

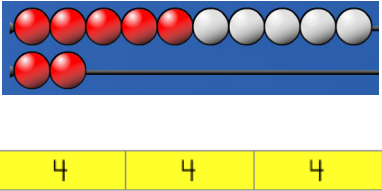


Representing Number to 20

Mathematical Ideas

Representing whole numbers develops an understanding of number including its size and its relationship to other numbers.

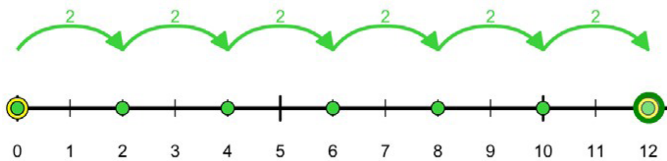
Numbers can be represented in many ways. Each representation reveals different things about the number. For example:

<p>12</p> <p>Numerically</p>	 <p>Pictorially or Concretely</p>	<p>Twelve</p> <p>In Words</p>
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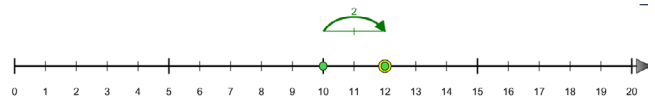
Counting and mathematical operations may be strategies to represent numbers.

For example:
Representing 12 on a number line

Skip counting by twos



Adding 2 onto 10





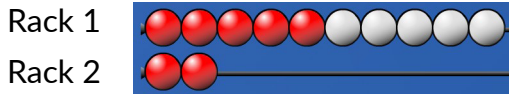
Representing Number to 20

Helpful Information

Tips

- Learning tools are used to explore mathematical ideas and are a way for children to share their thinking. Encourage your child to take the time to use the learning tools for each activity.
- Organized concrete and visual representations can help with understanding numbers and the relationships between numbers.

For example,



from this visual you can see that the representation of 12 beads is the same as:

- 7 red and 5 white beads, or
- 10 beads on rack 1 and 2 beads on rack 2, or
- 5 red beads, 5 white beads and 2 more red beads.

Mathematical Words/Symbols

Attribute – an aspect of an object that can be used to compare objects (e.g., colour, size, thickness, number of sides)

Set - a collection of objects

Skip counting – usually means counting forward or backwards by numbers other than 1, such as by twos (2, 4, 6, 8)

Sum – the result of addition

Materials

Activity 1:

- Set Tool
- Representation Cards

Activity 2:

- Whole Number Rods
- Representation Cards

Activity 3:

- Colour Tiles
- Number Cards

Activity 4:

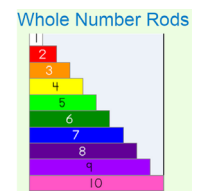
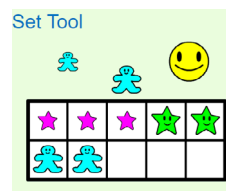
- Rekenrek
- Representation Cards

Activity 5:

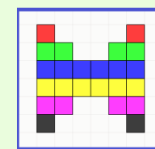
- Representation Match (Whole Numbers) Game

Activity 6:

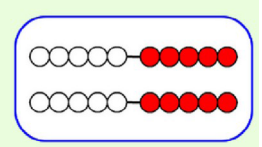
- Catch a Bouncing Ball – Representations (Whole Numbers) Game



Colour Tiles



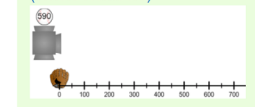
Rekenrek



Representation Match (Whole Numbers)



Catch a Bouncing Ball - Representations (Whole Numbers)





Representing Number to 20


Representing Numbers Using the Set Tool

Activity 1

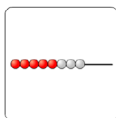
Set Up for the Activity:









- Open the Set learning tool.
 - » use the create mode (default)
 - » Shuffle one set of cards showing 8 to 20 and place them face down in a pile. Use the Representation Cards (dots, tallies, numerals, beads, dice).

How to Do the Activity:









1. Ask your child to draw a card and tell you the number that is represented.
2. Have your child show you that quantity using one shape from the set tool.
 - » have your child organize this quantity using ten-frames
3. Ask your child to show the same quantity using two shapes.
4. Have your child show the same quantity using any combination of attributes (shape, colour, size, face).
5. Clear the workspace using the recycle icon. 
6. Repeat as desired.

