

## ACTIVITY IA7.3: Counting Dot Tiles

**Intended learning:** To use sequences of multiples to count equal groups.

**Instructional mode:** Longer, inquiry mode for individuals, pairs or whole class.

⑥ **Materials:** Set of dot tiles.

**Description:** This activity allows students to use sequences of multiples to count quickly items in equal groups. The tiles within each set have the same dot pattern. There are geometric dot patterns for 3, 4 and 5 as well as two-colour linear arrangements of dots available in groups of 2, 3, 4, 5, 6, 7, 8, 9 and 10. There are several variations of the task involving the student determining the total number of dots on all tiles or the number of tiles when the total number of dots is given.

**Variations:**

- **A Growing and Shrinking Line of Tiles:** The teacher displays one tile at a time and asks the students *How many dots?* The teacher adds another tile and asks again, *Now how many dots?* This procedure continues with the teacher adding another tile and asking for the new total number of dots (see Figure 7.14). Once all tiles are visible, the teacher can remove a tile and ask, *Now how many dots?* This continues until all tiles have been removed. With this task all dots are visible. A student could thus count by ones to determine the total number of dots at each step.

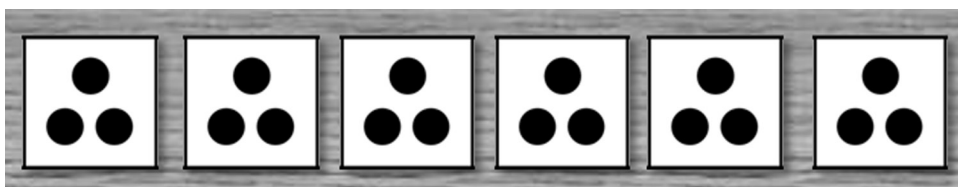


Figure 7.14 Row of 3-pattern geometric dot tiles

- **Adding to or Subtracting from Covered Tiles:** This variation functions in the same way as above except the teacher uses a screen to cover all but the last tile added to the collection. Thus, the student is encouraged to work from the previous total to determine the new total rather than counting the dots on all the tiles each time a tile is added.
- **Get Me:** Arrange each type of tile in a separate stack. Ask the student to use the tiles to create an arrangement of tiles to match a certain criterion. *Get me seven four-tiles. How many tiles altogether? How many dots are on each tile? How many dots are there altogether? Write an equation to match your arrangement. Using one type of tile only, make an arrangement with a total of 24 dots. Which type of tile did you use? How many tiles did you need? How did you figure it out?* Students might use repeated addition until they reach the specified product or might use division to determine the

number of tiles needed. Some students may initially attempt to use a tile that is not a factor of the specified product. If needed, you might prompt the student to use a particular type of tile.

- **Unknown Number of Tiles:** A pile of one type of tiles is visible to the student in such a manner that the student knows how many dots are on each tile. Without the student seeing, the teacher arranges an unknown number of tiles under a screen. *I have 24 dots made from the 3-dot tiles. How many tiles did I use?*
- **Unknown Type of Tile:** Without the student seeing, the teacher arranges an unknown type of tile under a screen. *I have 24 dots made with 8 tiles. How many dots are on each tile?*