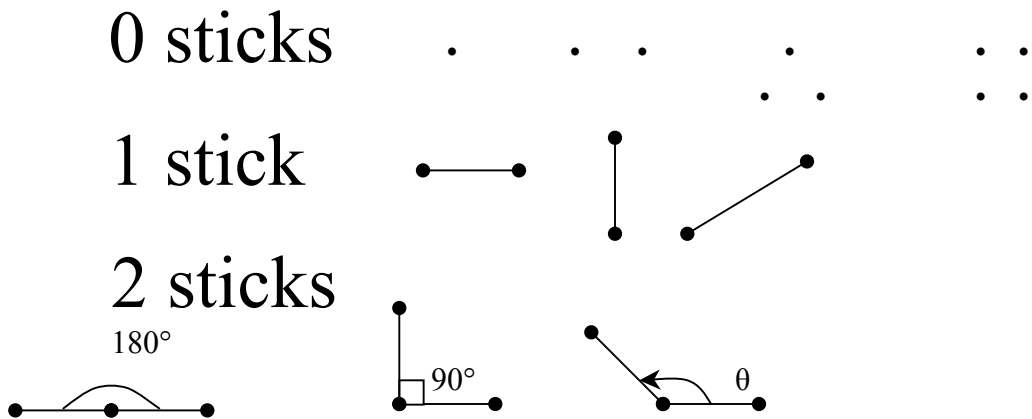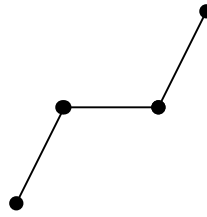# Math Circles – Polygons, part 1

Last time we talked about objects that can be made with sticks.
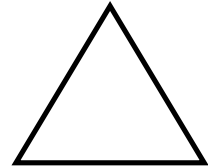
0 sticks

1 stick

2 sticks

180°

90°

θ

1. Draw 2 jointed sticks of length 3" on your paper and use the protractor to measure the angle. Write it as $\theta =$
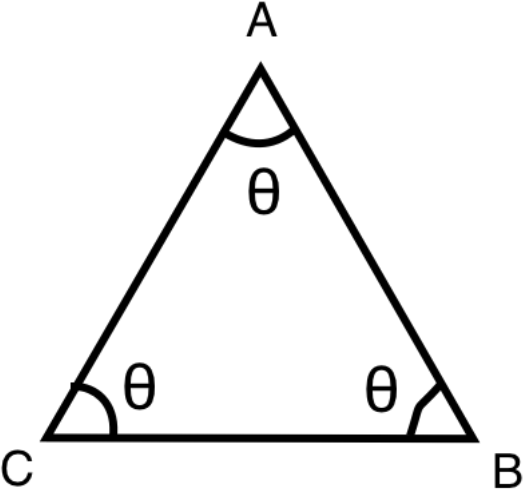
3 sticks?
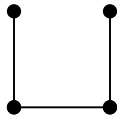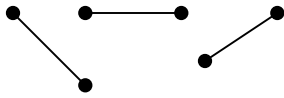
If we close the chain we get a **triangle**!

A triangle is **Equilateral** if all sides are the same length.

2. Make an equilateral triangle with toothpicks; measure the angles with the protractor, write them down.

3. Mom bought 180 chocolate hearts to send to school for Valentine's day. Her three children are in different classrooms. Each child took the same number of hearts to his or her class. How many did each of them take?

The sum of interior angles in a triangle is always 180º.

4. The angles in an equilateral triangle are all the same.

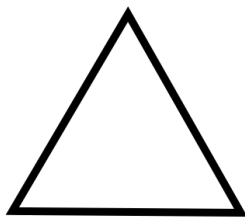$\theta + \theta + \theta = 180° \quad \theta + \theta + \theta = 180°$

$\theta =$

5. **Draw and equilateral triangle**:

Starting at point A, use the ruler to trace AB of length 3". Use the protractor to measure 60º and place point C. Trace a line segment from B to C. How long is the segment BC?
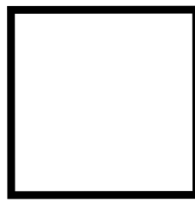
A **polygon** is a planar figure made with a finite number of sticks joined one after the other to form a closed chain
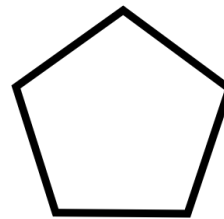
A B
θ_1 θ_2
F θ_6 θ_3 C
θ_5 θ_4
E D
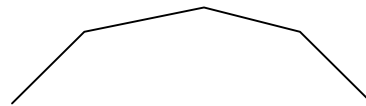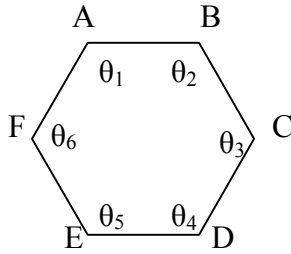
This is not a polygon!
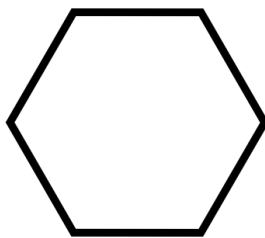
n = 3 (simplest)
triangle
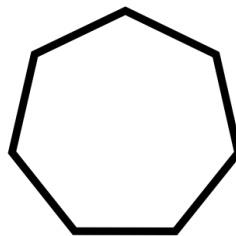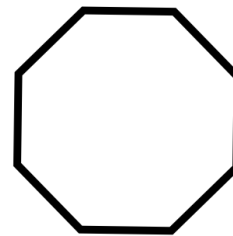
n = 4
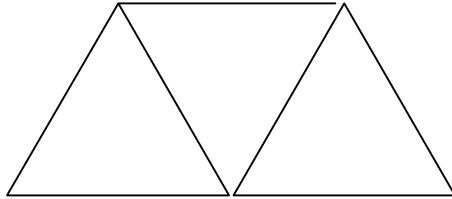quadrilateral

n = 5
pentagon

n = 6
hexagon

n = 7
heptagon

n = 8
octagon

n=9 **nona**gon; n=10 **deca**gon
n-gon = polygon with n sides

Homework:

A. Try to fill a page with equilateral triangles, one next to the other, without overlapping?
Hint:

What other figures do you see? Highlight them with a color pencil.

B. Do the same with squares