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| **GRADE: 3** | | |
| **Unit Title: Patterns**  **Lesson Title:** Can You Identify the Shapes?  **Estimated Duration:**  1 day | | **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:***  **Standard(s):** • 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.  **Standard (s)** • 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. | | |
| **Performance Objective: (Evidence of Learning)**  The students will:  Name five polygons that are quadrilaterals and know the attributes of each and classify quadrilaterals as parallelograms or not parallelograms with  70% accuracy. | | |
| **Prerequisite Skills:**   * Students should already know what polygons are. * They should have experience with the vocabulary necessary to discuss attributes such as: angles, sides, quadrilateral, and parallel. * Identifying a quadrilateral is introduced in the second grade standards. | | |
| **Materials/Resources:**   * **Pencil** * **Paper** * **White Board** | | **Key Vocabulary:**   * Attributes * Triangle * Square * Rectangle * Rhombus * Trapezoid * Quadrilateral * Circle * Polygons |
| **Elements of Rigor:**   * **Conceptual understanding of key concepts** * **Procedural skill and fluency** * **Rigorous application of mathematics in real-world contexts** | | |
| **Lesson Introduction** | | |
| **How will you introduce the lesson?**  1. The teacher may pose questions which students are likely to know the answer to, such as, "What does it mean to double something?" (x2) "What does it mean to triple something?" (x3) Then ask, "What does it mean to quadruple something?" Students will likely guess to multiply by 4, or the teacher can lead them to the answer by suggesting they look at the pattern. Then write quad on the board and ask students to predict what that prefix means based on the word quadruple. Students will likely say something to do with 4. Then say and write the word quadrilateral and explain that it is a type of polygon. Ask: How many sides do you think it has? Students may also have ridden 4-wheelers called Quads or may be familiar with the word quadruplet.  2. Formative Assessment: Read the definition of a quadrilateral. At their desks (substitute math notebooks or student whiteboards where needed), have students draw three examples of quadrilaterals. The teacher will observe the responses. If the class is mostly able to draw three, challenge them to draw all five. Students will likely draw a square and rectangle, but may not know a third example. On the chart, write the names of any correct polygons that students drew. Ask, "How are these the same? How are they different?"  3. Display page two of the chart. Have students come up and circle the quadrilaterals. (There are 5 on the page. Two are trapezoids; none are rhombuses.)  4. Go to page 3 of the flipchart. Tell the name of each quadrilateral and write it underneath. (1. square 2. rectangle 3. rhombus 4. parallelogram 5. trapezoid.) Explain to students that although they have their own names, they all belong to groups. The first group is Polygons. The second group is Quadrilaterals. Explain that there is a third group that some of them also belong to called Parallelograms. A student might then say that parallelogram is the name of one of the polygons. If no one does, then point that out on the slide. Give the definition of a parallelogram: A quadrilateral with both sets of opposite sides parallel.  5. Show page four of the flipchart. Tell students that they are going to look at each quadrilateral and use its attributes to classify it as a parallelogram or not.  6. Go to pages 5-9 of the flipchart. Write what students can tell you about each polygon. They should list as many attributes as possible. If students are not able to supply the needed information, then the teacher should add it. | | |
| **Lesson Activities** | | |
| Day 1 (3.G.1 and 3.G.2)   1. The teacher instructs the students to draw a quadrilateral (or a polygon with four sides) that is not a rhombus, rectangle, or square. 2. If the student struggles, ask the student to describe each of the three figures. Then remind the student that the task is to draw a quadrilateral that is not a rhombus, rectangle, or square.      1. If the student is successful, the teacher asks the student to explain, why the figure is:      1. NOT a rhombus    2. NOT a rectangle    3. NOT a square 2. Can you draw any type of quadrilateral for me? Did you draw a rhombus? A square? A rectangle? How can you tell? 3. Do all four sided shapes have equal sides? Or right angles (square corners)? 4. I am going to draw two sides of a quadrilateral for you (draw two adjacent sides of different lengths that do not form a right angle). Can you finish this figure to form a quadrilateral? Is this quadrilateral a rhombus, rectangle, or square? Why not? | | |
| **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:**   * Define a quadrilateral. * Provide examples of polygons that are quadrilaterals. * Provide examples of polygons that are not quadrilaterals. * List attributes of five different quadrilaterals (Parallelogram, Rectangle, Rhombus, Square and Trapezoid) * Identify which quadrilaterals are parallelograms and which are not and why. |
| **Standards for Mathematical Practice** (select all that apply) | | |
| * 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.   * + 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.     2. More precise directions or questions may be given to the struggling learner such as, Since quadrilaterals have four sides, what shapes do you know of that have four sides?     3. If the student is still unsuccessful, begin the drawing for the student by drawing one side. Ask the student to draw another side that connects to the side that you drew. If the two sides form a right angle, ask the student to redraw the second side so that the angle is not right. | | **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 task using the Frayer Model.  *Quadrilateral Riddle:* Choose two quadrilaterals that are similar but that have 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) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. |
| **Performance Based Assessment Task** | | |
| **Math Task**  1. Tell students that they are going to create an organizer for their quadrilaterals.  2. Pass out a light colored 9x12 piece of construction paper. Have students follow the steps with you to create the organizer. (Students can create these easily, but the cutting and folding can also be done ahead of time, if needed.   1. Hold the paper vertically and fold both sides in to meet in the middle of the paper. Crease both folds. 2. About 4 inches down the side of the paper, draw a straight horizontal line across. 3. About 4 more inches down, draw another straight horizontal line. 4. Students lift the flaps and cut on the lines only. 5. Students will have six flaps when finished. 6. Label the first five flaps, one for each quadrilateral. 7. On the sixth flap, put a question mark.   3. Inside of each flap, instruct students to draw the quadrilateral and list its attributes. Classify it as a parallelogram or not. Under the sixth flap, students will draw a T chart and sort the quadrilaterals as parallelograms or not parallelograms. | **Rubric/ Plausible Student Response(s)**  Student Name:     |  |  |  |  |  | | --- | --- | --- | --- | --- | | Category | 4 | 3 | 2 | 1 | | Content ­ Accuracy | All facts in the flipbook are accurate. | 99-90% of the facts in the fiip-book are accurate. | 89-80% of the facts in the flip-book are accurate. | Fewer than 80% of the facts in the fiipbook are accurate. | | Attractiveness & Organization | The flip-book has exceptionally attractive formatting and well-organized information. | The flip-book has attractive formatting and welI-organized information. | The fiip-book has welI-organized information. | The flip-book's formatting and organization of material are confusing to the reader. | | |