

Equal Division

Grade 3

Division Concepts

2 levels

Probing Questions

- How do you know which line needs to be moved?
- How do you know in which direction to move it?
- How does the game prove that they are equally divided?

Something to Think About

Comparing the size of the segments using a bar model builds the understanding that when dividing, the groups must be of equal size (partitive division).

What do the Standards Say?

Level 2 requires students to *Attend to Precision*.

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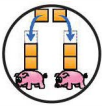
Level 1 teaches the gameplay so students can do the real work in Level 2.



The puzzles in level 2 require choosing both the arrow and direction.



Division Concepts - 1



Fair Sharing

Grade 3

Division Concepts

3 levels

Probing Questions

- How do you decide how high to move the platform?
- How does your strategy change when there are more than two animals?

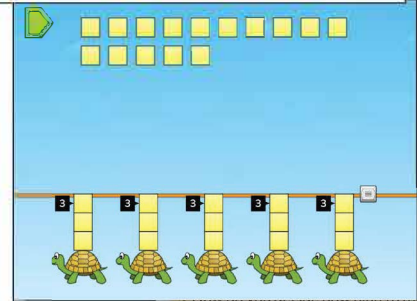
What Strategies Are Being Used?

Ask students to share how they are solving these puzzles. Look for dealing them out, skip counting, repeated subtraction, using multiplication, or ??

Classroom Connection

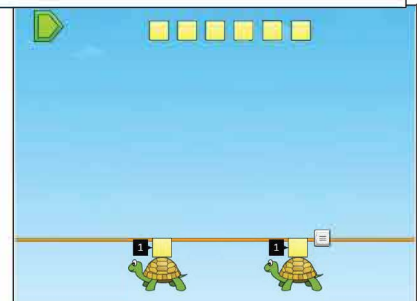
Use square tiles to simulate this game. Share strategies and ask questions that will help students generalize that all numbers divisible by two are even.

Can you see this solution as 3×5 ?



Levels 1 and 2: two groups.

Level 3: 2, 3, and 5 groups.



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Division Concepts - 2



How Many Creatures?

Grade 3

Division Concepts

3 levels

Probing Questions

- How do you decide how many creatures are needed?
- How would you turn this into a word problem?

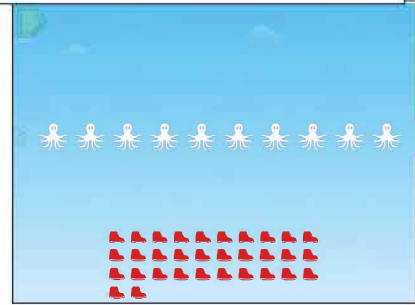
What Concepts Are Being Developed?

This game uses a quotative or measurement model of division where the number in each group is given and number of groups must be found.

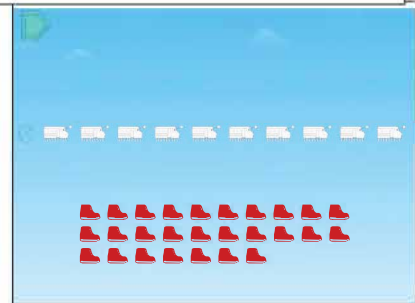
Research is clear

Children's understanding of quotative division lags behind their understanding of partitive situations.

Ask students to share their solution strategies.



Note how many boots are in each row.



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Division Concepts - 3



Fair Sharing Symbolic

Grade 3

Division Concepts

3 levels

Probing Questions

- How are you counting/figuring this out?

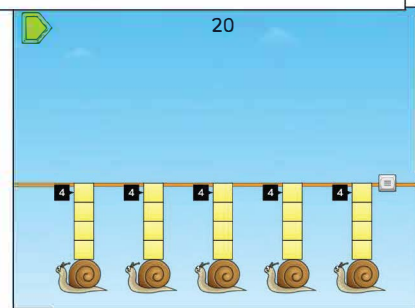
What's Important Here?

Since the blocks have been replaced with a number, students may need to adjust their strategies.

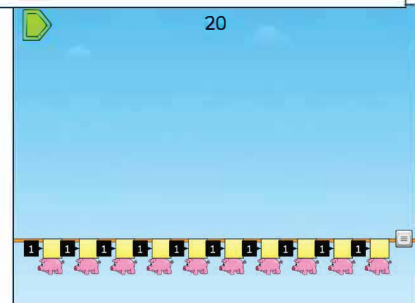
What do the Standards Say?

Understand division as an unknown-factor problem.

Use the visuals to discuss the inverse relationship of multiplication and division.



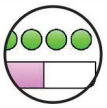
Some puzzles divide into 10 groups.



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Division Concepts - 4



Build Expressions

Grade 3

△ Division Concepts

📖 4 levels

Probing Questions

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

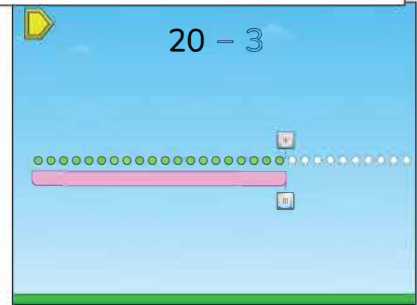
What Concepts Are Being Developed?

Students must distinguish division and subtraction using a visual model.

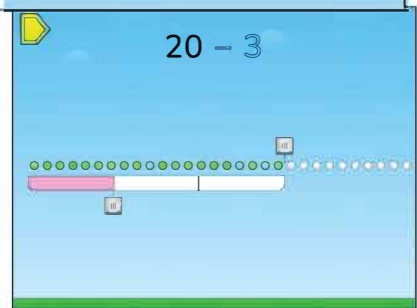
Classroom Connection

Give students a specific number of linking cubes. Represent various $+$, $-$, \times , and \div expressions. Discuss how the numbers are represented in each.

One slider will show subtraction, the other shows division.



Showing errors is a good conversation starter.



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Division Concepts - 5