Exemplar Lesson Plan

“Shapes, Patterns, and Math—Oh My!”

3.OA.9
3.G.1
3.G.2
Carey M. Wright, Ed.D., State Superintendent of Education

**Office of the Chief Academic Officer**
Kim S. Benton, Ed.D., Chief Academic Officer

**Office of Professional Development**
Trecina Green, Executive Director
Carol Ladner, Professional Development Coordinator
Elizabeth Fulmer, Professional Development Coordinator

**Office of Secondary Education**
Jean Massey, Executive Director
Marla Davis, Ph.D., NBCT, Bureau Director

**Office of Elementary Education and Reading**
Nathan Oakley, Executive Director
## Title: *Shapes, Patterns, and Math—Oh My!*

**Estimated Duration:** 3 days

### Real World Purpose:

- **Why do I need to learn about patterns?** Patterns are used from child’s play to career choices. As a young student, you use patterns in games (tic-tac-toe or checkers), music, and in your mathematical thinking. As an adult, you will use patterns in careers such as a doctor, an attorney, a construction worker, a designer, and others. Patterns help us see mathematical relationships to understand algebra and lay a foundation for problem-solving skills.

- **Why do I need to learn about shapes?** When a student learns the names and attributes of shapes, his verbal communication is enhanced that leads to abstract vocabulary. Pre-math and logic skills are developed when a child learns to fill a suitcase or builds a tower with blocks. A whole new perspective on a child’s world is opened.

### I Can:

- **3.OA.9:** Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.*

- **3.G.1:** Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

- **3.G.2:** Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as ¼ of the area of the shape.*
**Mississippi College- and Career-Readiness Standards**
Mathematics
Exemplar Lesson Plan

**Prerequisite Skills:**
- Determine whether a number is even or odd. (2.OA.3)
- Arithmetic patterns are patterns that change by the same rate, such as adding the same number. (2.NBT.2)
- Use an addition table, multiplication table, and hundreds chart. (2.NBT.7)
- The properties of operations can be used to identify arithmetic patterns. (2.NBT.9)
- A whole shape can be divided into equal parts. The equal parts may not be the same shape. (2.G.3)
- Divide shapes (circles and rectangles) into 2, 3, or 4 equal parts and use the terms halves, thirds, or fourths to describe the parts. (2.G.3)

**Materials/Resources:**
- Pattern blocks
- Song to play to class, “Mary Had a Little Lamb”
- Picture, Fish Making Ripples
- [www.georgiastandards.org](http://www.georgiastandards.org)
- I Have, Who Has? cards
- [www.illuminations.nctm.org](http://www.illuminations.nctm.org)
- **Checking for Understanding** by D. Fisher and N. Frey (2007)
- **Attachments:** (Total 11)
  - Hundreds chart
  - Addition table
  - Multiplication table
  - Highlighters/markers
  - 8 packs of crayons
  - [www.edison.k12.nj.us](http://www.edison.k12.nj.us)
  - Geoboards
  - Fraction strips
  - Fraction circles

**Key Vocabulary:** (* = words defined in the MS CCR Mathematics Glossary)
- Shapes
- Attributes
- Triangle
- Square
- Rectangle
- Rhombus
- Trapezoid
- Quadrilateral
- Polygons
- Circle
- Arithmetic patterns
- Properties of operations*
- Numerator
- Denominator
- Unit fractions
- Area

---

**Lesson Introduction**

**Student Exploration Activity:**

**Step 1:** The teacher will distribute one set of pattern blocks (9 triangles, 4 squares, 2 different rhombuses with 3 each, 3 trapezoids, and 2 hexagons) along with a rectangle and a circle to students allowing them to work in groups.
Step 2: The teacher will pre-assess students’ retention of previous knowledge asking them to identify and describe shapes (K.G.2), compose 2-D shapes to create a composite shape (1.G.2), and partition circles and rectangles into halves, thirds, and fourths (2.G.3). Students will be asked to place the pattern blocks into categories, name the category (see Step 3), and explain their reasoning (MP.3). Note: Students may use informal language to describe their categories at this point. The teacher will introduce the formal language in step 3.

