

## Decimal Fractions and Star Quilts

Subject: Mathematics  
Strand: Number

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Grade: 4

Content (topic)	
Comparing decimal numbers and fractions	
Outcomes	Indicators
<p><b>N 4.7:</b> Demonstrate an understanding of decimal numbers in tenths and hundredths (pictorially, orally, in writing, and symbolically) by:</p> <ul style="list-style-type: none"><li>• Describing</li><li>• Representing</li><li>• Relating to fractions</li></ul>	<p><b>N 4.7a:</b> Write the decimal for a concrete or pictorial representation of part of a set, part of a region, or part of a unit of measure.</p> <p><b>N 4.7b:</b> Represent a decimal concretely or pictorially.</p> <p><b>N 4.7h:</b> Read and write decimals as fractions (e.g., 0.5 is zero and five tenths).</p> <p><b>N 4.7i:</b> Express orally and in symbolic form a decimal in fractional form.</p> <p><b>N 4.7j:</b> Express orally and in symbolic form a fraction with a denominator of 10 or 100 as a decimal.</p> <p><b>N 4.7k:</b> Express a pictorial or concrete representation as a fraction or decimal (e.g., 15 shaded squares on a hundred grid can be expressed as 0.15 or 15/100)</p> <p><b>N 4.7l:</b> Express orally and in symbolic form the decimal equivalent for a fraction (E.g., 50/100 can be expressed as 0.50).</p>
Mathematical Processes	
<ul style="list-style-type: none"><li>• Communication</li><li>• Connections</li><li>• Visualization</li></ul>	
Lesson Preparation	
Equipment/materials:	
<ul style="list-style-type: none"><li>• A picture of a whole star quilt</li><li>• A cutout small diamond template for each student</li></ul>	

- 8 large cut out diamond templates
- Rulers
- Scissors
- Glue
- Colored pencils
- Cardboard which can be easily cut- cereal boxes work well.

#### Advanced Preparation:

- Create one cardboard template of the large diamond- cereal boxes work well.
- Create one cardboard template of the small diamonds for each student

#### Presentation

##### Set

- Tell the students that the star is meaningful to Lakota people, as stars are seen in the Lakota culture as a traditional symbol and central to many celebrations and ceremonies. The star quilt is known and respected as a powerful symbol, binding the community together and strengthening ties between generations.
- Using the [PowerPoint](#), show the students the picture of the star quilt and ask students to count how many colors they can see within the design.
- Notice the symmetry in the design and how the design is repeated on each of the eight points of the star.
- If possible, show students a variety of star quilts.

#### Development

- Tell the students that they are going to create a star quilt on paper.
- Divide the class into eight small groups and hand out supplies to each group: one template of a large diamond and one smaller diamond for each student.
- Ask the students in each group to use the small templates to trace diamonds on white paper until each group has 25 small diamonds.
- Have each of the groups create a design for a star quilt by coloring some of the small diamonds and placing them on the large diamond. When each of the groups has created a design, decide which will be used for the class star quilt. This can be done through vote or draw.
- Once a design is chosen, have each of the 8 groups cut out 25 more small diamonds and duplicate the chosen design. Have each group glue 25 small diamonds onto their large diamond and form 8 large diamonds into a star quilt.
- Cover up or remove half the star quilt and observe that the half remaining is composed of 100 small diamonds. Write each color used in the star quilt on the board and ask the students to discover the fraction of each color both as a fraction and a decimal.
- Use the half star quilt to explore fractions and decimals both orally and in written form.

