

Student Guide for POW 9: Tessellation Pictures

1. **PART 1: Make a “Tessellation Shape” (4 pts.)**
 - a. **Define and restate the properties of a “tessellation shape”**
 - 0 – No definition of properties stated
 - 1 – Definition and properties are copied from the text
 - 2 – Definition and properties are written in the students own words
 - b. **Describe how to make a “tessellation shape from an index card”**
 - 0 – No description given
 - 1 – A limited/vague/incomplete description
 - 2– A complete and thorough description written in the student’s own words
2. **PART 2: Make Some More Tessellation Shapes (14 pts)**
 - a. **Describe how to make a “tessellation shape” from other parallelograms**
 - 0 – No description given
 - 1 – Poorly written/incomplete/vague description
 - 2 - Complete and thorough description that uses specific examples
 - b. **Describe how you can start with a “tessellation shape” to make a new “tessellation shape**
 - 0 – No description given
 - 1 - Poorly written/incomplete/vague description
 - 2 - Complete and thorough description that uses specific examples
 - c. **Describe how to make “tessellation shapes” using objects other than index cards**
 - 0 – No description given
 - 1 - Poorly written/incomplete/vague description
 - 2 - Complete and thorough description that uses specific examples
 - d. **Provide all “tessellation shapes” created**
 - 0 – No tessellation shapes provided
 - 1 – Several simple tessellation shapes-all created from index cards
 - 2 – Several complex tessellation shapes – all created from index cards
 - 4- Many complex tessellation shapes created from a variety of materials as well tessellation shapes being used to create new shapes
 - e. **Describe any problems you had, and how you solved them**
 - 0 – No description of problems encountered
 - 1 – Vague and limited discussion of problems encountered
 - 2 – Excellent discussion of several problems encountered, including a thorough record or your thought process used to deal with the problems
 - f. **Describe all assistance provided and how it helped you**
 - 0 – No statement of assistance
 - 1 – Clear statement of assistance with minimal description of how it helped
 - 2 – Clear statement of assistance with a complete description of how it helped
3. **PART 3: Make a Tessellation Picture (20 pts)**
 - a. **State why you choose a specific “tessellation shape” for use in your “tessellation picture”**
 - 0 – No statement given

- 1 – A limited or vague explanation that does not give any specific reasons
- 2 – A detailed explanation that is well supported by specific example

b. Describe how you worked on the shape until it was “really well designed and worth using in your final product”

- 0 – No description given
- 1 – A limited or vague explanation that does not give any specific reasons
- 2 – A detailed explanation that is well supported by specific example

c. Describe how you colored each shape so it “looked like something interesting”

- 0 – No statement given
- 1 – A limited or vague explanation that does not give any specific reasons
- 2 – A detailed explanation that is well supported by specific example

d. Describe how you would evaluate the quality of your picture for “mathematical content”

- 0 – No statement given
- 1 – A poor or vague explanation that does not give any specific reasons
- 2- A limited explanation that provides some general reasons
- 4 – A detailed explanation that is well supported by specific example

e. Describe how you would evaluate the quality of your picture for “beauty”

- 0 – No statement given
- 1 – A poor or vague explanation that does not give any specific reasons
- 2- A limited explanation that provides some general reasons
- 4 – A detailed explanation that is well supported by specific example

f. Provide tessellation picture(s) created

- 0 – No picture provided
- 1 – A picture that that used a very simple tessellation shape, or did not demonstrate evidence of a considerable amount of time and effort was put into making the picture
- 2 – A fair picture that used a simple tessellation shape, but demonstrated some creativity in terms of the coloring
- 4 – A good picture that uses a fairly complex tessellation shape and demonstrates considerable time and effort
- 6- An excellent picture that uses a complex tessellation shape, demonstrates considerable time and effort, and clearly exhibits the qualities you described for “mathematical content” and “beauty”

4. EVALUATION (4pts)

a. Write a one paragraph summary of “what you learned from this POW”

- 0 - No summary paragraph
- 1. A brief, poorly written summary that demonstrates little understanding of the problem, its solution and the mathematical ideas and concepts
- 2. A fair summary that includes some support, but lacks one or two key points that would have demonstrated understanding of the problem, its solution, and the mathematical ideas and concepts
- 3. A good summary that demonstrates an acceptable understanding of the problem, its solution and the mathematical ideas and concepts, however could be

- described in greater detail
4. A well written summary written that demonstrates a thorough understanding of the problem, its solution and the mathematical ideas and concepts

5. SELF-ASSESSMENT (8 pts)

a. Grade and Justify your work using a self-assessment scoring rubric

0 – Work not graded with rubric

1 – Score values provide with no justification

2 - Score values provide with minimal rationale and many/most values not acceptable based on scoring guide criteria

3 - Scores values provided with fair/good rationales, but some values not acceptable based on scoring guide criteria

4 - Score values provided with strong rationales, all values acceptable based on scoring guide criteria

b. Write a one paragraph summary that identifies your weakest areas in this POW and describe the problems you had or the reasons you become “stuck” in these areas

0 – No paragraph written

1- A brief, poorly written summary that does not allow the reader the ability to understand why you had problems in specific areas of the POW and could not finish a problem, come to a solution, or make a generalization

2. A fair summary that is quite limited, and does not go into detail on problem areas and their specific reasons

4. A well written summary written that clearly identifies the weakest areas of the POW and describe the specific reasons that you had problems and how you will try to resolve these problems