**Sensational Sticker Factory**

*Adapted from North Carolina Department of Public Instruction*

**Student Objective:** “I can use the dimensions of rectangles to determine their areas.”

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| **Common Core Standards to Measure** | **Mathematical Practices Addressed** |
| **3.MD.7** Relate area to the operations of multiplication and addition | #1 Make sense of problems and persevere in solving them.  #7 Look for and make use of structure.  #8 Look for and express regularity in repeated reasoning. |

**Materials:**

“Sticker Order” page (1 per student)

Centimeter grid paper (1 per student)

Stamp sheets (1 pair per student)

Interactive notebook (optional)

Colored pencils/crayons

Notebook paper

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| G  **Engage Students with the Goal** | State and Rate  Objective: “I can use the dimensions of rectangles to determine their areas.” Students rate themselves to the goal (1, 2, 3, 4). | Setting Objectives and Providing Feedback |
| A  **Access Prior**  **Knowledge** | Explain to students that stamps come in sheets like stickers. Show students the pictures of two sheets of stamps. Have them discuss how the sheets are alike and different with a partner.  *If using an Interactive Notebook, pass out stamp sheets below to students and have them glue them in their notebooks and write their observations down as they discuss them with a partner.*  Stamp Sheet 1  p305  Stamp Sheet 2  p305 | Nonlinguistic Representations  Cooperative Learning  Identifying Similarities and Differences |
| N  **New Information** | Discuss the stamp sheets with students, asking the following questions:  -What do you notice about the two sheets of stamps?  -Could you find the area that the stamps cover on each sheet? How?  -What are the dimensions? What is the area? Prove your answer.  -When comparing the area of the two sheets, which one covers the most area? How can you prove it?  *(If using an Interactive Notebook, have students take notes regarding the questions discussed.)*  *(The sticker factory scenario provides students with the opportunity to applying finding area to real world problems. Two types of problems are being introduced in this activity. Students are asked to find the dimensions given the area and area given the dimensions. Problem two makes students think more flexibly, because there are multiple solutions. Students should make connections between factors and dimensions, beginning to list the dimensions for a given area. )*  Pass out materials and introduce the problem scenario to students:  *You are the owners of the Sensational Sticker Factory. Your factory makes sticker sheets for customers according to what they need. You have two new sticker orders that need to be filled. Working in pairs, you will use grid paper to show how the orders will be filled.*  Tell students that they are to create the sticker pages on grid paper, according to the dimensions and/or area provided to demonstrate their understanding and show their thinking. Then, they will complete the tables and/or answer the questions on the order page. | Summarizing and Note-taking  Cooperative Learning  Questions, Cues, and Advance Organizers  Identifying Similarities and Differences |
| A  **Application** | Have students work through Questions 1 and 2 on the “Sticker Order” activity sheet with a partner. Each student should have their own copies of materials, so that both students are working through the problems on their own papers.  As students are working, make observations about their strategies. If students struggle, support them through questioning. Choose students to share during the discussion.  When students are finished with Questions 1 and 2, have students that were chosen share. Discuss each part of the “Sticker Order” activity sheet. Possible discussion questions are:  -How are Order 1 and Order 2 different?  -What do you notice about the relationship of the dimensions of the rectangles and the number of stickers in Order 1?  -What do you notice about the total number of stickers and the lengths of the sides of the rectangles in Order 2?  -Are there more possibilities for Order 2? How can we find them? *(This question leads into students work on Question 3.)*  Have students work on Question 3. They should use the grid paper to show each solution. As students finish, have them draw and label their solutions on the board. Discuss the multiple solutions and any that students did not find. Encourage students to relate the dimensions of the rectangles to the factors of the area.  *If Interactive Notebooks are being used, Question 4 will be answered in the next section to summarize/generalize the goal.* | Cooperative Learning  Nonlinguistic Representations  Identifying Similarities and Differences  Cues, Questions, and Advances Organizers  Homework and Practice  Generating and Testing Hypotheses  Providing Feedback |
| G  **Revisit the Goal** | Have students answer Question 4 in their Interactive Notebooks or on the page provided. Have students share their entry with other students.  State and Rate  Objective: “I can use the dimensions of rectangles to determine their areas.” Students rate themselves to the goal (1, 2, 3, 4). | Setting Objectives and Providing Feedback  Summarizing and Note-Taking |

**Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Sticker Orders**



Order Specifications:

* All sticker sheets must be rectangular.
* All dimensions must be in whole units.
* All stickers must be arranged in rows and columns with no spaces or overlaps.

1. **Order Number 1**

Stars Designs sent an order for the stickers it wants. How many stickers will fit on each sheet?

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| --- | --- | --- | --- |
| Item | Length | Width | Number of Stickers |
| Sticker Sheet A | 10 stickers | 4 stickers |  |
| Sticker Sheet B | 8 stickers | 3 stickers |  |
| Sticker Sheet C | 5 stickers | 4 stickers |  |

2. **Order Number 2**

The Flower Power Company sent an order for the number of stickers per sheet it wants to sell. What will be the length and width of each sticker sheet?

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| --- | --- | --- | --- |
| Item | Length | Width | Number of Stickers |
| Sticker Sheet A |  |  | 36 stickers |
| Sticker Sheet B |  |  | 12 stickers |
| Sticker Sheet C |  |  | 24 stickers |

3. The Flower Power Company wants your factory to design more than one sheet for their total number of stickers. Choose Sticker Sheet a, b, or c. Use the grid paper to show your plan for the sticker sheets.

4. Choose one Sticker Sheet from Order 1 and one Sticker Sheet from Order 2. In your Interactive Notebook (or on this page), show how you found the answers using words, numbers, and pictures.