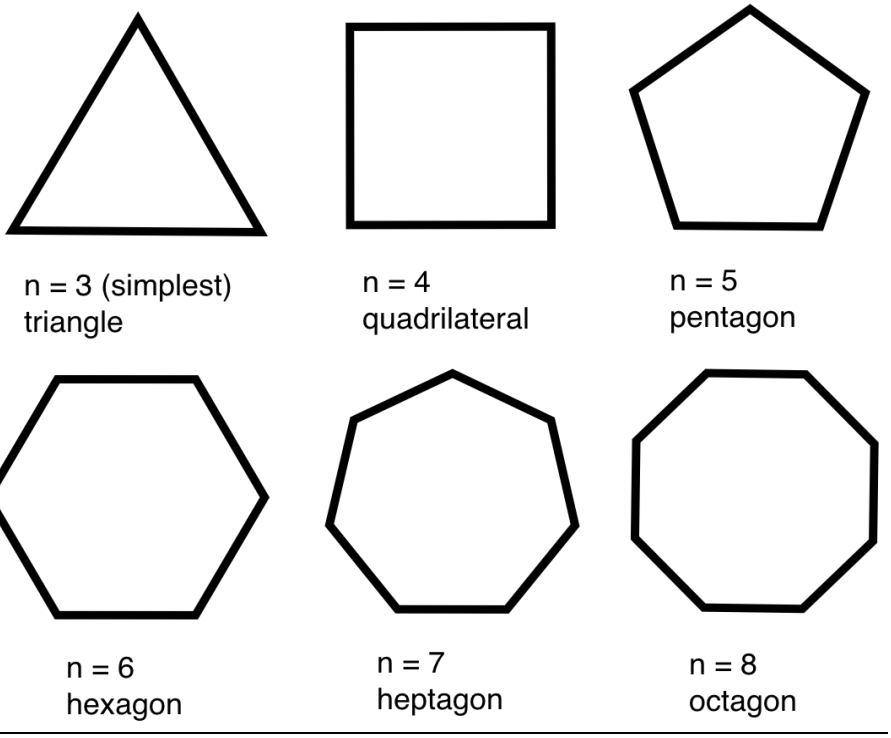
Math Circles -Polygons Part 2

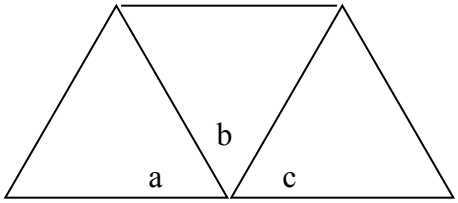
Putting Polygons together (tessellations)

Last Time: polygons; equilateral triangles



Can we fill up a page with polygons of the same kind without overlapping?

1.Triangles: Using ruler and protractor draw three equilateral triangles like this



Measure a+b+c =

How many triangles do you need so that the angles add to 360º?

2. Can you fill the plane in this way?

3. In a plane filled with triangles, What other figures do you see? Write them down.

4. Squares: Cut out the squares with your scissors, color one vertex in each square. How many squares can you glue together at the colored vertex without overlapping?

5. Pentagons: Cut out the pentagons with scissors.

Using the protractor measure the angles. Write your answer (in degrees):

$\theta =$

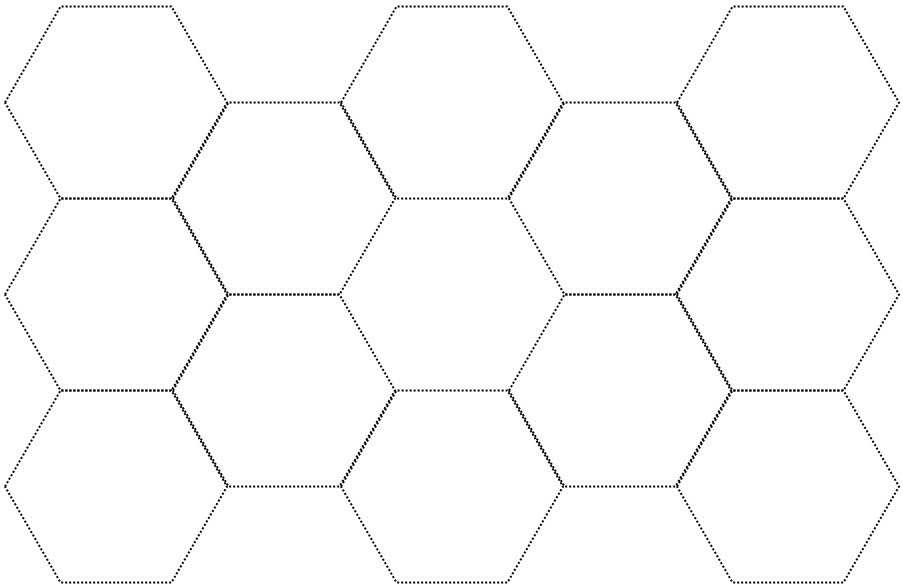
Can we use pentagons to fill a plane?

