



Counting On

Grade 3

Number Patterns

Skip Counting and Addition

3 levels

Probing Questions

- What does the gray box mean?
- How do you know which number comes next?

Helping Struggling Students

The gray boxes support students by showing where the skipped numbers are in the sequence.

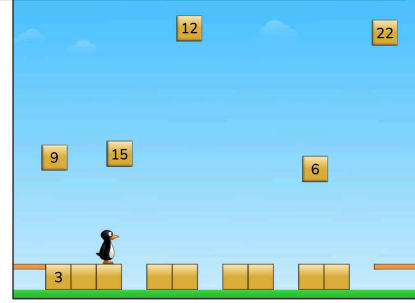
The Bigger Picture

Patterns are at the heart of mathematics. We want students to find patterns and use them to generalize broader solutions to a problem.

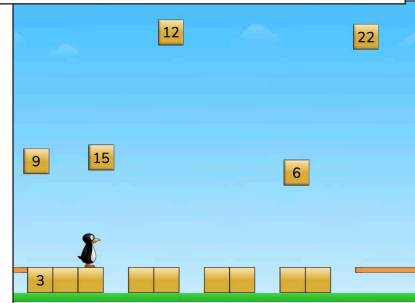
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Students skip count by ones, twos, and threes.



In level 3, the pattern is built in decreasing order.



Number Patterns - 1



Even or Odd

Grade 3

Number Patterns

Skip Counting and Addition

4 levels

Probing Questions

- Why is there a ladder on the odd button?
- How do you know if a number is odd/even?

Classroom Connection

Use Level 4 in the classroom to come up with strategies to find the solution without figuring the sum.

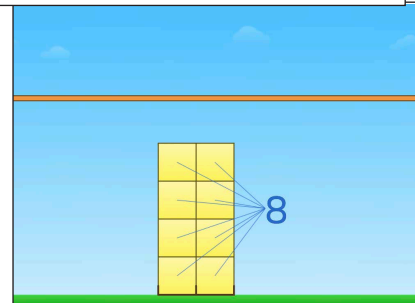
The Bigger Picture

Ask students to generalize rules about adding even and odd numbers. Example: $even + odd = odd$. This has them thinking about groups of numbers rather than individual numbers. This is the first step to thinking algebraically.

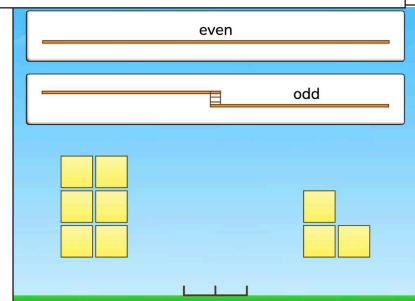
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Levels 2 and 3 use the box model as a visual proof.



Level 4 shows combining two odds, two evens, or an even and an odd.



Number Patterns - 2



Make it Linear

Grade 3

Number Patterns

Skip Counting and Addition

3 levels

Probing Questions

- What do you notice about the numbers?
- How does each stack of blocks change?
- How do you know how tall the missing tower will be?

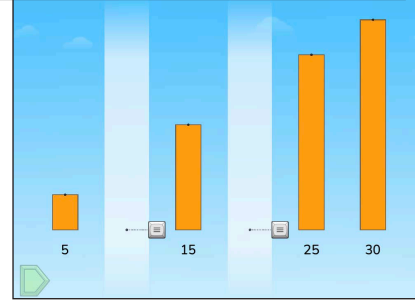
Helping Struggling Students

Use blocks to represent the numbers and stack them next to each other. Facilitate the student to help him/her to see the consistent growth between the numbers.

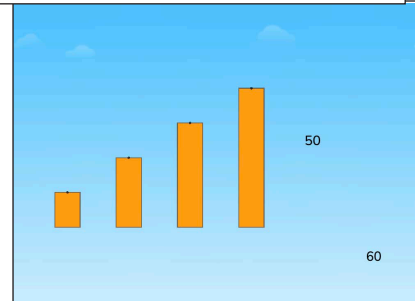
The Bigger Picture

Showing skip counting geometrically sets the foundation for graphing linear patterns in algebra.

Levels 2 and 3 sometimes ask for two blanks.



The animation changes numerals to a bar model to show linearity.



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Number Patterns - 3



Table Directions

Grade 3

Number Patterns

Skip Counting and Addition

4 levels

Probing Questions

- Where will JiJi move when adding/subtracting 10?
- How do you know where JiJi will end up?

Classroom Connection

Pause to show the animals jumping into the boots. Discuss Give students individual 100s charts Present problems similar to the game orally. You may want to use the same progression as in Levels 1-3. Encourage students to find shortcuts for adding/subtracting 9 and 11. Ask them to share how they are adding/subtracting two-digit numbers.

