

July, 2016 – Grades 5 & 6

Individual Questions (Part 1)

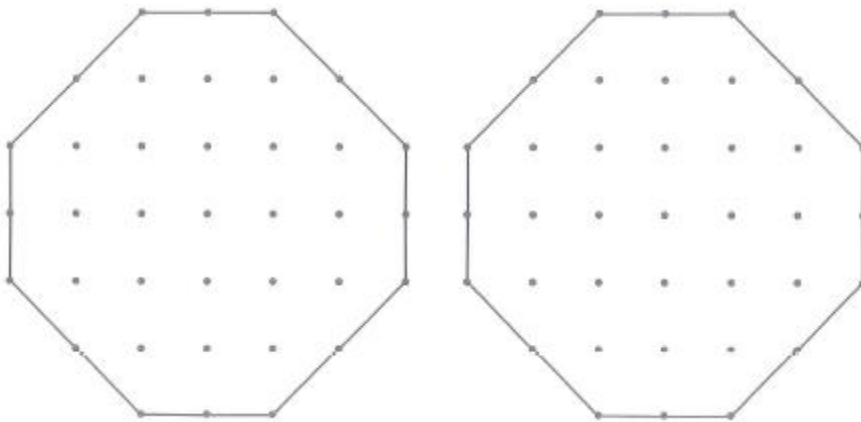
Total pages: 6, Total points: 40

Time limit: 30 minutes

Name (Print): _____

Question #1 (6 points)

These octagons may be divided into congruent parts. Divide the octagon on the left into **eight** congruent parts. And divide the octagon on the right into **fourteen** congruent parts. In each new pattern created by division into parts, all the parts must be congruent to one another.



Question #2 (3 points)

Similar figures have the same shape but different sizes. For example, the following two shapes are **not** congruent, but **similar** because, although they have different sizes, they have exactly the same shape.



Use the dot grid on the right to draw a figure with sides one and one-half times as long as the figure on the left.



Question #3 (3 points)

Use the dot grid on the right to draw a figure with sides three-fourths as long as the figure on the left.

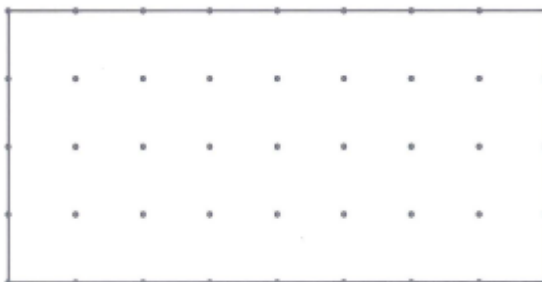
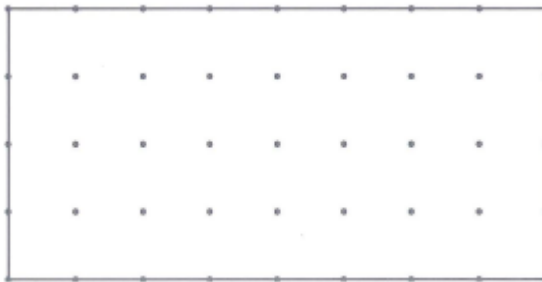
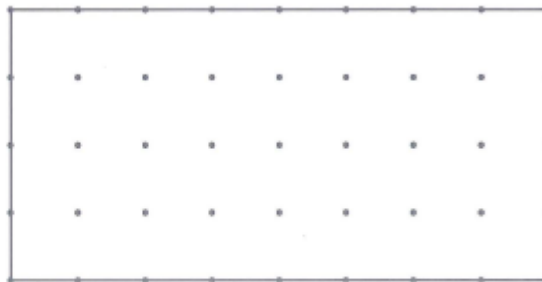


Question #4 (6 points)

Draw the pattern on the dot grid as many times as needed to cover the whole grid. There should be **no** empty space left in the grid and **no** overlapping. This process is called **tessellation**. Draw three **different** tessellations.

