Using Square Tiles to Find the Area of an Irregular Shape

Materials:

- Masking/painter's tape or paper

- Supply of square tiles for each group

1. Explain that the purpose of this activity is to determine the area of an irregular shape, but this time square tiles are the unit.
2. There is flexibility in how to approach this. Working in groups, children could be given a large sheet of paper and asked to draw an irregular shape or they could be given masking/painter's tape and asked to make an irregular shape on the floor.
3. Next, trade shapes among the groups.
4. First students are to estimate in writing ABOUT how many square tiles will be needed to cover their shape. Tell them that they may record their estimate as a range. (For example, between 50 and 55)
5. Next students begin to cover the shape with square tiles.
6. After covering about 1/6-1/4 of the shape, allow students to revise their estimate if they choose. However, ask them to keep a record of their first estimate and be ready to explain why they revised it.
7. Ask them to finish the task.
8. As they work, note how they address parts of the shape where the tiles do not fit completely and probe them to consider how to handle those parts.
9. Have the groups show their shape, report their first and revised (if needed) estimate and their final results.
10. They should also explain how they handled the areas where the square tile would not fit.
11. Ask why it was easier to find the area using the square tiles rather than Penshancies. (More uniform and easier to piece uncovered areas into parts of the square tiles)
12. Ask student what they understand about area---that it is the measure of covering, can be found for irregular and regular shapes.

Adapted from *Teaching Student-Centered Mathematics* by John Van de Walle

Area of Rectangles Using a Ruler and Square Tile

Supplies needed per pair of students:

- At least 1pair of rectangles with close or same area (For example: 5X5 and 4X6; 6X8 and 7X7; 3X6 and 2X9)
- Ruler
- Square tile

1. Distribute rectangle pairs to pairs of students.
2. Explain they may not cut out the rectangles or draw on them.
3. They are to use the rulers to determine which rectangle is larger or if they are the same in area.
4. They may use pictures, numbers, or words to explain their answers.
5. As students work, circulate to check for groups using strategies you want shared with the class.

Teacher notes:

The purpose of this is to help students connect multiplication arrays to area of rectangles. Some students will use the rulers to see the number of square tiles that will fit along the length and width and make the connection to arrays. However, not all students will use a multiplicative strategy. Sharing of strategies will help these students.

Adapted from Teaching Student-Centered Mathematics by John Van de Walle