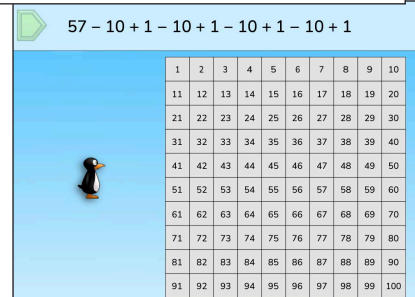
Something to Think About

Generalizing patterns of adding and subtracting 9 to a number helps students think algebraically, creating rules that work for any number.

The animation breaks down double-digit addition/subtraction using tens and ones.



Some problems require students to move from one side of the chart to the other.



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Number Patterns - 4



Hundreds Pit

Grade 3

Number Patterns

Skip Counting and Addition

5 levels

Probing Questions

- How do you know which number to choose next?
- What pattern do you notice in the numbers?

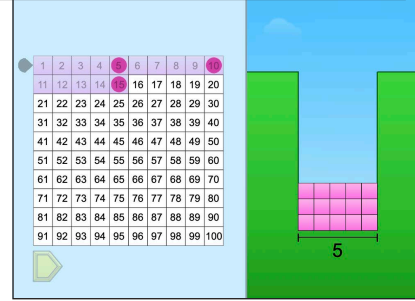
Classroom Connection

Let students replicate skip counting patterns on a blank 100s chart, using chips or coloring in the squares. Discuss the patterns shown. Repeat the activity filling in the multiples of two different numbers (e.g. 5 and 2) What patterns do you see?

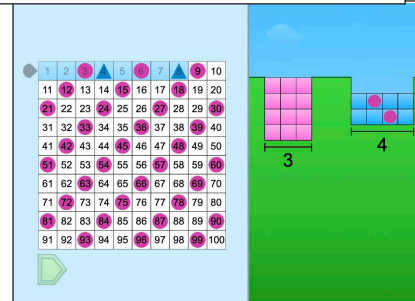
Pause the Animation

Stopping the animation as JiJi starts across the screen allows students to focus on the visual patterns created by the multiples. Stop to discuss the patterns. Ask students to extend the patterns.

Levels 1-3 show multiples of 2, 3, 4, 5, or 10.



Levels 4 and 5 show the multiples of two different numbers.



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Number Patterns - 5



Multiplication Table Parts

Grade 3

Number Patterns

Skip Counting and Addition

3 levels

Probing Questions

- How do you know where to put the square(s)?
- Will that work for both squares?
- Where else could the square go?

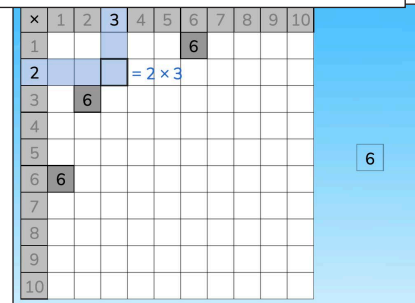
Helping Struggling Students

You may be tempted to give out multiplication charts to assist. Instead have students find different factors of the given number and find where those will line up on the chart. They can then test out the different possibilities.

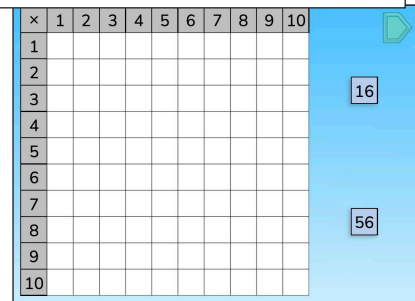
What's Important Here?

This game requires students to look at multiple facts that have the same product. Level 1 helps students find all of the possible combinations and sets the stage for the work in levels 2 and 3.

Level 1 requires all of the combinations to be shown.



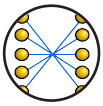
In Levels 2 and 3 students must place two or more squares simultaneously.



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Number Patterns - 6



Multiplication Pattern Strings

Grade 3

Number Patterns

Skip Counting and Addition

4 levels

Probing Questions

- What do you need to do first?
- What patterns do you see?
- Can you predict where the next number will be using the pattern?

Classroom Connection

Students may enjoy creating these patterns on paper. Discuss the patterns they create. Compare the different patterns to find similarities. Do any of the patterns help students create shortcuts for finding products?

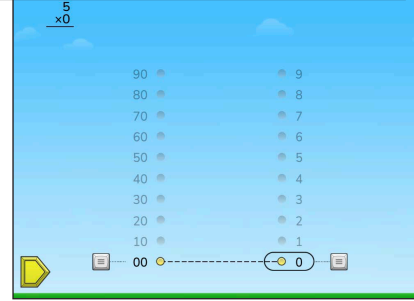
The Bigger Picture

To help students generalize, ask them to extend these patterns using grid paper.

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Students must first select the number of tens.
Remember to start at 0!



Look for patterns: $\times 8$ can be add 10 subtract 2.

