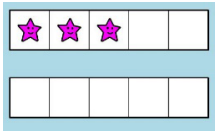# Addition to 100

Mathematical Ideas

Composing and decomposing numbers, and counting are fundamentals of addition and subtraction.

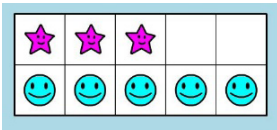The following are properties of addition.

1. Identity

$3 + 0 = 3$

The sum is the number when zero is added to the number.

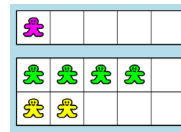### 2. Commutative

$3 + 5$ $=$ $5 + 3$

The sum is the same no matter the order of the numbers.

3. Associative

The sum is the same no matter the order in adding.

Strategies used for addition may change according to the numbers being added and the addition facts known.

Example 1: Counting On From the Greatest Number

2 + 34 = ?

34... 35, 36   the last number count is the sum

Example 2: Compensating

38 + 7 = ?

40 + 7 = 47   *two is added onto 38 to make it an easier number to work with*

47 - 2 = 45   *to maintain equivalency 2 must be subtracted off*

<div align="right">**Mathematical Ideas**</div>

Example 3: Using a standard algorithm

The sum may be determined by adding each of the numbers by place value.

$$\begin{array}{r} {}^{1}26 \\ +\ 37 \\ \hline 63 \end{array}$$

- Adding the ones – 6 ones plus 7 ones is 13 ones which can be renamed as 1 ten and 3 ones
- Adding the tens – 1 ten plus 2 tens plus 3 tens is 6 tens

<div align="right">**Helpful Information**</div>

Tips
- There are many strategies to do develop math facts.
- Learning tools can be used to develop and apply foundational skills and concepts.
    » the way your child interacts with the tool can reveal your child's thinking
    » they can be used for your children to communicate their thinking
    » encourage your child to take the time to use the learning tools in each activity

Mathematical Words/Symbols
Addition Expression - a mathematical phrase containing numbers and the addition symbol.
(e.g., 3 + 2 + 5)

Composing – is when numbers are combined to create a larger number

Decomposing – is when a number is broken down into smaller numbers

Sum or total – the result of addition
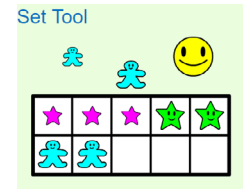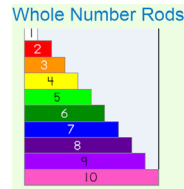
+ plus or add

= equals or same as

WINS

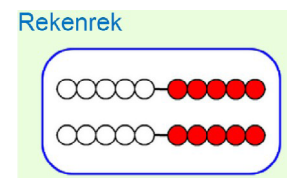## Materials

Activity 1:
- Whole Number Rods
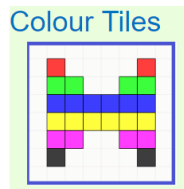- Number Cards

Activity 2:
- Set Learning Tool
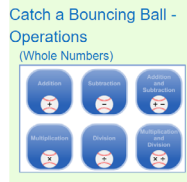
Activity 3:
- Colour Tiles

Activity 4:
- Rekenrek

Activity 5:
- Whole Number Rods

Activity 6:
- Catch a Bouncing Ball Game – Whole Number Operations

Activity 7:
- Number Chart
- Number Cards

Adding by Counting On Rods

Set Up for the Activity:
- Open the whole number rods learning tool
  - » In the settings adjust the size to 14