Step 3: The polygon category may be introduced as a category for all shapes except circles. The teacher will guide students through questioning to find the quadrilateral category and others. Once the categories are made [quadrilaterals (squares, rhombuses, rectangle, trapezoids); triangle; hexagon; and circle], the teacher will ask the students to use smaller pattern blocks (that have the same area) to create a larger one naming the individual parts of the whole [such as one part of a hexagon (a triangle) is a sixth of the whole].
The teacher will assist and encourage students to use correct vocabulary words as they work. (MP.6) *This unit intends to connect reasoning with shapes and their attributes with arithmetic patterns.

## Lesson Activities

**Day 1** *(3.G.1 and 3.G.2)*

1. The teacher will introduce the vocabulary word, *unit fraction*, to the class. She will use the terms “numerator” and “denominator” in the introduction and point out the fraction bar.

2. The teacher will bring the class back to the hexagon with six triangles and will ask the class what part of the hexagon is one triangle—a sixth. We can now represent this sixth as a fraction—1/6. This is called a unit fraction because 1 is the numerator.

3. The teacher will ask the question, “Can someone tell me what unit fraction would represent one of the triangles in the trapezoid?” (1/3) “What fraction would represent two of the triangles in the trapezoid?” (2/3) (MP.2, MP.5, and MP.7)

4. The teacher will ask the students to trace the circle onto their paper and ask them to shade in an eighth or 1/8 of the circle. (The teacher will check for comprehension and correct any misconceptions.) (MP.2, MP.5, and MP.7) Other examples may include non-unit fractions such as 3/6. The teacher may use the *Pattern Block Relationships* (Attachment # 2) for intervention.

5. The teacher will have students complete the activity—*I Have, Who Has?* “Print out and cut apart the pages of *I Have, Who Has?* game cards (Attachment #1). Randomly distribute all 24 cards. Some students may have more than 1 card. If there are not enough cards, place students in pairs so that at least all partners get 1 card. Begin with the card that says “First Card”. Students will read the card aloud. Each player must pay attention to his/her card to know when it is his/her turn. Continue to play until the last card is read.” Fraction strip and fraction circle manipulatives may be used to connect the procedural skill of reading or writing a fraction with its conceptual model. (An alternative to whole class use of this activity is for the teacher to place students in groups of 4 with 6 cards each. This will allow for increased verbal and visual interaction with the mathematical practices.)
6. The teacher will revisit the student exploration activity with the category of quadrilaterals. She will distribute the Frayer Model (Attachment #3) to the students and ask them to individually use the model to define and describe all quadrilaterals—square, rectangle, rhombus, trapezoid—and the term quadrilateral. Students need only one model. They should be able to construct the number of Frayer models they need to complete this activity. The teacher will also instruct students to include all shapes discussed today. (The teacher may refer to the Quadrilateral Reference Sheet, Attachment #4.)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Words Identified</td>
<td>Identified more than 5 words.</td>
<td>Identified 3 or 4 words.</td>
<td>Identified less than 3 words.</td>
</tr>
<tr>
<td>Definitions</td>
<td>Definitions were detailed and accurately matched the meaning of the word.</td>
<td>Definitions accurately matched the meaning of the word.</td>
<td>Most definitions accurately matched the meaning of the word.</td>
</tr>
<tr>
<td>Facts and Characteristics</td>
<td>Facts and Characteristics were detailed and accurately matched the meaning of the word.</td>
<td>Facts and Characteristics accurately matched the meaning of the word.</td>
<td>Most facts and characteristics accurately matched the meaning of the word.</td>
</tr>
<tr>
<td>Example and Non-examples</td>
<td>Example and Non-examples were detailed and accurately matched the meaning of the word.</td>
<td>Example and Non-examples accurately matched the meaning of the word.</td>
<td>Most accurately matched the meaning of the word.</td>
</tr>
<tr>
<td>Appearance</td>
<td>Responses were neatly written and easy to read.</td>
<td>Responses were fairly neatly written and readable.</td>
<td>Responses were not neatly written and difficult to read.</td>
</tr>
</tbody>
</table>

Source: [www.georgiastandards.org](http://www.georgiastandards.org)
Day 2

1. The teacher will use pattern blocks to help us identify and describe geometric shapes. They also helped us to learn about unit fractions. (Review unit fractions.) Today, I want you to use the pattern blocks to create a pattern.

