1.6 Classify Polygons

plane figure – a figure that lies in a plane

polygon – a closed plane figure with the following properties:

* it is formed by 3 or more line segments called ***sides***
* each side intersects exactly 2 sides, one at each endpoint, so that no 2 sides with a common endpoint are collinear

vertex – each endpoint of a side of a polygon

convex – a polygon where no line that contains a side of the polygon contains a point in the interior of the polygon

concave – a polygon that is not convex, also called ***nonconvex***

Ex 1: Tell whether each figure is a polygon. If it is, tell whether it is convex or concave.

polygon convex | polygon concave | not a polygon | not a polygon

CLASSIFYING POLYGONS A polygon is named by the number of its sides.

Number of sides	Type of polygon
3	Triangle
4	Quadrilateral
5	Pentagon
6	Hexagon
7	Heptagon

Number of sides	Type of polygon
8	Octagon
9	Nonagon
10	Decagon
12	Dodecagon
n	*n*-gon

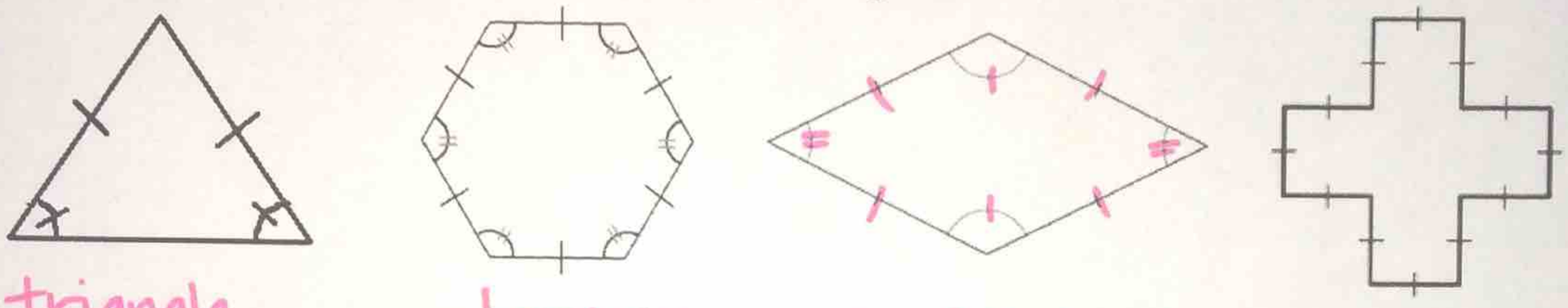
n-gon – a polygon with **n** sides

equilateral – a polygon with all sides congruent

equiangular – a polygon where all angles in the interior are congruent

regular – a convex polygon that is **both** equilateral and equiangular

Ex 2: Classify each polygon by the number of sides. Tell whether the polygon is equilateral, equiangular, or regular.



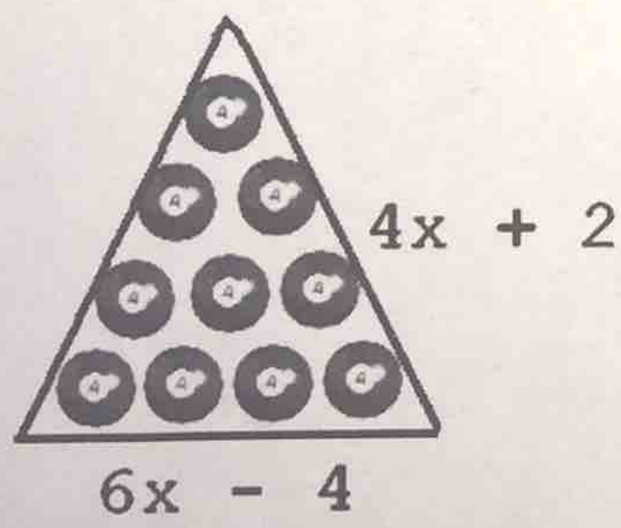
triangle
not equilateral
not equiangular
not regular

hexagon
regular

quadrilateral
equilateral

dodecagon
equilateral
equiangular?
not regular because concave

Ex 3: A rack for billiard balls is shaped like an equilateral triangle. Find the length of each side in inches. Then find the distance around the entire rack. What is this distance called?



$4x+2=6x-4$
$6=2x$
$x=3$

$4x+2$
$4(3)+2$
$12+2$
14

$6x-4$
$6(3)-4$
$18-4$
14

The length of each side is 14 in.

The distance around is
$14+14+14=42$ in
This is the perimeter.