Math Fact Fluency: Addition & Subtraction

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What is Fluency?

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

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

### Addition & Subtraction Fluency Standards

<table>
<thead>
<tr>
<th>KY.K.OA.5</th>
<th>Within 5</th>
<th>Represent add. &amp; sub. with objects, fingers, mental images, drawings, sounds, acting out situations, verbal explanations, expressions, or equations. (KY.K.OA.1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KY.1.OA.6</td>
<td>Within 10</td>
<td>Relate counting to addition &amp; subtraction (KY.1.OA.5) Use a range of strategies including: Counting on Referencing a 10 Relating to known or easier facts Using the relationship between add. &amp; sub.</td>
</tr>
<tr>
<td>KY.2.OA.2</td>
<td>Within 20</td>
<td>Mental Strategies (see above)</td>
</tr>
<tr>
<td>KY.2.NBT.5</td>
<td>Within 100</td>
<td>Strategies based upon: Place Value Add/subtract chunks of 10 (1.NBT.5) Properties of Operations Relationships between add. &amp; sub.</td>
</tr>
<tr>
<td>KY.3.NBT.2</td>
<td>Within 1000</td>
<td>Strategies (see above) &amp; algorithms A range of algorithms may be used</td>
</tr>
</tbody>
</table>

**Build procedural fluency from conceptual understanding.**

Effective teaching of mathematics builds fluency with procedures on a foundation of conceptual understanding so that students, over time, become skillful in using procedures flexibly as they solve contextual and mathematical problems.
Fluency Develops in Three Phases

Phase 1: Counting
Student counts with objects or mentally.

Phase 2: Deriving
Uses reasoning strategies based on known facts.

Phase 3: Mastery
Efficiently produces answers
Foundational Facts Must Precede Derived Facts

Addition Fact Fluency Flexible Learning Progression

Doubles
- Use a double to find the sum.
- $6 + 8 = 6 + 6 + 2$

Combos of 10
- Move some from one addend to the other to make a 10.
- $6 + 8 = 10 + 4 = 14$

10+
- Pretend-a-10*
- Think of an 8 or 9 as a 10, and adjust answer.
- $6 + 8 \rightarrow 6 + 10 = 16$
- $16 - 2 = 14$

*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, Eiland, Reid, & Paliwal, 2016).
Students Need Substantial and Enjoyable Practice

Stories

Three bears were in the cave. Some more bears went in. Then there were five bears in the cave altogether. How many bears walked in and joined the other three bears?
Students Need Substantial and Enjoyable Practice

Quick Looks and Visuals
Students Need Substantial and Enjoyable Practice

Games
KCM is here to support you!

Contact me

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