



Bouncing Shoes

Grade 3

Multiplication Concepts

3 levels

Probing Questions

- How do you decide how many creatures to choose?
- What does the puzzle show you? What do you need to find out?

Stop the Animation

Pause to show the animals jumping into the boots. Discuss what students see and how they are solving the problem.

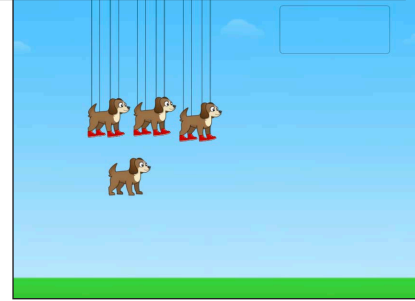
What Strategies Are Being Used?

Sharing different student strategies will help students see the connections between multiplication and division.

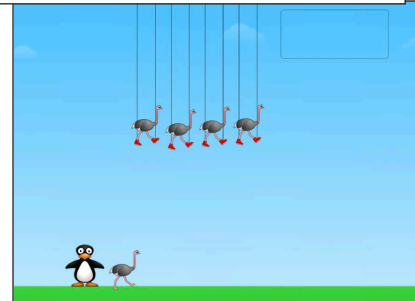
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The visuals allow students to connect multiplication concepts to repeated addition.



Showing errors is a good conversation starter.



Multiplication Concepts -1



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.

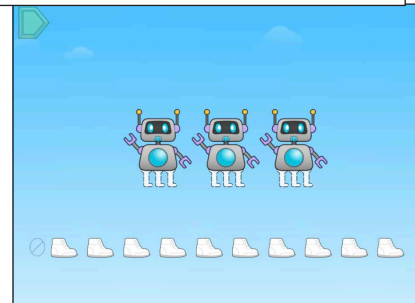
What Strategies Are Being Used?

Determine the unknown whole number in a multiplication equation relating three whole numbers.

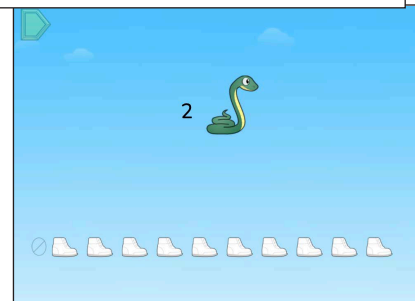
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Levels transition from visual to symbolic



Students are introduced to multiplying by 0.



Multiplication Concepts -2



Bouncing Shoes LI

Grade 3

Multiplication Concepts

2 levels

Probing Questions

- How do you decide which number/creature to choose?
- What does the number you choose represent?

Emphasize the Connection

Ask students to explain what each of the numbers mean in the context of the problems posed.

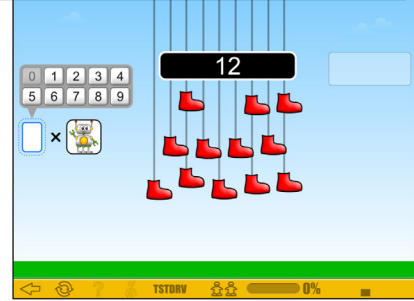
The Bigger Picture

In this first module, the emphasis is the relationship of the quantities and not on learning the multiplication facts.

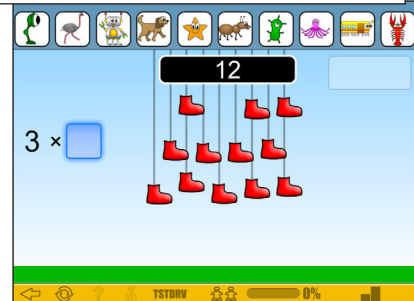
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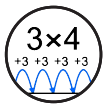
Ask how students solve these puzzles.



Does changing the unknown change how students solve the puzzle?



Multiplication Concepts -3



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?

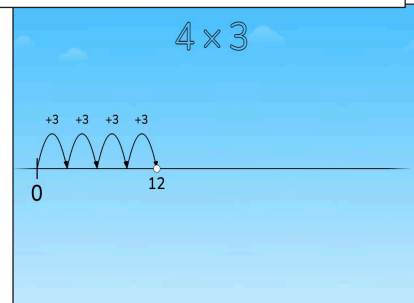
What Concepts Are Being Developed?

In level 3 students use the commutative property to create two representations with the same endpoint on the number line.

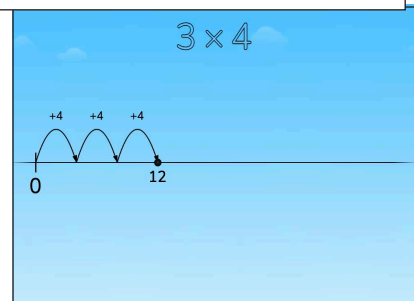
Emphasize the Connection

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.



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Multiplication Concepts -4



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?

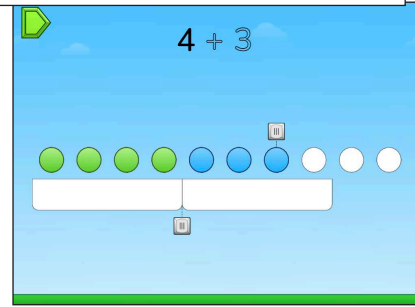
What Concepts Are Being Developed?

Students must distinguish addition and multiplication using a visual model.

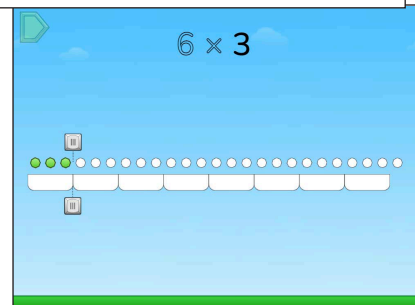
Classroom Connection

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.



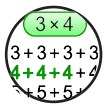
In level 2, the numbers get larger.



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Multiplication Concepts -5



Repeated Expressions

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?

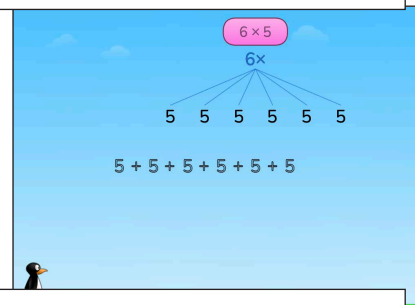
The Bigger Picture

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

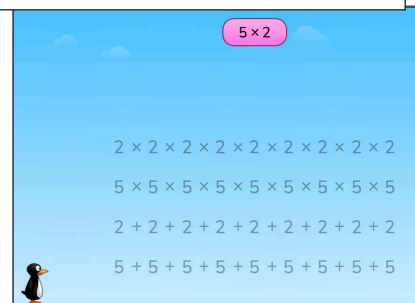
What do the Standards Say?

Choosing between two correct answers requires them to *Attend to precision*.

Students may benefit from using grid paper or square tiles.



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



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Multiplication Concepts -6