How Many Legs?

Grade 3 △ Multiplication Concepts   5 levels

Probing Questions
- How do you decide how many shoes to select?
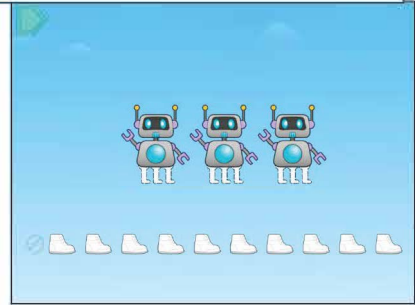- How are you counting?

What's important here?
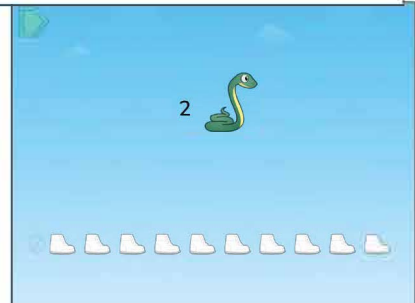Visuals help connect to their counting and addition schemas.

What Strategies Are Being Used?
Determine the unknown whole number in a multiplication equation relating three whole numbers.

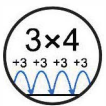Levels transition from visual to symbolic

Students are introduced to multiplying by 0.

Number Line Multiplication

Grade 3 △ Multiplication Concepts   3 levels

Probing Questions
- How is the number represented as jumps on the number line?
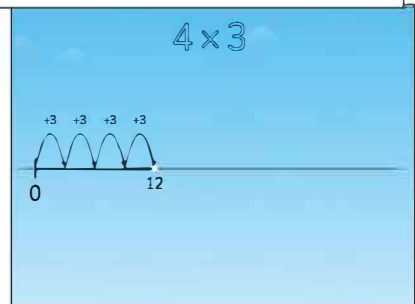- Why do the different representations land on the same number?

What Concepts Are Being Developed?
In level 3 students use the commutative property to create two representations with the same endpoint on the number line.
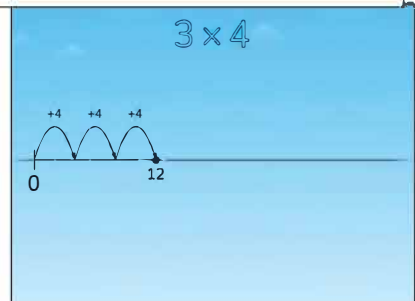
Emphasize the Connection
Discuss how the repeated addition connects to the multiplication notation.

These two screenshots are from the same puzzle in Level 3.

The two parts illustrate the commutative property of multiplication.

Build Expressions

Grade 3 △ Multiplication Concepts ⬚ 2 levels

Probing Questions
• After selecting the number of dots, how do you decide where to move the cursor?

What Concepts Are Being Developed?
Students must distinguish addition and multiplication using a visual model.
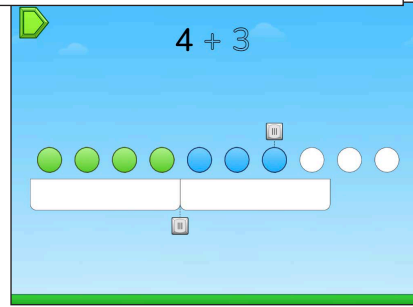
Classroom Connection
Ask students to represent various addition and multiplication expressions using linking cubes. Discuss how the numbers are represented in each expression.
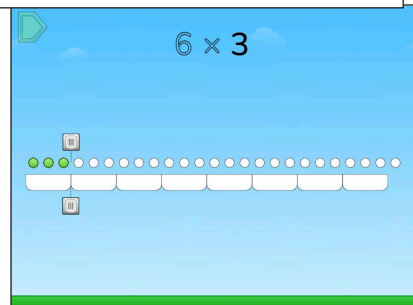
Moving the cursor allows students to represent addition, subtraction, and multiplication.

$$4 + 3$$

In level 2, the numbers get larger.

$$6 \times 3$$

Repeated Expressions

3×4
$3+3+3+3$
$4+4+4+4$
$5+5+$

Grade 3 △ Multiplication Concepts ⬚ 2 levels

Probing Questions
• How do you know which line to select?
• How do you know how many to select?
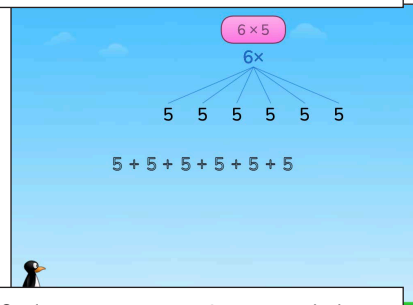• How can it be multiplication if it is addition?

The Bigger Picture
3x4 can be shown as 3+3+3+3 or as 4+4+4. When written out it is less obvious that these give the same product
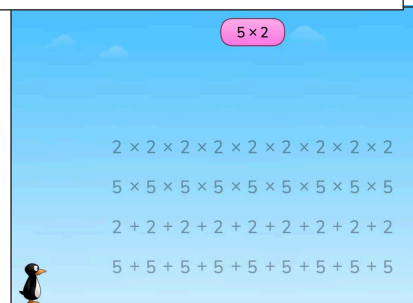
What do the Standards Say?
Choosing between two correct answers requires them to *Attend to precision*.

Students may benefit from using grid paper or square tiles.

6×5

$6\times$

5   5   5   5   5   5

$5 + 5 + 5 + 5 + 5 + 5$

Students must pay attention to not only the dimensions of the rectangle, but its placement on the grid.

5×2

$2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$

$5 \times 5 \times 5 \times 5 \times 5 \times 5 \times 5 \times 5 \times 5$

$2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2$

$5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 + 5$