

Subitizing with Dot Plates

This is an introductory version of subitizing with dots plates to help children become familiar with different dot arrangements from 1 to 4. Children are shown a dot plate and asked to represent the quantity they have seen by recreating the spatial arrangement with counters.

Connecting to the CCSSM: K.CC.4, MP.2, MP.4, MP.6

Materials and Preparation

- Dot plates. Prepare a set (see sample dot plate arrangements 1–5) using paper plates and circle stickers or bingo daubers.
- Blank paper plates for children
- Counters

Activity 1: Differentiating Dot Plates from Matching to Memory

Subitizing activities can easily be differentiated according to the child's past experiences. Some students may need opportunities to *match* counters directly onto the dots on the plate; they may indirectly match counters to the dots by placing a second plate to the side; and for familiar arrangements, they may be able to recreate the dot plate arrangement from memory.

- Give each child a blank paper plate or circular mat and a small number of counters. Say, "I'm going to show you a dot plate for just a second and then turn it over. I want you to look at it carefully. When I turn my plate over, I want you to use the counters to build what you saw."
- Depending on their experience, children may need a second look or may need to make corrections to their arrangement while the dot plate is held near theirs.



- Ask the children, “Is your plate the same as mine?” “How did you know where to put your counters?” Children may say, “It looks like a triangle.” “I saw a bunch of dots in a row.” Or as Tory said, “I put one on each corner, like a box” (see figure 1).



Figure 1. Tory reconstructs the dot plate from memory.

Activity 2: Subitizing Games with Dot Plates

- Children create their own dot plates by selecting one to four circle stickers and adhering them onto a plate in an arrangement of their choosing. Dot plates can be hung on the classroom wall for children to play the subitizing game (see figure 2): “Flip a plate over and have a look, then turn it back. Do this REALLY FAST! Think about the number you saw. Tell a partner, show the number on your fingers, or say it out loud. Turn



the plate over again to check if you are right. You can count the dots this time if you need to. You are subitizing!"



Figure 2. Children's dot plates showing different arrangements of four.

Supporting Their Thinking:

- Ask, "How many?" "How did you know it was three?" "How did you see the dots?" "Did anyone see it a different way?" For children who respond, "I counted one, two, three," ask questions such as, "How could you know it was three without counting? How might you remember what three dots might look like?"
- Rotating the plates may make some arrangements of dots appear very different to children. For example, if the plate had been rotated, Tory might have described the four dots as a diamond rather than seeing them on a corner of box. Help children recognize that the quantity of dots doesn't change when the plate is turned and also ask questions such as, "How will you still recognize it is four dots when it is turned like this?"

Variations

- Dot plate activities are most effective when used regularly as part of the classroom routine. Children need not always reconstruct the image they see with counters. As a whole class activity, flash a dot plate and ask children to represent the quantity they see in multiple ways: orally, with their fingers, using number fans or flip cards, or by clapping.
- Use materials other than dot plates, such as dice, cards or ten-frames, so that children become familiar with the common arrangements for small quantities.
- The current activity has focused on small quantities to promote perceptual subitizing. Similar dot plate activities can be done with quantities between 5 and 10 to promote conceptual subitizing wherein children partition the dots and combine the parts. For example, “I saw 4, and one more is 5.” Before introducing these activities, ensure that children have plenty of exposure to smaller quantities or they may resort to counting when flashed a larger number of dots.

Reference

“Subitizing. What Is It? Why Teach It?” by Douglas H. Clements. *Teaching Children Mathematics*, March 1999, p. 400.