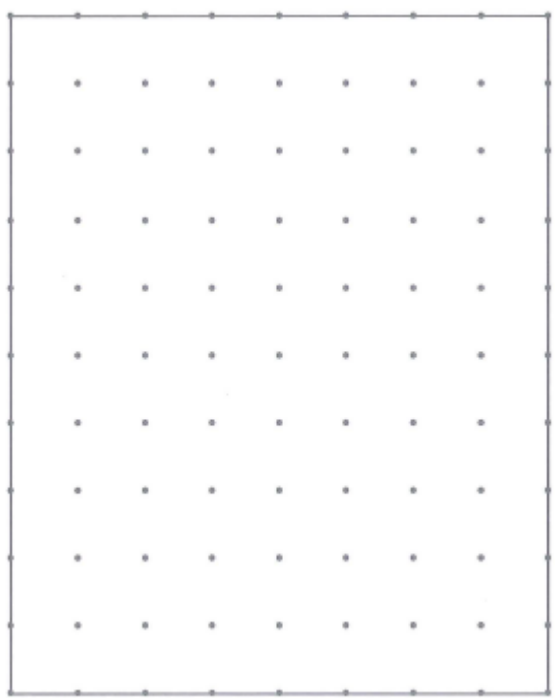
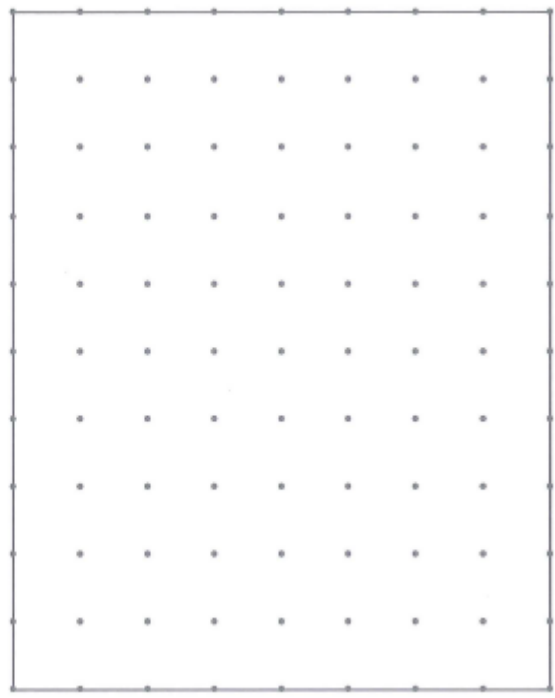
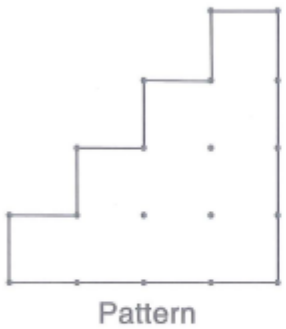


Pattern



Question #5 (6 points)

Draw the pattern on the dot grid as many times as needed to cover the whole grid. There should be **no** empty space left in the grid and **no** overlapping. This process is called **tessellation**. Draw three **different** tessellations.



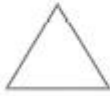


Question #6 (5 points)

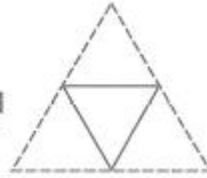
Some shapes can be repeated (tessellated) to form a larger pattern of the **same** shape. Some can not. Draw the larger pattern that can be made by tessellating the following trapezoid.

EXAMPLE:

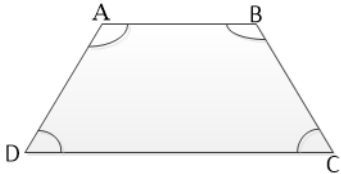
This small equilateral triangle



can be tessellated to form this similar equilateral triangle.



$ABCD$ is a trapezoid, $m\angle DAB = 120^\circ$, $m\angle ABC = 120^\circ$, $m\angle ADC = 60^\circ$, $m\angle BCD = 60^\circ$, $DA = AB = BC$.

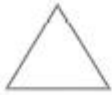


Question #7 (5 points)

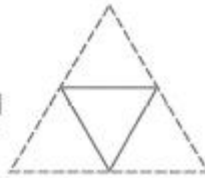
Some shapes can be repeated (tessellated) to form a larger pattern of the **same** shape. Some can not. Draw the larger pattern that can be made by tessellating the following triangle.

EXAMPLE:

This small equilateral triangle



can be tessellated to form this similar equilateral triangle.



Question #8 (6 points)

A polyomino is formed by joining one or more equal squares edge to edge.

NUMBER	NAME	EXAMPLES
1	Monomino	
2	Domino	
3	Trominoes	
4	Tetrominoes	

Cover this surface with three **different** pairs of tetrominoes. Do this in three **different** ways.

