



# JiJi Cycle Basket

Grade 3

Fractions on the Number Line

4 levels

## Probing Questions

- What do you notice about the numbers in the grass?
- How do you decide where to place the basket?

## What Concepts Are Being Developed?

Students connect the visual unit fractions on the cycle to locations on the number line.

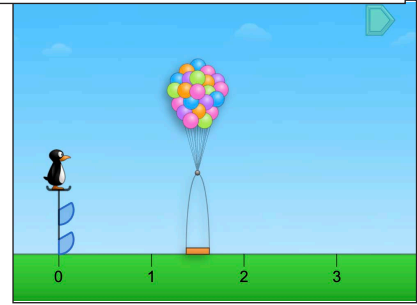
## Something to Think About

Iterating unit fractions helps students connect their existing schema of counting whole numbers to fractions.

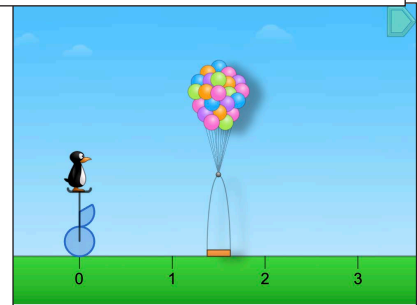
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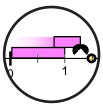
Students translate area models to the number line.



Thirds can be more challenging for some students.



Fractions on the Number Line - 1



# Scale Fraction

Grade 3

Fractions on the Number Line

4 levels

## Probing Questions

- What are those marks in between the whole numbers on the number line? Why are they different from puzzle to puzzle?

## What Concepts Are Being Developed?

This game connects an area / bar model to a point on the number line.

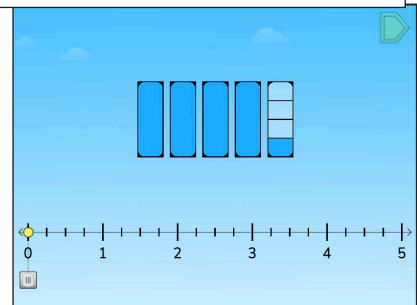
## What's Important Here?

Students are transitioning to the symbolic from the visual by connecting the denominator to how a whole is partitioned.

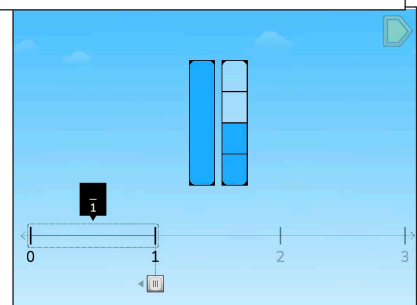
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The number lines are ticked appropriately for the visual models.



Level 4 requires choosing how to tick the number line.



Fractions on the Number Line - 2



# JiJi Cycle

Grade 3

Fractions on the Number Line

4 levels

## Probing Questions

- How many pieces do you think make a whole? How do you decide how many pieces you need?

## What Strategies Are Being Used?

Assess how students solve these puzzles. Help students move toward more efficient strategies (e.g. grouping 4/4 to make a whole) that strengthen number sense.

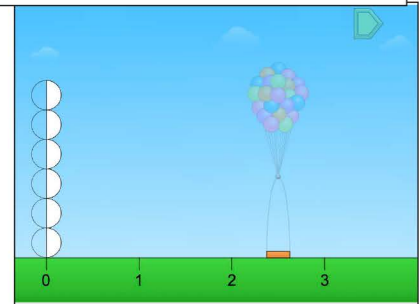
## The Bigger Picture

In the previous JiJi Cycle game the fraction was given and the student had to find the point on the number line. In this game, the point is given and the student has to find the fraction.

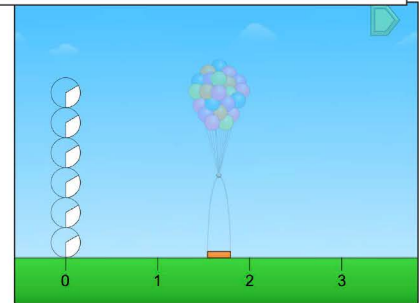
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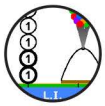
Like JiJi Cycle Basket but the unknown has changed.



This game illustrates iterating unit fractions.



Fractions on the Number Line - 3



# JiJi Cycle Select Wheel Symbolic

Grade 3

Fractions on the Number Line

3 levels

## Probing Questions

- What do the numbers in the circles mean?
- How many are needed to make a whole?

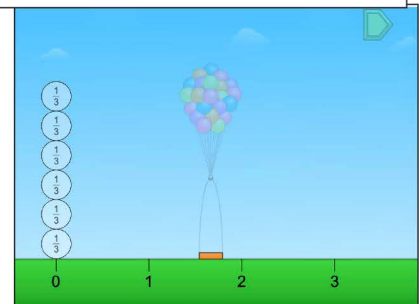
## Emphasize the Connection

Are students understanding the meaning of the fraction notation, especially the denominator?

