

Parent Information: Fact Fluency (2nd Grade)

Numerical fluency is the ability to work with numbers flexibly, efficiently, and accurately. Numerical fluency also includes understanding the relationships between numbers and using that knowledge to solve problems.

Numerical fluency is much more than just memorizing facts. It is a deep understanding of how numbers work and how to decompose numbers into two or more parts.

Four Components of Math Fact Fluency.

1. **Accuracy:** The ability to get the correct answer
2. **Efficiency:** The ability to get the answer quickly and easily
3. **Appropriate Strategy Use:** The ability to select and apply a strategy that is appropriate for solving a problem efficiently
4. **Flexibility:** The ability to think about a problem a different way if needed in order to solve the problem.

Appropriate Strategy Use:

Children are usually very familiar with the doubles facts. ($4 + 4 = 8$; $6 + 6 = 12$; $3 + 3 = 6$)

These doubles facts can be used to quickly solve other addition problems.

For example, if I know that $7 + 7 = 14$, I can use the “doubles plus one” strategy to determine that $7 + 8$ must be 15 (one more than $7 + 7$).

The “doubles minus one” strategy also uses doubles facts to solve more challenging problems. If I know that $7 + 7 = 14$, then $7 + 6 = 13$ (one less than $7 + 7$).















A strong understanding of combinations of 10 is very useful for solving addition problems. If I know that $7 + 3 = 10$, I can use that fact to solve $7 + 8$ by decomposing (separating) 8 into 3 and 5. I can then add 3 to 7 to get 10 and $10 + 5$ to get 15.

$$\begin{aligned}7 + 8 &= \\7 + (3 + 5) &= \\(7 + 3) + 5 &= \\10 + 5 &= 15\end{aligned}$$

Combinations Of Numbers:

Children need many opportunities to practice finding combinations of different numbers. One easy way to do this is to have students draw pictures to represent the combinations.

For example: "I have 7 blocks in all. My blocks are blue and green. What are the possible combinations of blue and green blocks that I could have to make 7 blocks?"

Blue Blocks	Green Blocks	Equation
		$0 + 7 = 7$
		$1 + 6 = 7$
		$2 + 5 = 7$
		$3 + 4 = 7$
		$4 + 3 = 7$
		$5 + 2 = 7$
		$6 + 1 = 7$
		$7 + 0 = 7$

Using an organized list such as the one above is a great way to keep track of the combinations. As you find the combinations, you are familiarizing yourself with the addition facts for the number.

Drawing pictures of different combinations of numbers also helps children internalize addition facts.

Let children reason as they try to solve math facts. The goal is for the child to be able to reason and solve efficiently, not to completely memorize every fact.

Counting on their fingers is not a problem as children are learning facts. Research shows that the act of touching your fingers as you count helps build the concept of numbers in your brain.

Three Phases Of Fluency Development:

1. **Phase 1: Counting**—Counting objects aloud or mentally. Children can use strategies such as pointing at objects or moving them to the side to keep track of the count.
2. **Phase 2: Deriving**—Using reasoning strategies based on known facts. Children can relate a fact to what they already know, such as the ‘doubles + 1’ strategy to find the answer.
3. **Phase 3: Mastery**—Children reason so quickly and efficiently that the facts appear to be automatic and memorized.

Playing games is a great way to develop numerical fluency. Rolling a die and counting the steps builds counting skills. “Go Fish” improves number matching skills. Games with money, such as Monopoly, help students learn to count money in different denominations.

The best way to improve fact fluency is to work with numbers as much as possible. Look for different combinations of numbers. Give young children opportunities to count things such as the number of plates on the table or the number of windows in the home. Let older children count out money to pay for things or determine the change that should be received for a purchase. Make real-life problem-solving a part of your everyday routine.