Example:











8 using one shape

8 using two shapes

8 using mixed attributes

Your child may represent eight by adding 3 onto 5 or by skip counting by 2s.

Let's Talk About It

How did you know how many objects you needed to show?
Why is it okay to use different representations for the same number?
How does the ten-frame help you know the number of objects?



Representing Number to 20


Representing Numbers Using Whole Number Rods

Activity 2

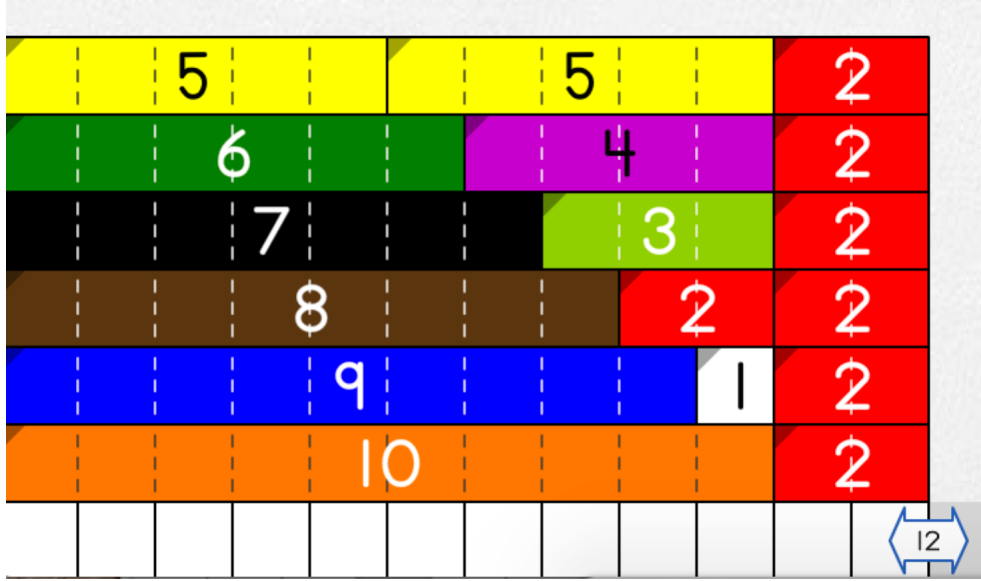
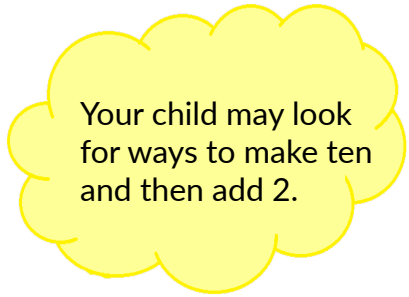
Set Up for the Activity:

- Open the Whole Number Rods learning tool.
- Shuffle one set of cards showing 8 to 20 and place them face down in a pile. Use the Representation Cards (dots, tallies, numerals, dice, beads).

How to Do the Activity:

1. Ask your child to pick a card and identify the quantity shown.
2. Have your child represent this number using the Whole Number Rods by aligning the rods horizontally to form a train.
3. Leave this representation on the workspace and then ask your child to show other trains that represent this number.
4. Have your child use the unit train to check and see if the number trains are the same.
5. Clear the workspace using the recycle bin  and repeat the activity as desired.

Example:



Unit Train

Let's Talk About It

What strategy did you use to represent your numbers?
How does the unit train help us check the rods?



Representing Number to 20

Representing Number Using Colour Tiles

Activity 3

Set Up for the Activity:

- Open Colour Tiles learning tool.
- Shuffle together two sets of number cards 1 to 10 and place them face down in a pile.