How to Do the Activity:
1. Have your child pick one number less than 10 and a second number between 50 and 75.
2. Have your child write an addition expression for the two numbers.
3. Ask your child to place one whole number rod to represent the number less than 10 just above the unit train at the bottom of the workspace.
   - » slide the unit train arrow to match the end of the rod
4. Ask your child to represent the second number using any combination of 1, 2, and 5 whole number rods.
5. Have your child place and count on these whole number rods one at a time at the end of the rod from step 3 forming a train.
   - » ask your child to count on from the starting number as the rods are being placed
   - » slide the unit train arrow to match the end of the full train to confirm that the length matches the count
6. Leave these rods on the workspace.
7. Have your child represent the second number picked in step 1 using the fewest number of rods.
   - » place the rods above the previous train
   - » slide the unit train arrow to match the end of the rods to confirm the train's length
8. Have your child represent the number less than 10 using 1-rods.
9. Have your child place and count on these 1-rods one at a time at the end of the train formed in step 7.
   - » slide the unit train arrow to match the end of the full train to confirm that the length matches the count
10. Ask your child to tell you the sum of the two numbers.
11. Have your child compare the two ways they added the numbers together.
12. Repeat activity as desired.

Example:
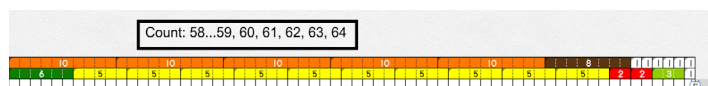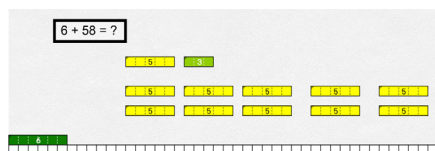
Your child may count by tens (moving two 5 rods) at a time and then trade in one 5 rod for 2 rods and a 1 to make the count

Let's Talk About It

Did you get the same sum no matter which order you added the numbers? Why or why not? Will this happen every time?

Which was easier, counting on from the larger number or the smaller number? Why?

Sums Less than One Hundred Using the Set Tool

**Set Up for the Activity:**
- Open the Set learning tool.
  - » ensure it is in the Create mode
  - » place ten 10-frames on the workspace

How to Do the Activity:
1. Ask your child to pick two 2-digit numbers that when added together have a sum that is greater than 50 and less than 100.
   - » have your child tell you the numbers and their sum
   - » accept any two numbers even if the sum is less than 50 or greater than 100
2. Have your child verify the sum by completing the following steps:
   a. represent the first number; filling in 10-frames using the same object
   b. represent the second number; filling in 10-frames using a different object
   c. determine the combined number of objects (sum)
3. Have your child compare this sum to 100.
4. Have your child compare this sum with the stated sum in step 1.
5. Repeat the activity having your child select 2-digit numbers that do not end with 5 or 0.

Example:

"I think that 37 plus 45 is 72."

37

45

sum is 82

"It is 18 less than 100."
"I was 10 off of what the sum is."
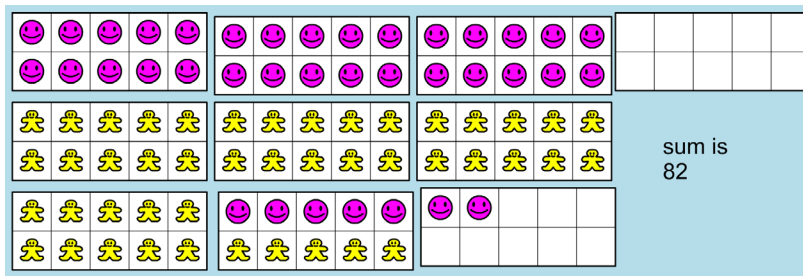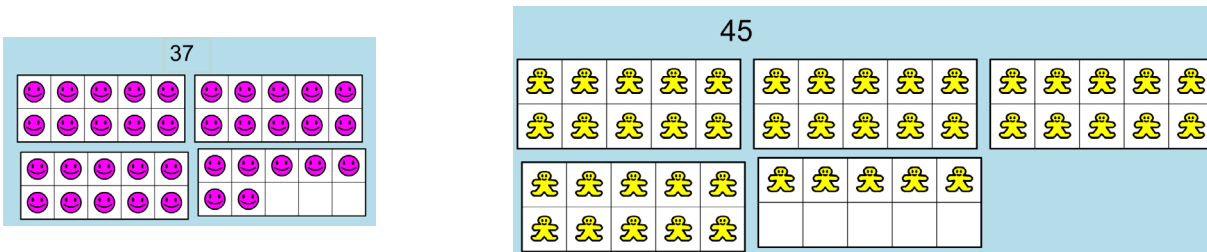
Your child may decompose one number to make a ten.

