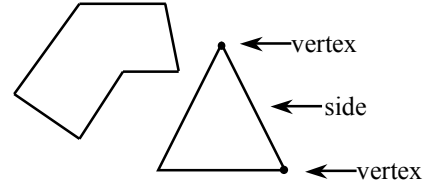


POLYGON VOCABULARY

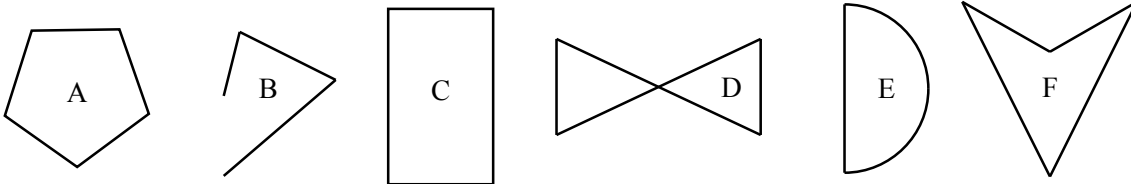
POLYGON

A **polygon** is a two-dimensional closed figure of three or more line segments (sides) connected end to end. Each segment is a side and only intersects the endpoints of the two adjacent sides. Each point of intersection is a vertex. At right are two examples of polygons.



Example

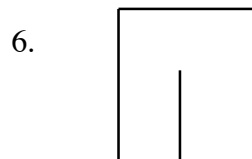
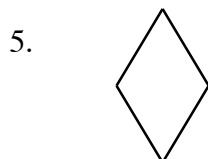
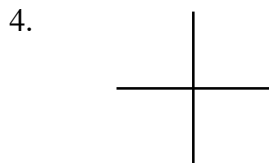
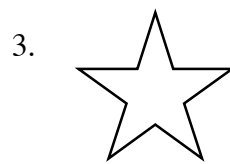
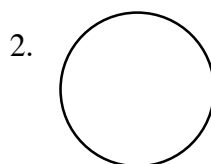
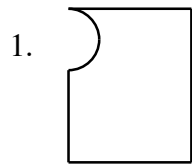
Which of the following are polygons? If not, explain why not.



Shapes A, C, and F are polygons. Shape B is not connected. Some of the sides in shape D intersect more than two other sides. Shape E is not completely made by line segments.

Problems

Determine if each shape is a polygon.



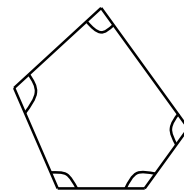
NAMING POLYGONS

Polygons are named by the number of sides they have.

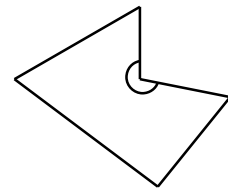
sides	name
3	triangle
4	quadrilateral
5	pentagon
6	hexagon
7	heptagon

sides	name
8	octagon
9	nonagon
10	decagon
12	dodecagon
n	n -gon

A polygon is **convex** if each of the interior angles measures less than 180° . If a polygon has any interior angle measuring greater than 180° (a reflex angle), then the polygon is non-convex or **concave**.



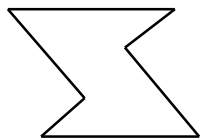
convex polygon



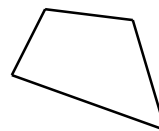
concave polygon

Example

Name each polygon by the number of sides and determine if it is convex or concave.



This polygon has six sides so it is a hexagon. There are two interior angles measuring greater than 180° so it is concave.

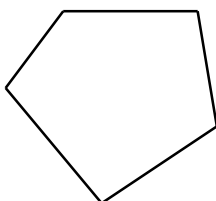


This polygon has four sides so it is a quadrilateral. All of the interior angles measure less than 180° so it is convex.

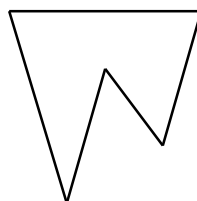
Problems

Name each polygon by the number of sides and determine if it is convex or concave.

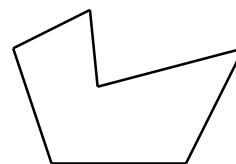
7.



8.



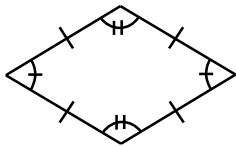
9.



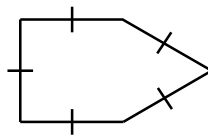
If all of the sides of a polygon are congruent, it is called **equilateral**. If all of the angles are congruent, it is called **equiangular**. If a polygon is both equilateral and equiangular, then it is a **regular** polygon.

Example

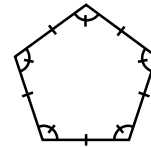
Determine if each polygon is regular.



This polygon is equilateral but not equiangular so it is not regular.



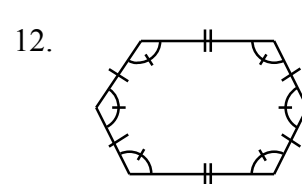
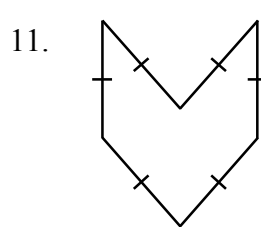
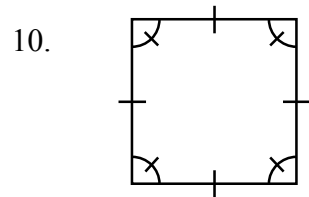
This polygon is equilateral but not equiangular so it is not regular.



This polygon is equilateral and equiangular so it is regular.

Problems

Determine if each polygon is equilateral, equiangular, or regular.



Answers

- | | | |
|--------------------|---------------------|--------------------|
| 1. not a polygon | 2. not a polygon | 3. polygon |
| 4. not a polygon | 5. polygon | 6. not a polygon |
| 7. convex pentagon | 8. concave pentagon | 9. concave hexagon |
| 10. regular | 11. equilateral | 12. equiangular |