Engaging Families in Math Fact Fluency
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The Five Fundamentals

1. Mastery must focus on fluency!
2. Fluency develops in three phases.
3. Knowing foundational facts must precede derived facts.
4. Timed tests do not assess fluency.
5. Students need substantial and enjoyable practice.

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Figure 1.1. What Procedural Fluency Is and What It Looks Like

![Diagram of Procedural Fluency](image)

The four components (bolded) are interrelated. Appropriate strategy selection is required for efficiency and flexibility.

Basic Fact Fluency requires using strategies flexibly, accurately, efficiently and appropriately, eventually being able to solve problems automatically. (AKA ‘master’).

@JBayWilliams #mathfactfluency #NCTM100
Strategy-Based Progressions for Math Fact Fluency

**Addition Fact Fluency Flexible Learning Progression**

- +/- 0,1,2
- Doubles
- Combos of 10
- 10+
- Near Doubles
- Making 10
- Pretend-a-10*

*Also called Compensation and Use 10; we have found that young learners remember the strategy and distinguish it from Making 10 when we use this name. Research indicates that this strategy is more accessible than Making 10, and therefore should be explicitly taught (Baroody, Elland, Reid, & Pailwal, 2015).

**Multiplication Fact Fluency Flexible Learning Progression**

- 2s
- 10s
- 5s
- 1s
- 0s
- Squares
- Doubling (4s, 6s, 8s)
- Adding a Group (3s and 6s)
- Subtracting a Group (9s, 4s)
- Break Apart* (3s, 4s, 6s, 7s, 8s, 9s)
- Near Squares

*We acknowledge that all the derived fact strategies are break apart (distributive property) strategies. We focus on specific ways to break apart (e.g., adding a group) and move towards generalizing the Break Apart strategy.