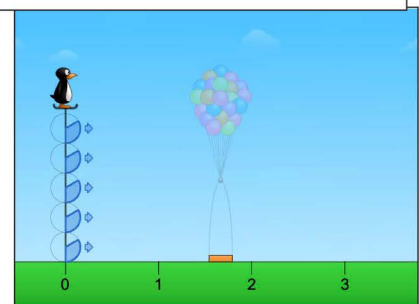
## Pause the Animation

Focus on the connection between the visual and symbolic representations of the fractions.

Wheels are presented numerically . . .



. . . but shown visually in the feedback.



Fractions on the Number Line - 4

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# Estimate Fractions on the Number Line

Grade 3

Fractions on the Number Line

5 levels

## Probing Questions

- How do you decide where to put the blastpad?

## The Bigger Picture

Previous games focused on visual models. From this game on, puzzles begin with numbers. The animation uses visual models to reinforce the meaning of the fractions.

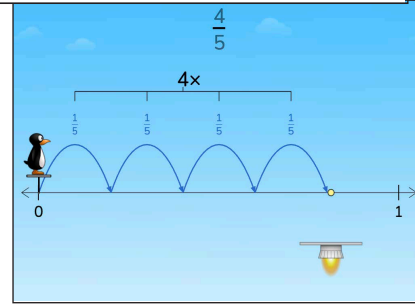
## Research is Clear

Even after years of study, students lack conceptual understanding of fractions, which limits their ability to solve problems and apply computational procedures.

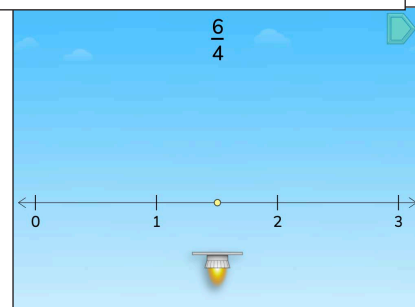
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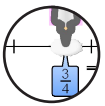
Pause the animation to see unit fractions iterated



Later levels extend the number line beyond 1.



Fractions on the Number Line - 5



# Fraction Trap

Grade 3

Fractions on the Number Line

3 levels

## Probing Questions

- What do you know about the value of that fraction? How many parts should you break the line from 0 to 1 into?

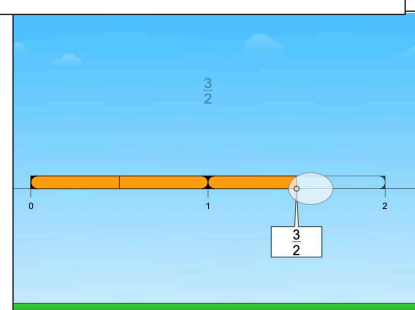
## What's Important Here?

In levels 2 and 3, students are introduced to whole numbers as fractions (e.g.,  $0/4$ ,  $6/1$ ).

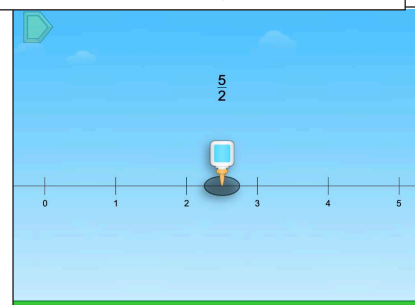
## What do the Standards Say?

*Represent a fraction  $a/b$  on a number line diagram by marking off  $a$  lengths of  $1/b$  from 0.*

Pause the animation to see how the unit is divided and then iterated.



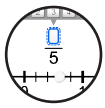
The number line in Level 3 goes from 0-5.



Fractions on the Number Line - 6

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# Bubble Fraction Trap

Grade 3

Fractions on the Number Line

3 levels

## Probing Questions

- How do you know where to put the glue trap?
- Why did you place the glue trap between those two numbers?

## What's Important Here?

By naming multiple fractions with the same denominator, students are building a foundation for comparing fractions.

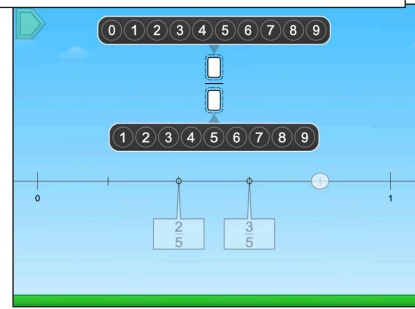
## The Bigger Picture

Previously students placed a given fraction on the number line. In this final game, students must use fraction notation to describe points on a number line.

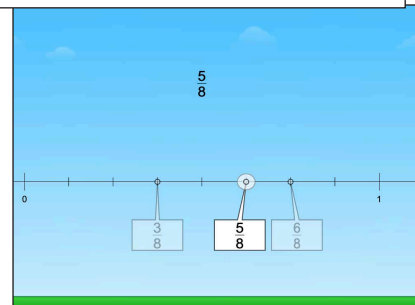
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Multiple fractions must be shown on the same number line.



Help students connect to their whole number counting schema.



Fractions on the Number Line - 7