1: For each problem below, a shape and a dot (•) are given to you. This dot represents one vertex of a tessellation made by the shape. Fill in this tessellation around the vertex.

1. Squares:

•

2. Regaular triangles (recall that regular means all of the internal angles are the same):

•

3. Regular hexagons:

•

4. Identical rectangles that are not squares:

•

2: We will denote by N the **Number of shapes that meet at one vertex**. Using your tessellations from problem **1**, Fill in the following table. The last one has been done for you.

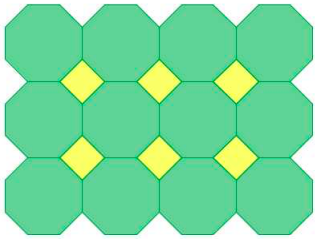
Shape	**Internal Angle**	N	$N \times$ InternalAngle
Square			
Regular Triangle			
Regular Hexagon			
Rectange	90	4	360

3: Use the dot below to draw a tessellation consisting of pentagons (5 sides). Prove that there does not exist a tesselation that uses only *regular* pentagons.

•

4: In this problem we consider *semi-tessellations*. These are different than tessellations in that we can use two shapes instead of one. The rule is still that every vertex must look the same.

Example 1. *Octagons and Squares*



Repeat what you did in problem **1** for the semi-tessellations below. **All shapes below are assumed to be regular!**

1. triangles and hexagons (there are two different ways of doing this, hence the two dots).

2. Triangles and squares (there are also two different ways of doing this.)

3. Triangles, squares, and hexagons.

4. Triangles and dodecagons (12 sides)

5. Squares, hexagons, and dodecagons

•

5: