



Math Myths and Misconceptions

A Series on Preventing and
Repairing Student Misconceptions
in Mathematics



Preventing Misconceptions

Session 2

Concepts of Addition

Concepts of Addition

The title is centered at the top of the slide. It is flanked by five circles: a solid light purple circle on the far left, a hollow light purple circle, a solid light purple circle, a hollow light purple circle, and a solid light purple circle on the far right.

Addition is more than just
“putting together” or “in all.”

A decorative header consisting of five circles in a horizontal row. From left to right, the colors are: solid light purple, hollow light purple, solid light purple, hollow light purple, and solid light purple.

Concepts of Addition

Addition is the appropriate operation for a variety of situations.

Five circles are arranged horizontally at the top of the slide. From left to right, they are: a solid light purple circle, an outline of a light purple circle, a solid light purple circle, an outline of a light purple circle, and a solid light purple circle.

Concepts of Addition

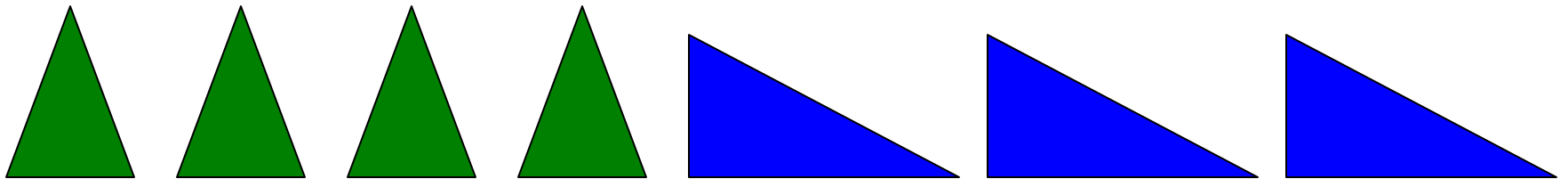
Recognizing these situations can lead to success with word problems and problem solving, and can aid in the learning of number facts.

Key Concepts of Addition

Addition is used to combine two or more quantities

Combining includes putting together two or more sets of objects, such as

4 green triangles + 3 blue triangles = 7 triangles



Key Concepts of Addition

Addition is used to show a change or increase from a starting point

For example, “The tree was 60 feet tall last summer and grew 8 feet. How tall is it now?” represents a growth, or increase, of 8 feet.



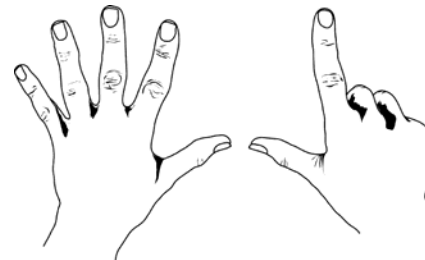
Key Concepts of Addition

Addition can be used to solve missing addend situations

For example, “Isy needs to get 10 boxes, and so far she has 3. How many more does she need?” This problem can be solved by adding on from 3.



...4...5...6...7...8...9...10



Developing Students' Understanding of Addition—Teaching Tips

Students should encounter a variety of situations, and discuss a variety of strategies for addition

Each type of addition problem can be modeled differently and may seem very different to a child.

Developing Students' Understanding of Addition—Teaching Tips

Students should encounter a variety of situations, and discuss a variety of strategies for addition

Combining two sets is different from increasing a given number. Students should see word problems, make up word problems, and work with materials and drawings.

Developing Students' Understanding of Addition—Teaching Tips

Include experiences where students model both word problems and computational exercises with materials

Using concrete materials can lead to visualizing the action involved in problems after sufficient experience.

Developing Students' Understanding of Addition—Teaching Tips

Give students many early experiences combining, or joining, sets of actual objects

Use beads or counters to represent tangible objects, such as apples or flowers, as well as intangible objects, such as days or years.

Developing Students' Understanding of Addition—Teaching Tips

Give students early experiences adding more to or increasing a known number

After counting the parts and then recounting the whole set, students will gradually be able to use the more efficient method of counting on from the known number.

Developing Students' Understanding of Addition—Teaching Tips

Teach strategies for remembering basic facts while developing an understanding of key concepts of addition

Students should connect and apply various models to “number-only” problems. For example, $7 + 2$ can be thought of as “7 increased by 2” and $5 + 6$ can be seen as “5 joined by 6 more.”