Let's Talk About It

How did you pick your numbers?
What was your strategy for determining the sum?
How many would you have to add on (or take away) to make 100?

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Sums Less than One Hundred Using Tiles

Activity 3

Set Up for the Activity:
- Open the Colour Tiles learning tool.

How to Do the Activity:
1. Ask your child to pick three numbers when added together has a sum between 80 and 90.
   - » have your child tell you the numbers and their sum
   - » accept any three numbers even if the sum is not in the range
2. Ask your child to represent the three numbers using three different colours of tiles.
   - » one colour for each number
3. Have your child verify the sum by completing the following steps:
   a. have your child use the annotation tool to draw a rectangle that has a length of 10 and an area of 90 square units
      - » have your child place the tiles representing the three numbers into the 90 square unit rectangle to confirm that the sum is less than 90
         - ◊ if there are more tiles than 90, ask your child to adjust one of the three numbers picked so that the sum is less than 90
   b. have your child draw a second rectangle with a length of 10 that has an area of 80 square units
      - » have your child move this rectangle onto the other rectangle to confirm that the sum of the three numbers is greater than 80
         - ◊ if there are less than 80 tiles, ask your child to adjust the three numbers picked so that the sum is greater than 80 and less than 90
4. Ask your child to compare the total number of tiles and the sum your child shared in step 3.
5. Ask your child to compare the sum of the three numbers to 90.
6. Ask your child to compare the sum of the three numbers to 80.
7. Repeat the activity as desired.

Example:
"I think that 32 plus 34 plus 16 is 82"
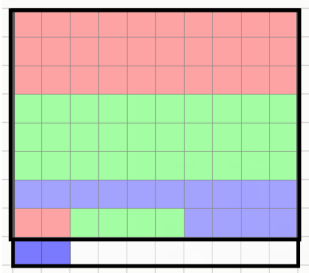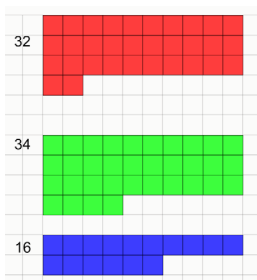
Your child may decompose the numbers into tens and ones in order to arrange the tiles in the rectangle.

"There are 82 tiles which is the same as the sum I thought that it would be."
"The sum is 8 less than 90... and the sum is 2 more than 80."

Let's Talk About It

How did you pick your numbers?
What strategy did you use to determine the sum of those three numbers?
Is your sum closer to 80 or 90?
How many tiles need to be added to make 90?

Even or Odd Sums Less than One Hundred Using the Rekenrek

Activity 4

Set Up for the Game:
- Open the Rekenrek Learning Tool
    » show ten racks with the beads on the right hand side
- Set up a chart with the headings as shown in the example

How to Play the Game:
1. Have your child pick a number less than 10 and represent it on the Rekenrek.
2. Ask your child to determine whether it is even (by forming two equal groups) or odd.
3. Record the number and state if it is even or odd in the chart.
4. Have your child pick a number between 55 and 90 and ask if the number is even or odd.
5. Have your child represent this number on the Rekenrek and verify whether it is even or odd.
    » add to the chart
6. Have your child determine the sum of the two numbers from step 1 and step 4.
7. Ask your child to determine if the sum is even or odd.
8. Record the sum and state if it is even or odd in the chart.
9. Repeat the activity several times and then have your child look for patterns in the chart.