2. Have students (in groups) use 20 pattern blocks with two different colors and shapes and create a pattern of their choice.
Allow groups to share their patterns with the class. The teacher will make use of essential questions as they relate to the patterns during class discussion with the groups such as, “Why do I need to know how to distinguish attributes of a shape?”; “What are the attributes of the pattern blocks in your model?”; “How can you describe various patterns?”; “Do you see a property of addition or multiplication displayed in your model?”, “Is there a way I could break up the pattern model into two, three, or four equal parts?”, etc. Fractions are extended here into a set of objects representing one instead of one object being one whole. For example, in the first picture one triangle is 1/6 of a hexagon. In the second picture, one set of pattern blocks contains 12 squares and 8 triangles. The fraction of squares to the total number of pattern blocks is 12/20, and the fraction of triangles to the total number of pattern blocks is 8/20.

![Image of pattern blocks](image1.png)

(The teacher will ensure students are aware of mathematical practices 7 and 8—look for and make use of structure and look for and express regularity in repeated reasoning as they discuss these patterns. The teacher can do this by listening for student responses as they make their patterns and describe their patterns to each other.)

3. The teacher will distribute addition tables (Attachment #5) to the students allowing them ample opportunities to observe and identify any numerical patterns they see. The teacher will ask students probing questions that allow them to see that: (1) even numbers can always be decomposed into two equal addends, (2) on an addition table, the sums in each row and column increase by the same amount, (3) the sum of two even numbers is even, (4) the sum of two odd numbers is even, (5) the sum of an even number and an odd number is odd, (5) doubles in an addition table fall on a diagonal to name a few. The teacher will ask students to relate these numerical patterns to the properties of operations (1.OA.3 and 2.NBT.6). Students will explain why these patterns make sense mathematically. Students may work in pairs or groups. (See closure for culmination of this activity.)
Day 3

1. The teacher will review patterns by playing an instrumental song such as “Mary Had a Little Lamb”, “Frere Jacques” (Are You Sleeping?) in French, or “London Bridge is Falling Down” and ask students if they hear a pattern in the song. The teacher will allow students to verbalize what they hear. The teacher will relate the pattern in the song to the mathematical concept. The pattern in “Mary Had a Little Lamb” could be in “little lamb, little lamb” with $a, a, b$ pattern or square, square, triangle. The teacher will tell the students that the simple aspect of counting is found in doing math (lining up manipulatives) and in making music (keeping a beat or pattern). As students understand musical notes, they also have the concept of fractions reinforced when the music teacher introduces the picture of the notes along with their terminology. (The teacher will revisit MP.7 and MP.8 as students are asked to listen to a song and relate the pattern or beat in the song to the patterns they have used in class.)

2. The teacher will pass out Fish Making Ripples (Attachment #6) or display the attachment at the front of the class for the entire class to see. She will ask students to explain the relationship of the fish to the ripples in the water. (a circular pattern) (The teacher will revisit MP.7 and MP.8 by referring to the patterns made earlier with the pattern blocks and how the ripples or waves in the water caused by the movement of the fish create a pattern.)

3. The teacher will ask students to examine the multiplication table (Attachment #7) and ask the question, “What pattern do you notice when 2, 4, 6, 8, or 10 are multiplied by any number (even or odd)?

4. The student should answer that the product will always be an even number.

5. The teacher will ask, “Why?” (Accept all plausible answers.)
6. As students examine the multiplication table, they may discover the following concepts: (1) even numbers are always divisible by two, (2) multiples of even numbers are always even numbers and can be decomposed into two equal groups, (3) on a multiplication table, the products in each row and column increase by the same amount (skip counting), (4) the multiples of any number in a multiplication table fall on horizontal and vertical lines due to the commutative property, (5) all the multiples of 5 end in 0 or 5 and multiples of 10 end in 0 and every other multiple of 5 is a multiple of 10 to name a few.