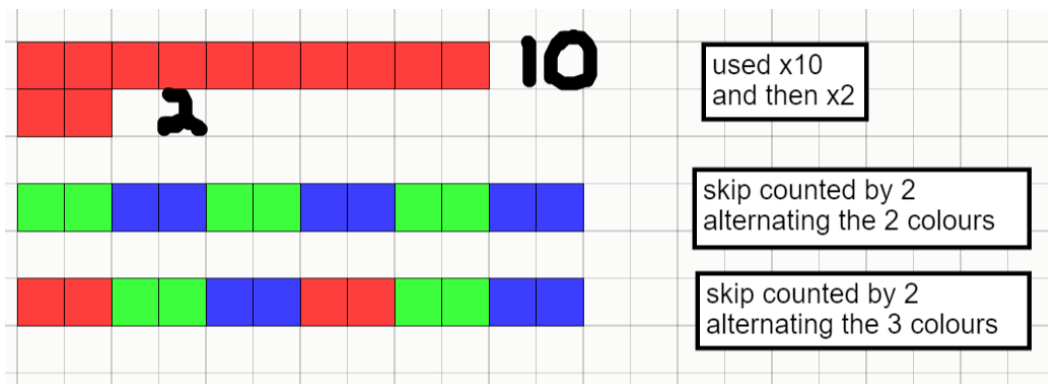
How to Do the Activity:

1. Select two number cards from the pile. Determine the sum of the two cards. This is the target number.
2. Represent the target number using one colour of tiles.
3. Represent the target number using two colours of tiles.
4. Represent the target number using three colours.
5. Ask your child what strategy was used for each of the representations. You may wish to make note of this using the annotation tool.

Example:

Sum of 3 and 9 is 12 - the target number.

Your child may use the multiplier to drag out combinations of tiles.



Let's Talk About It

Which representation did you find easiest to create?
How do you know that each of your representations shows the target number?
If you had a fourth colour, how do you think your strategy for representing the target number would change?




Representing Number to 20

Matching Representations

Activity 4

Set Up for the Activity:

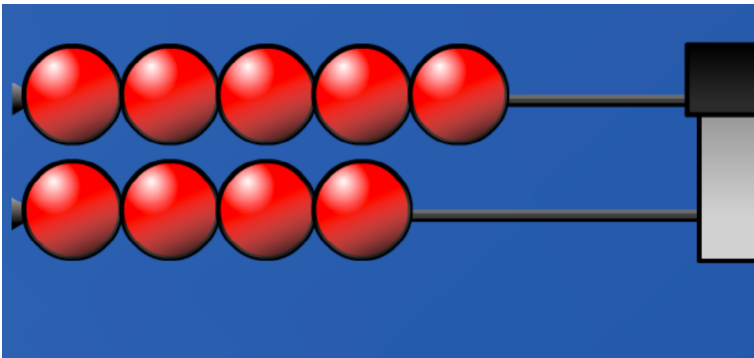
- Open the Rekenrek learning tool.
- Represent a number between 8 and 20 on the Rekenrek tool. Hide the other beads using the shade feature of the tool. 
- Spread face up one set of cards showing representations 8 to 20. Use the Representation Cards (tallies, dice, beads, dots, numerals).

How to Do the Activity:

1. Ask your child to tell you the number of beads shown on the Rekenrek.
2. Ask your child to look at the number representation cards and find the cards that match the number of beads on the Rekenrek.
3. Repeat as desired.

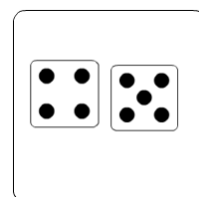
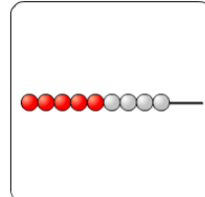
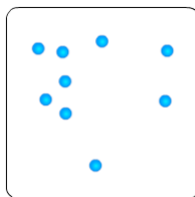
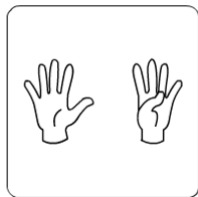
Example:

Representations of 9



Your child may automatically recognize 9 in the structured models. This is called subitizing.

Matching cards:



Let's Talk About It

How did you find the matching cards?

If the Rekenrek has one or two more beads what would the matching cards look like?

If the Rekenrek has one or two fewer beads what would the matching cards look like?



