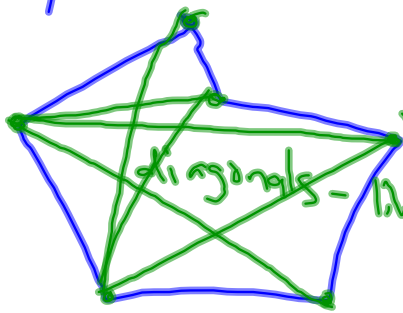


6.1 Properties of Polygons

polygon: closed plane figure formed
by 3 or more line segments.



vertex - corners

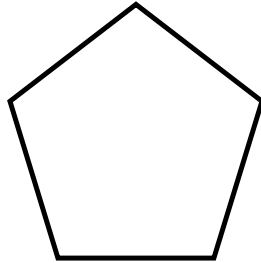
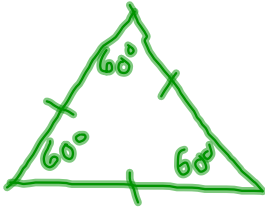
diagonals - lines from a vertex to another vertex

Classifying polygons

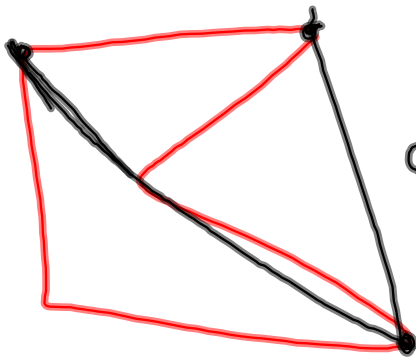
<u># of sides</u>	<u>names</u>
3	triangle
4	quadrilateral
5	pentagon
6	hexagon
7	heptagon/septagon
8	octagon
9	nonagon
10	decagon
12	dodecagon
n	n-gon

Regular Polygons

polygon that is equiangular and equilateral.

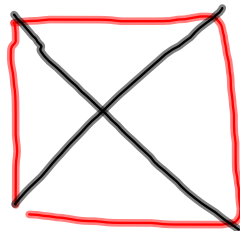


Concave: a polygon is concave if a diagonal can be drawn on the exterior of the polygon.



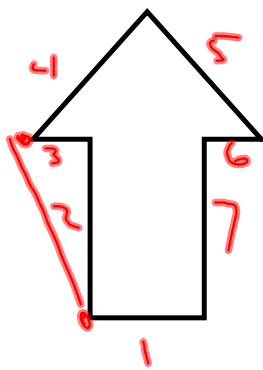
Concave.

Convex: all diagonals are on the interior of a polygon

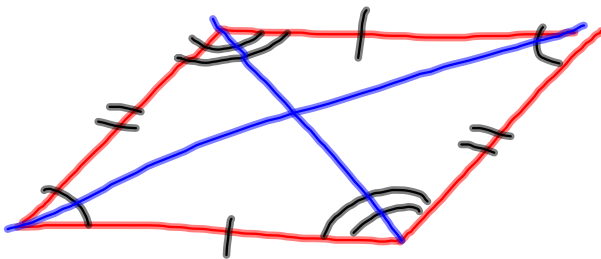


Convex

Ex: classify polygons by sides & by being concave or convex



Concave
heptagon



convex
quadrilateral
irregular

Polygon Sum theorem:

The sum of the interior angles of any ^{convex} polygon with n sides is

$$(n-2)180$$

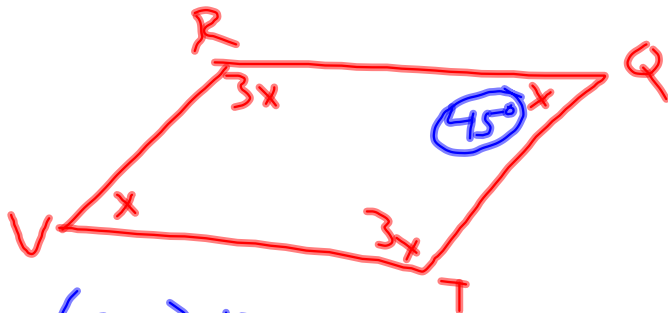
Find the sum of the \angle 's of :

a convex octagon

$$(8-2)180$$

$$6 \cdot 180 = 1080^\circ$$

Ex: Find the $m\angle Q$



$$(n-2)180$$

$$(4-2)180 = 360$$

$$x + x + 3x + 3x = 360$$

$$\frac{8x}{8} = \frac{360}{8}$$

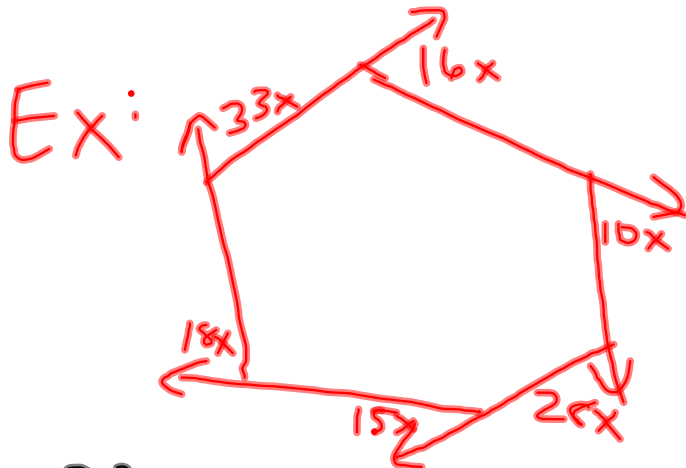
$$x = 45^\circ$$

Polygon Exterior Sum Theorem

The sum of the exterior \angle measures, one at each vertex, of a convex polygon is 360°

Ex: Find the exterior \angle of a regular decagon.
10 sides

$$\frac{360}{10} = 36^\circ$$



$$33x + 16x + 10x + 25x + 15x + 18x = 360$$

$$\frac{120x}{120} = \frac{360}{120}$$

$$x = 3$$

HW:
P. 386
2-42 even