7. The teacher will distribute the hundreds charts (Attachment #8) to the class and allow ample time for students to work in groups or pairs to discover and explain mathematically all the patterns they find (including any of the ones mentioned above in number 6). Each student will need several charts (one for each pattern found), highlighters, or markers to show their work. Allow students time to share their work with the class. (Note: Intervention, Bullet #2 has a variation to this activity.)

**Lesson Closure**

1. **Think-Pair-Share:** The teacher closes the lesson by posing these two essential questions to the class: (1) How are quadrilaterals alike? What are some differences between quadrilaterals? She will ask them to think about the questions for 30 seconds and then pair with another student and share their thoughts with each other.

2. **Whip Around:** Have all students stand. The teacher randomly calls on a student to describe one numerical pattern he/she found on the addition table. Students check off patterns shared. Once all patterns have been shared by individuals or a group, have the students return to their seats.

**Essential Questions:**

- Why do I need to know how to distinguish attributes of a shape?
- What is a two-dimensional shape?
- What is a quadrilateral?
- How are quadrilaterals alike?
- What are some differences between quadrilaterals?
- How can I break shapes into different areas?
- What is a unit fraction?
- How can you describe various patterns?
- What are addition or multiplication patterns?
- What are the properties of addition and multiplication?
- What are ways that I can multiply?
3. **Gallery Walk:** Prepare one chart for each pair/group of students and write the following question on it—“Thinking about what you have learned today, describe how the commutative property of multiplication can help you memorize multiplication facts?” Have pairs/groups write their responses on the chart. Post all charts on the wall and have students participate in a Gallery Walk to review all responses.

- What are the multiples of ten?
- How can multiplication products be displayed on a hundreds chart?
- What is area?

Essential Questions adapted from: [www.georgiastandards.org](http://www.georgiastandards.org)

### Standards for Mathematical Practice

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

### Supplemental Activities

#### Intervention

- Struggling students should consult math journals, notes, or textbooks to help them complete the Frayer Model task on Day 1. Several copies of the Frayer model may be provided for a struggling learner to enable them to focus solely on their responses and not the creation of the graphic organizer.

#### Enrichment

- Allow for creativity including making models of the vocabulary words and using other “shape” words they know that were not mentioned today when completing the Day 1 task using the Frayer Model.

- Students may create the patterns on Day 3 on the same sheet (Hundreds Chart) to see the relationship between
• More precise directions may be given to the struggling learner when completing the hundreds charts on Day 3 such as “You will be skip-counting by 2, 3, 4, 5, 6, 7, 8, 9, and 10.” “As you count by 2s, what patterns do you notice?” “Explain.” “As you count by 3s, what patterns do you notice?” “Explain.”

pattern skips. Using an 8 count pack of crayons, the students could shade all skips of 2 green, skips of 3 red, skips of 4 yellow, etc. Students may shade some numbers multiple colors because some numbers may belong to more than one “multiple”. The teacher can ask, “How is it possible one number can be shaded with more than one color?” “How is this connected to multiplication?”

• Quadrilateral Riddle: Choose two quadrilaterals that are similar that has at least one difference. The first three lines of the riddle refer to one quadrilateral and its attributes. The last two lines of the riddle refer to the second quadrilateral and its attribute(s) which make it different from the first quadrilateral. Use specific math vocabulary to describe the attributes (Attachment #9).

If I were a(n) _____________________________

I would have ___________________________.

I would have ___________________________, but I would not have ______________________ because that would be a(n) ____________________.
### Great Uncle John’s Will

Great Uncle John has a parcel of land that measures 6 miles by 4 miles. In his will, he left the land to be divided equally among his (2, 3, 4, 6, or 8*) nieces and nephews. However, he forgot to partition the land. Please help his nieces and nephews determine which parcel of land is theirs. Be sure to give everyone an equal amount of land.

