Gold Seal Lesson

Author(s):			*Lesson Title:*			
Judith P. Wood			*Quilt Design*			
Grade Span			***ICLE Application Model***			
K-4	***5-8***	***9-12***	***A***	***B***	***C***	***D***
X						***X***

Instructional Focus:

Tools and Technology
Students use appropriate tools and technologies to model, measure, and apply the results in a problem-solving situation. Students communicate the reasoning used in solving these problems.

Measurement
Students use a variety of tools and techniques of measurement in a problem-solving situation. Students communicate the reasoning used in solving these problems.

Algebraic Concepts and Relationships
Students use algebraic methods to investigate, model, and interpret patterns and functions involving numbers, shapes, data, and graphs in a problem-solving situation. Students evaluate and communicate the reasoning used in solving these problems.

Geometry
Students apply geometric concepts, properties, and relationships in a problem-solving situation. Students communicate the reasoning used in solving these problems.

Problem-Solving and Mathematical Reasoning
Students apply a variety of problem-solving strategies to investigate and solve problems from across the curriculum as well as from practical applications.

Performance Task

In this task, students will utilize transformational geometry, measurement, and area when designing a quilt.

Students will use geometric shapes to make a geometric pattern. Rectangles, squares, and triangles will be the most frequently used shapes. Four different colors will be used. The teacher will determine the colors and shapes used, as well as the size of the final product.

Students should either work in pairs or in groups of 3. Each pair or group of students is given a piece of white construction paper, which they will use to design their quilt. The construction paper should be the shape and size of the square to be used in the final product. This is decided upon by the teacher (e.g. a 10”X10” square). They are also told which four shapes to use, the dimensions of those shapes, and the colors to use. Each group will design a quilt pattern using the requirements given to them by their teacher, and then draw and color their pattern on the construction paper. They must make sure that the final design is mathematically correct and is aesthetically appealing.

One of the designs made by the various groups will be used to make the quilt. When each group has accomplished its task, the class will vote and choose the design that will be used. It should be the design that receives the most votes. A quilt will be made using this pattern.

You may want to raffle off for the quilt and give the proceeds to a charity, or you may want to give the quilt to a local nursing home or to the children’s ward in a local hospital.

ICLE Essential Skills

Compute the perimeter and area of two-dimensional figures. (m13)
Understand the properties and classification of polygons (e.g., triangle, quadrilaterals, pentagon, hexagon, etc.) as well as knowledge of geometric shapes. (m26)
Understand the properties and classification of quadrilaterals by orientation (e.g., parallelogram, rectangle, rhombus, square, and trapezoid). (m27)
Understand and use various techniques for estimating, making and converting measure; and using these to perform dimensional analysis. (m33)
Apply transformation concepts to understand and create congruent and similar figures. (m49)
Understand the concepts of symmetry and transformations and graphically apply line reflections, rotation, translations, and dilation. (m55)

Scoring Guide:

Final Pattern

4 Points = The design satisfies all components of the job. It is complete and logical. It is neat and shows an understanding of reflection, rotation, transformation and symmetry. The final product is attractive and shows a clear understanding of the task.

3 Points = The design satisfies most of the components of the job. It is complete, but the design could be more organized. The design pattern uses most of the shapes and colors. It is neat and shows an understanding of reflection, rotation, transformation and symmetry. The final product is attractive and shows some understanding of the task.

2 Points = The design is missing a major component of the job. It is incomplete and the design is not organized. The design pattern uses some, but not all, of the shapes and colors. It is relatively neat but shows some lack of understanding of reflection, rotation, transformation and symmetry. The final product is legible but needs more attention. It shows a lack of understanding of the task.

1 Point = The design satisfies few, if any, components of the task. There is no discernable pattern and the design is illogical. Few shapes and colors have been used. It is not neat, and there is no understanding shown for neither the job nor the concepts taught.

Keywords

English Language Arts	Mathematics	Science
Reading	**Algebra** **Math in daily life** **Patterns** **Problem Solving**	**Earth Science**
Writing	**Geometry** **Area** **Geometric shapes** **Geometry in daily life** **Quadrilaterals** **Rectangles** **Polygons** **Symmetry** **Triangles** **Transformations** **Two-Dimensional Objects**	**Life Science**
Communications	**Statistics**	**Chemistry**
Literature	**Calculus**	**Physics**
Other	**Trigonometry**	**Other**
	Other	