

# Task Specific Rubric- Stained-Glass Window Design

Level	Understanding	Strategies, Reasoning, & Procedures	Communication
<b>Novice</b>	<ul style="list-style-type: none"> <li>✓ The student does not understand enough of the problem to begin the task or s/he started the task but did not understand that each section created must be divided into two sections therefore his/her calculations are incorrect.</li> </ul>	<ul style="list-style-type: none"> <li>✓ The student cannot start the task or s/he has started the task using manipulatives or representations but cannot complete the task.</li> <li>✓ The student shows little or no understanding of the connection between the geometrical pattern and the number of sections each division creates.</li> </ul>	<ul style="list-style-type: none"> <li>✓ There is little or no communication, the student did not label the work and their thinking is difficult to follow.</li> <li>✓ The student does not use any algebra or geometrical terms/symbols to describe his/her work.</li> </ul>
<b>Apprentice</b>	<ul style="list-style-type: none"> <li>✓ The student understands that they are dividing each geometrical section into two parts and can accurately complete parts of the task, but cannot accurately calculate the <math>20^{\text{th}}</math> term.</li> </ul>	<ul style="list-style-type: none"> <li>✓ The student has chosen an appropriate strategy to solve the task, creates a geometrical design that demonstrates his/her understanding of the division process, and creates a chart/t-table to organize the data. The student cannot track all of the pieces of the task to an accurate and complete solution to both the <math>10^{\text{th}}</math> and <math>20^{\text{th}}</math> term.</li> <li>✓ Sample Strategies: Student draws a geometrical design, but tries to make all of his/her divisions on the same geometrical figure and loses his/her understanding of the forming pattern. Student misrepresents the algebraic pattern as <math>2n</math>, where <math>n</math> is the number of divisions.</li> </ul>	<ul style="list-style-type: none"> <li>✓ The student has attempted to communicate their findings by labeling their work, but does not attempt to summarize their work by stating their final answer.</li> <li>✓ The student attempts to explain his/her work, but uses little or no algebra or geometry terminology/symbols in his/her explanation.</li> <li>✓ The student has used a geometrical shape to help organize his/her data and has started to convert this information into a chart. Information may be disorganized causing confusion in his/her understanding of the pattern forming.</li> </ul>
<b>Practitioner</b>	<ul style="list-style-type: none"> <li>✓ The student understands that they are dividing each geometrical section into two parts and can accurately calculate both the <math>10^{\text{th}}</math> and <math>20^{\text{th}}</math> terms.</li> <li>✓ The student can identify and explain the pattern (the sections double with each division), but cannot create an equation to describe the exponential pattern.</li> </ul>	<ul style="list-style-type: none"> <li>✓ The student has chosen an appropriate strategy to solve the task, creates a geometrical design(s) that demonstrates his/her understanding of the entire division process, and creates an accurate chart/t-table to organize the data.</li> <li>✓ The student can track all of the pieces of the task to identify both the <math>10^{\text{th}}</math> and <math>20^{\text{th}}</math> terms in the pattern.</li> <li>✓ Sample Strategies: Student draws a series of shapes to track his/her progression of the divisions and correlates this data with a chart/t-table. Student may begin to correlate the geometric pattern with the algebraic pattern.</li> </ul>	<ul style="list-style-type: none"> <li>✓ The student represents his/her work in a clear, organized manner, and uses appropriate algebra or geometric terminology/symbols in his/her explanation.</li> <li>✓ The student has designed a geometric figure and accurately converted the exponential data into a t-table or chart.</li> <li>✓ The student can describe the geometric pattern and connect the data to an algebraic pattern (i.e. doubling), but cannot correspond that with a knowledge of exponents.</li> </ul>
<b>Expert</b>	<ul style="list-style-type: none"> <li>✓ The student understands that they are dividing each geometrical section into two parts and can accurately calculate both the <math>10^{\text{th}}</math> and <math>20^{\text{th}}</math> terms.</li> <li>✓ The student can identify and explain the exponential pattern and can create an equation to describe the exponential pattern. (i.e. <math>2^n</math>, where <math>n</math> = each division)</li> </ul>	<ul style="list-style-type: none"> <li>✓ The student can track all of the pieces of the task to identify both the <math>10^{\text{th}}</math> and <math>20^{\text{th}}</math> terms in the pattern.</li> <li>✓ Sample Strategies: Student draws a series of shapes to track his/her progression of the divisions, correlates this data with a chart/t-table and can extend the task to create an algebraic formula to explain the geometric pattern.</li> </ul>	<ul style="list-style-type: none"> <li>✓ The student has designed a geometric figure and converted the exponential data into a t-table or chart. The student can describe the geometric pattern and connect the data to an algebraic formula.</li> <li>✓ The student has extended the task by providing a formula and a detailed explanation of the exponential pattern that has formed.</li> </ul>