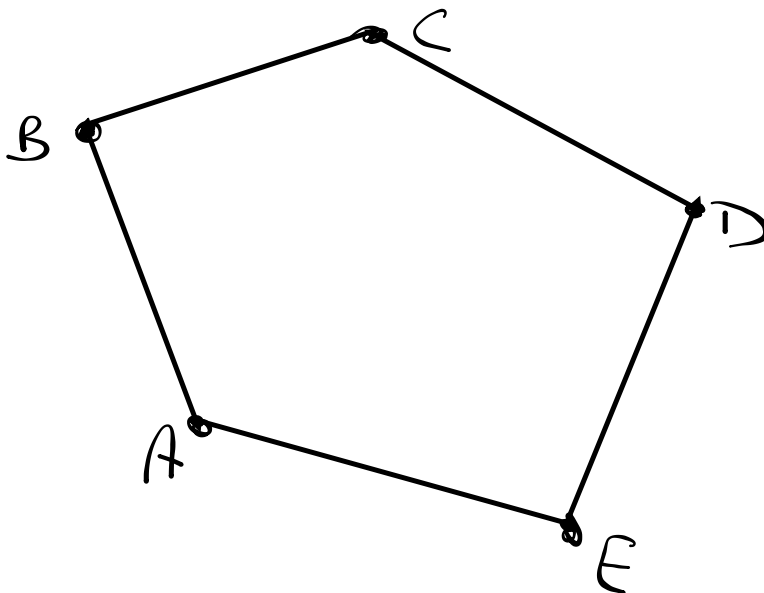


Two-Dimensional Figures

A **polygon** is a closed figure formed by a finite number of coplanar segments called **sides** such that:

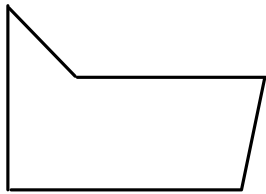
-the sides that have a common endpoint are noncollinear

-each side intersects exactly two other sides, but only at their endpoints.

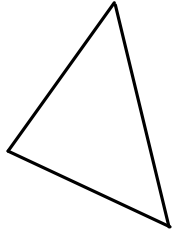


Polygon
ABCDE

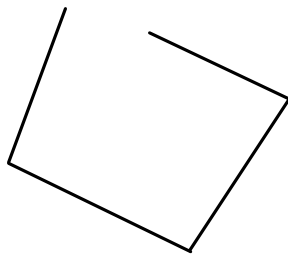
The vertex of each angle is a **vertex of the polygon.**



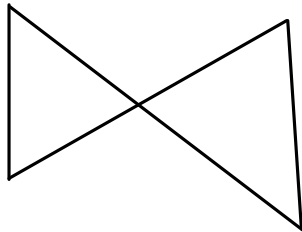
Yes!
Polygon!



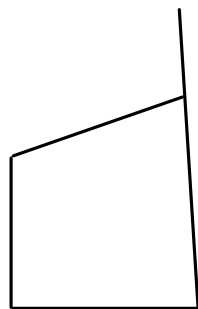
Yes!
Polygon!



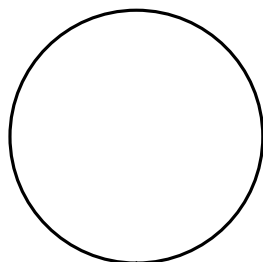
No!
It is not closed



No
A segment intersects
3 others



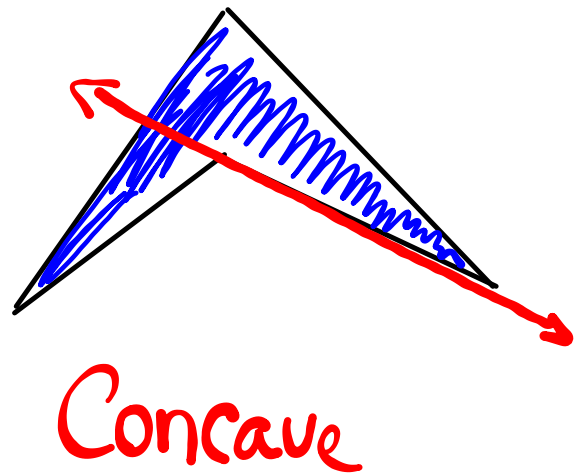
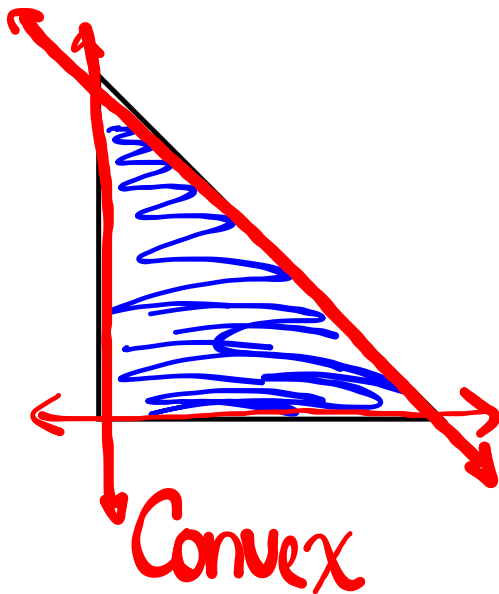
No,
a segment doesn't
intersect at an
endpoint.



No,
no finite number
of segments

Polygons can be concave or convex.

If a side can be extended to a line and it contains any interior points, it is concave. Otherwise, it is convex.



Classifying Polygons

Number of Sides	Polygon
3	Triangle
4	Quadrilateral
5	Pentagon
6	Hexagon
7	Heptagon
8	Octagon
9	Nonagon
10	Decagon
11	Hendecagon
12	Dodecagon
n	n-gon

Equilateral Polygon - all sides are congruent

Equiangular Polygon - all angles are congruent

Regular - both equilateral and equiangular

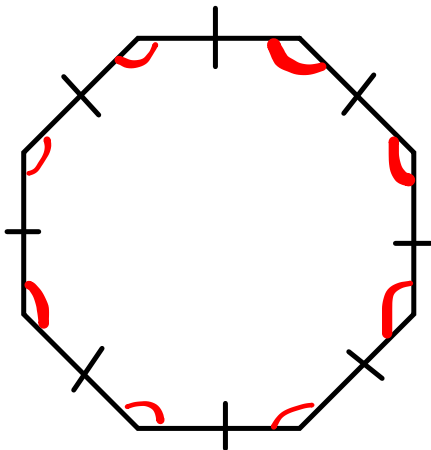
Classify the polygon:

-*Convex* or *concave*

-*Equilateral, equiangular, regular, or irregular*

-*Name* the polygon (triangle, pentagon, etc.)

State **why**.



Convex because no line containing any of the sides will pass through the interior.

Regular because all sides are congruent and all angles are congruent.

Octagon because it has 8 sides.

Convex regular octagon