6. Can we use hexagons to fill a plane? Use the protractor to measure the interior angles:

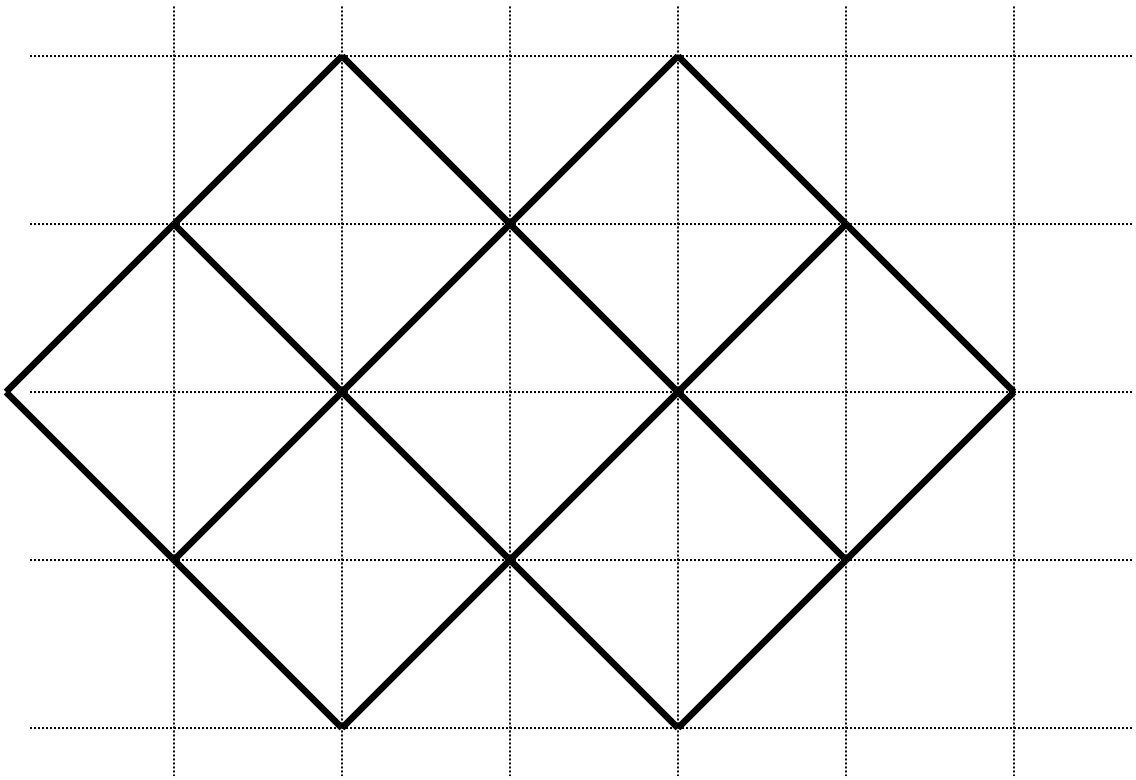
$\theta =$

Color one vertex in each hexagon. How many hexagons can you glue together at the colored vertex without overlapping?

7.



Tessellation is fitting together the same polygon to cover the whole plane.



Example of a tessellation: [M.C. Escher]

Two Birds, February 1938
Drawing, 228 x 243 mm (9 x 9 5/8")
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HOMEWORK: Find examples of tessellations and write them down. Make your own inspired by Escher's art.