Example:
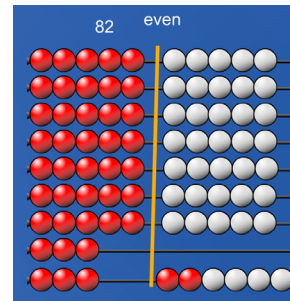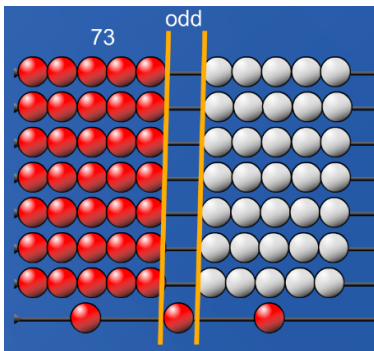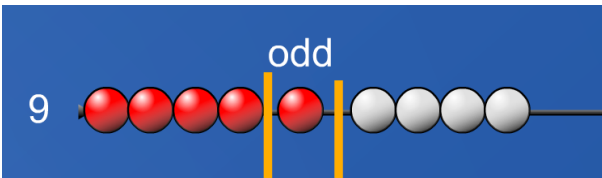
Number less than 10	9 (odd)			
Number between 55 and 90	73 (odd)			
Sum	82 (even)			

Your child may add on the smaller amount of beads onto the greater amount.

Let's Talk About It

What strategies did you use to determine your sum?
What patterns do you see between numbers being even or odd and their sum?

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**Using Compensation to Add Numbers using Rods**

Set Up for the Game:
- Open the Whole Number Rods Learning Tool

How to Play the Game:
1. Ask your child to pick two 2-digit numbers such that:
   - » one number has a ones digit that is 7, 8, or 9 and,
   - » the sum of the two numbers is greater than 50 and less than 100.
2. Have your child tell you the numbers and write an addition expression.
   - » accept any two numbers even if the sum is less than 50 or greater than 100.
3. Ask your child to round the number with a 7, 8, or 9 in the ones digit to the closest ten.
4. Ask your child to write an addition expression that is equivalent to the first expression and uses the rounded number.
5. Have your child verify that the two expressions are equivalent by representing each expression using the whole number rods.
6. Have your child determine the sum.

Example:
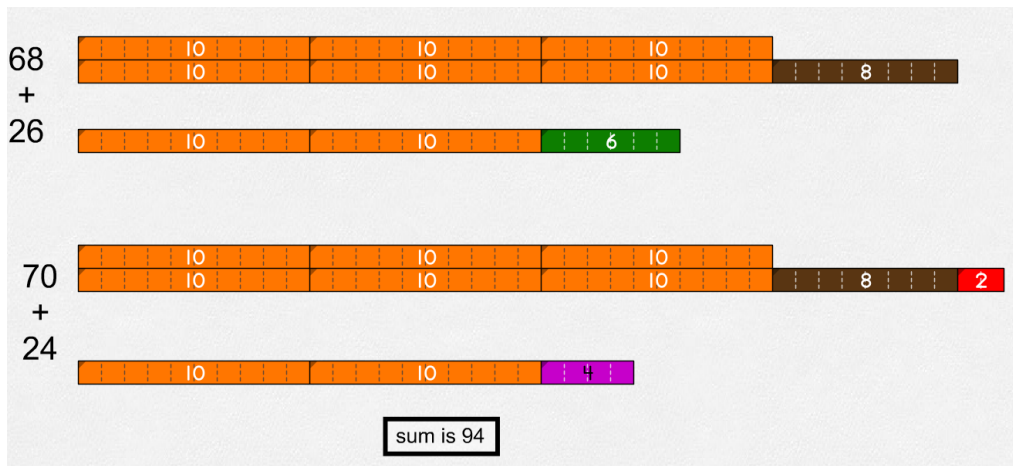
Your child may notice that when the one number was increased the other number needed to be decreased by the same amount in order for the expressions to be equal.

Let's Talk About It

Why are the two expressions equivalent?
How did you determine the sum?
Which expression makes it easier to determine the sum?