Representing Number to 20

Representation Match Game

Activity 5

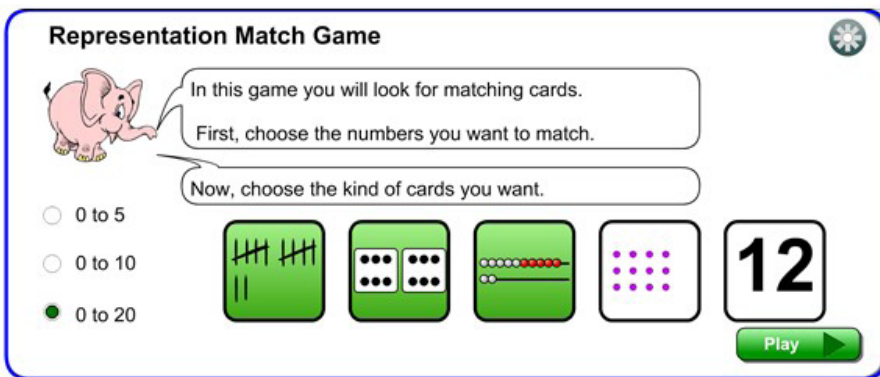
Set Up for the Game:

- Open the Representation Match (Whole Numbers) game.
 - » Select 0 to 20.
 - » Choose the Number of players through Settings once you select Play.

How to Play the Game:

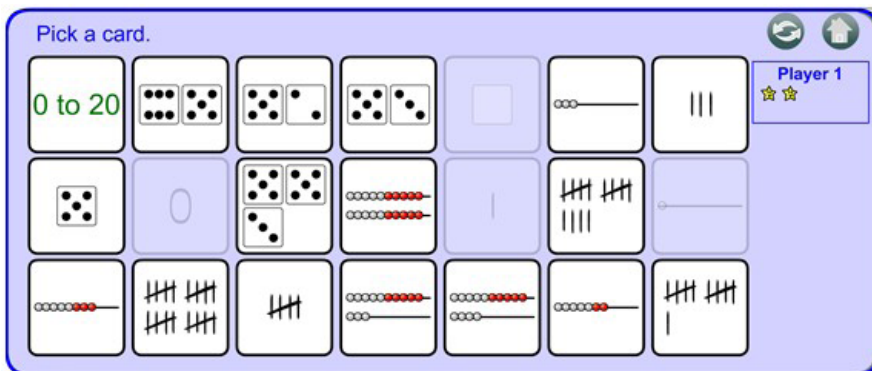
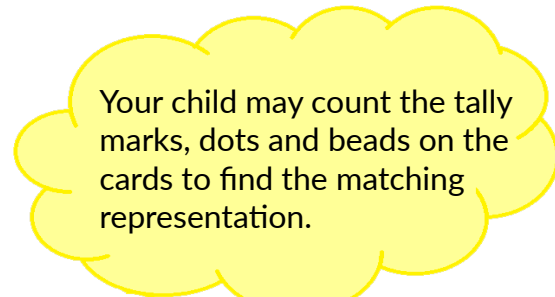
1. Pick the types of representations for the game.
2. Use the icon to turn the cards face up.
3. Match pairs of cards where the representations are the same quantity.
4. There are ten possible matches in each game.
5. Play the game again using different representations.
6. Play as a memory game (face down).

Example:



Chosen Representations:

Tally marks, dots on the dice, and Rekenrek beads



Let's Talk About It

Which type of cards do you find the easiest to recognize the number represented? Which do you find difficult?
 Do you think it is easier to find the correct match using fewer types of representations?



Representing Number to 20

Catch a Bouncing Ball

Activity 6

Set Up for the Game:

Number of Players: 1

- Open the Catch a Bouncing Ball – Representations (Whole Numbers) game.
 - » Select 0 to 20.

How to Play the Game:

1. A representation of a number will be shown on the pitching machine.
2. Move the glove to the number on the number line that matches the representation.
3. Ten representations will be given in each game.
4. Review the game at the end to see the correct placement of the representations.

Example:

Catch a Bouncing Ball

Correct. Nice catch!

Ball #1 of 10 ✓

Your child may skip count 5, 10, 15 and then count back 1 to place the glove at 14.

Let's Talk About It

Which number representations do you find the most difficult to place on the number line? What type of number line do you find easier to work with, the horizontal or vertical? Why?