**Answer the following questions:**

1. **How much land did Great Uncle John leave in his will?**

   - 6 miles long by 4 miles wide = 24 square miles of land
   - 3 points total (student answered 24—receives 1 point; student answered 24 squares—receives 2 points; student answered 24 square miles—receives 3 points)

2. **What does each person’s share look like in terms of a geometric shape, how would it be represented as a unit fraction, and how much is each share?**

   - The shares could be rectangles, irregular hexagons, or any other shape that correctly divides the land into equal shares. Each person’s share written as a unit fraction with 2 people (1/2) and 12 sq. mi., 3 people (1/3) and 8 sq. mi., 4 people (1/4) and 6 sq. mi., 6 people (1/6) and 4 sq. mi., and 8 people (1/8) and 3 sq. mi. Accept all correct explanations or drawings.
   - (Each person’s share—2, 3, 4, 6, 8—are worth 3 points each for a total of 15 points for this question. Give students 1 point for each correct response given.)

3. **How do you know that each share is equal?**

   - I know the shares are equal because each partition will have the same square miles, and I used the blueprint to make sure.
   - [3 points total—no correct reason but tried (1 point), reason accurate but no details (2 points), and reason accurate with details (3 points)]

4. **How did you determine the amount of land each niece and nephew will get?**

   - Accept all plausible answers such as “I used patterns I learned from the multiplication table”;
   - “I used trial and error”; “I used
(See Attachment #10 to use as a working copy for today, and Attachment #11 is a blank copy you may use later at your school.)

multiplication facts for the product of 24 which was the amount of square miles of land and found the factors that went with 2, 3, 4, 6, and 8”. [3 points total—reasoning not correct (1 point), accurate reasoning no details (2 points), and accurate reasoning with details (3 points)]

5. If students did not see the multiplication table relationship, after trial and error they should be able to come to the conclusion that they could have used patterns in the table by looking for 24 and find the factors with 2, 3, 4, 6, and 8 as one of the factors. For example, 2 and 12 are both factors of 24; 3 and 8 are both factors of 24; 4 and 6 are both factors of 24. Using the commutative property, since 3 and 8 are factors of 24 then 8 and 3 are factors of 24. Therefore, since 4 and 6 are factors of 24 then 6 and 4 are factors of 24. [3 points total—does not see a pattern (1 point), accurately describes a pattern (2 points), and accurately describes a pattern with details (3 points)]
**I Have, Who Has? Activity**

<table>
<thead>
<tr>
<th>First Card: I have ( \frac{3}{4} )</th>
<th>Who has ( \frac{4}{6} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who has ( \frac{4}{6} ) ?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>I have ( \frac{7}{8} )</th>
<th>Who has ( \frac{2}{3} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who has ( \frac{2}{3} ) ?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>I have ( \frac{2}{8} )</th>
<th>Who has ( \frac{3}{8} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who has ( \frac{3}{8} ) ?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>I have ( \frac{6}{6} )</th>
<th>Who has ( \frac{1}{6} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who has ( \frac{1}{6} ) ?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>I have ( \frac{5}{8} )</th>
<th>Who has ( \frac{2}{6} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who has ( \frac{2}{6} ) ?</td>
<td></td>
</tr>
</tbody>
</table>
I Have, Who Has? Activity

1. I have \( \frac{4}{4} \) Who has \( \frac{1}{1} \)?

2. I have \( \frac{1}{3} \) Who has \( \frac{5}{6} \)?

3. I have \( \frac{6}{8} \) Who has \( \frac{1}{8} \)?

4. I have \( \frac{2}{2} \) Who has \( \frac{1}{4} \)?

5. I have \( \frac{8}{8} \) Who has \( \frac{3}{3} \)?
### I Have, Who Has? Activity

<table>
<thead>
<tr>
<th>I have</th>
<th>Who has</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\frac{4}{8}$</td>
<td>$\frac{3}{6}$</td>
</tr>
<tr>
<td>$\frac{2}{4}$</td>
<td>$\frac{1}{2}$</td>
</tr>
</tbody>
</table>