## Catch a Bouncing Ball – Operations

Set Up for the Game:
- Open the Catch a Bouncing Ball – Operations game
  - » Choose Addition
  - » Choose Sums to 100
  - » Select Play

How to Play the Game:
1. An addition expression will appear on the baseball.
2. Move the baseball glove to the location on the number line that represents the sum of the expression.
3. If the location is correct a new expression will appear. If the location is incorrect try to find the correct sum and move the glove to the new location.
4. The game is played until ten balls have been caught.
5. Review any mismatches at the end of the game.

Example:
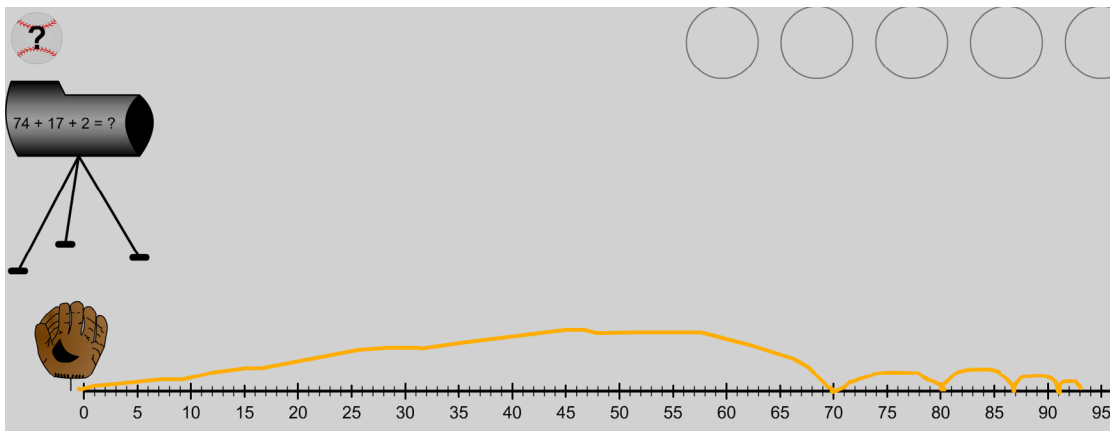
Your child may determine the sum by first adding the tens and then add on the ones from the greatest to least.

Let's Talk About It

How did you find the sum of the numbers?
What is another way you can determine the sum?

Addition to 100

Add up to 100 on the Numbers Chart

Set Up for the Game:

- Open the Number Chart learning tool.
  - » Select 1 to 100 version of the chart
  - » Choose Hide All
- Shuffle a set of cards 0 to 20 and place face down in a pile. Choose a representation – Beads, Numerals, Tallies or Ten Frames.
  - » When all the cards are played, shuffle and reuse the cards.

How to Play the Game:

1. Share that the object of the game is to be the first person to reach the number 100 on the chart.
2. Players take turns:
   - » picking a card
   - » predicting what number will be flipped
   - » counting the squares and flips over the square of the final count
3. Play is repeated until one player reaches, or passes, 100.
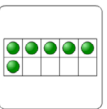4. Repeat activity as desired.

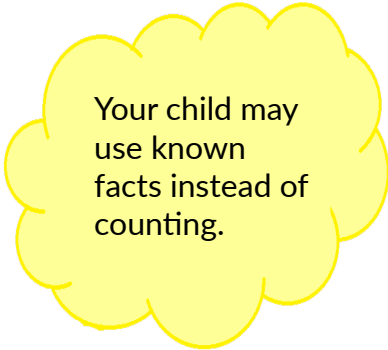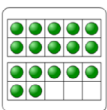**Example:**

Player 1
1st turn: 19
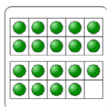
2nd turn: 8
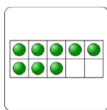
Player 2:
1st turn: 6

2nd turn: 17

Your child may use known facts instead of counting.

Player 2 is circled.

Let's Talk About It

How did you predict which number was going to be flipped?

How can you check that the sum of your cards matches the final card flipped?