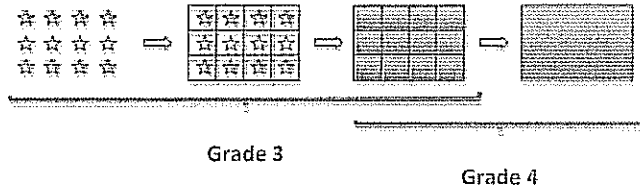


Array and Area Models

Grade Level 1 – 5

Description



An array is an arrangement of a set of objects organized into equal groups in rows and columns. Arrays help make counting easy. Counting by equal groups is more efficient than counting objects one by one. The ten-frame is an array used in Kindergarten. Students count objects in arrays in Kindergarten and Pre-Kindergarten. (PK.CC.4) The rectangular array is used to teach multiplication and leads to understanding area. (3.OA.3)

Arrays reinforce the meaning of multiplication as repeated addition (e.g., $3 \times 4 = 4 + 4 + 4$), and the two meanings of division—that $12 \div 3$ can indicate how many will be in each group if I make 3 equal groups and that it can also indicate how many groups I can make if I put 3 in each group. Further using arrays reinforces the relationship between multiplication and division.

Instructional Strategies

- Use number towers to depict multiplication problems in the shape of an array.

4 8 12 16

$4 \times 4 = \underline{\quad}$
 $16 \div 4 = \underline{\quad}$

5 fours + 1 four = 6 fours
 $20 + 4 = 24$
 6×4 is 4 more than 5×4 .

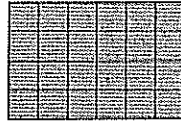
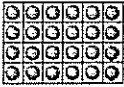
4 8 12 16 20 24

- Use the rectangular grid to model multiplication and division.



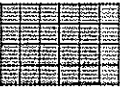
$$4 \times 6 = \underline{\quad}$$

$$6 \times 4 = \underline{\quad}$$



$$4 \times \underline{\quad} = 24$$

$$\underline{\quad} \times 6 = 24$$



$$24 \div 4 = \underline{\quad}$$

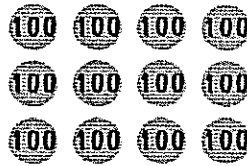
$$24 \div 6 = \underline{\quad}$$

- Multiply units with arrays.

Multiplying hundreds:

$$4 \text{ hundreds} \times 3 = 12 \text{ hundreds}$$

$$400 \times 3 = 1200$$



$$400 \times 3 = \text{[bill icon]}$$