This is the last card.
Pattern Block Relationships

NAME __________________________ Date ______________________

How many triangles \( \bigtriangleup \) are in one rhombus \( \Box \)? ______

What would be the fraction of 1 triangle in the rhombus? ______

How many triangles \( \bigtriangleup \) are in one trapezoid \( \Box \)? ______

What would be the fraction of 2 triangles in the trapezoid? ______

How many triangles \( \bigtriangleup \) are in one hexagon \( \bigcirc \)? ______

What would be the fraction of 4 triangles in the hexagon? ______

How many rhombuses \( \Box \) are in one hexagon \( \bigcirc \)? ______

What would be the fraction of 3 rhombi in the hexagon? ______

How many trapezoids \( \Box \) are in one hexagon \( \bigcirc \)? ______

What would be the fraction of 1 trapezoid in the hexagon? ______
The Frayer Model

- Definition
- Facts and Characteristics
- Examples
- Non-Examples
Quadrilateral Reference Sheet

For Teacher Use Only

## Addition Table

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>17</td>
<td>18</td>
</tr>
<tr>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>17</td>
<td>18</td>
<td>19</td>
</tr>
<tr>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>17</td>
<td>18</td>
<td>19</td>
<td>20</td>
</tr>
</tbody>
</table>

Source: [www.math-aids.com](http://www.math-aids.com)
Fish Making Ripples

Source: www.mathrise.com
Multiplication Table

Source: www.webanswers.com
## Hundreds Chart

![Hundreds Chart]

Source: [www.brighttubeeducation.com](http://www.brighttubeeducation.com)
The Quadrilateral Riddle

Choose two quadrilaterals that are similar that has at least one difference. The first three lines of the riddle refer to one quadrilateral and its attributes. The last two lines of the riddle refer to the second quadrilateral and its attribute(s) which make it different from the first quadrilateral. Use specific math vocabulary to describe the attributes.

If I were a(n) _____________________________
I would have _____________________________.
I would have _____________________________,
but I would not have _______________________
because that would be a(n)___________________.

Source: www.georgiastandards.org
Great Uncle John’s Will

Great Uncle John has a parcel of land that measures 6 miles by 4 miles. In his will, he left the land to be divided equally among his \(2, 3, 4, 6, \text{ or } 8\) nieces and nephews. (You will work this problem five times using each of the numbers in the parentheses on problem #2.) However, he forgot to partition the land. Please help his nieces and nephews determine which parcel of land is theirs. Be sure to give everyone an equal amount of land. Answer the following questions:

1. How much land did Great Uncle John leave in his will?

2. What does each person’s share look like as a geometric shape, how would it be represented as a unit fraction, and how much is each share? (Complete all five amounts of nieces and nephews 2, 3, 4, 6, or 8.)

3. How do you know that each share is equal?

4. How did you determine the amount of land each niece or nephew will get?

5. Do you notice any patterns in the shares, if so, describe them?

Use the blueprint below, a geoboard, or any other appropriate tool to help you.
Great Uncle John’s Will
Great Uncle John’s Will (Copy)

Great Uncle John has a parcel of land that measures 6 miles by 4 miles. In his will, he left the land to be divided equally among his (2, 3, 4, 6, or 8) nieces and nephews. (You will work this problem five times using each of the numbers in the parentheses on problem #2.) However, he forgot to partition the land. Please help his nieces and nephews determine which parcel of land is theirs. Be sure to give everyone an equal amount of land. Answer the following questions:

1. How much land did Great Uncle John leave in his will?

2. What does each person’s share look like as a geometric shape, how would it be represented as a unit fraction, and how much is each share? (Complete all five amounts of nieces and nephews 2, 3, 4, 6, or 8.)

3. How do you know that each share is equal?

4. How did you determine the amount of land each niece or nephew will get?

5. Do you notice any patterns in the shares, if so, describe them?

Use the blueprint below, a geoboard, or any other appropriate tool to help you.