Addition and Subtraction: What’s the Difference?

Tools for Modeling Subtraction Problems

Presented by Shelah Feldstein
Intro

Shelah Feldstein
Tulare County Office of Education
Session Agenda

Addition & Subtraction: What’s the Difference?

Subtraction Contexts

Subtraction Strategies Common in Early Elementary

Tools for Modeling Subtraction Situations

Formative Assessment

Promote and Deepen Academic Discourse
EXPECTATIONS IN CALIFORNIA
3 Types of Knowledge

- Physical
- Social (Tell)
- Logico-Mathematical (Ask)
1.OA.6 Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., $8 + 6 = 8 + 2 + 4 = 10 + 4 = 14$); decomposing a number leading to a ten (e.g., $13 - 4 = 13 - 3 - 1 = 10 - 1 = 9$); using the relationship between addition and subtraction (e.g., knowing that $8 + 4 = 12$, one knows $12 - 8 = 4$); and creating equivalent but easier or known sums (e.g., adding $6 + 7$ by creating the known equivalent $6 + 6 + 1 = 12 + 1 = 13$).

2.NBT.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

3.NBT.2 Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
1.OA.6 Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 - 4 = 13 - 3 - 1 = 10 - 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 - 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).

2.NBT.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

3.NBT.2 Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
Why are these facts related for addition and subtraction?

Represent your explanation as many ways as possible.
Where Does our Teaching Lead?
Where Does our Teaching Lead?

Mathematical understanding is about our experiences, not our ability.
As good as we might be, experience is a better teacher.
Create experiences for your students.
What answer did you get?

How did you solve the problem?
Discuss

Why do students tend to struggle with the concept of subtraction?
CONTEXT
## Take from VS Compare

<table>
<thead>
<tr>
<th>Context</th>
<th>Take From</th>
<th>Compare</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>One quantity is decreasing.</td>
<td>Two different quantities—comparing the differences.</td>
</tr>
<tr>
<td></td>
<td>“There are 10 frogs on the log. 6 frogs jump in the water. How many frogs are still on the log?”</td>
<td>“There are 10 green frogs and 6 brown toads. How many more frogs are there than toads?”</td>
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STRATEGY
## Take from VS Compare

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[Diagram with circles and Xs indicating the quantities being compared]
## Take from VS Compare

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<td>Remove/Count Back</td>
<td>Count up the difference/ Distance</td>
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The diagram illustrates the removal of a group of objects (the strategy) from one set and then counting back or up to compare with another set. The visual representation shows a before and after scenario, with crosses marking the removed objects and the final comparison highlighted.
Compare Focus Questions

How many more does 6 need to have the same as 10?

How many less does 10 need to have the same as 6?
## Take from VS Compare

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What has been your experience teaching these problem types?
## Connections to Number Lines

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![Diagram showing connections between number lines with strategy examples](image-url)
# Hundreds Chart

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How can a hundreds chart be used to represent both approaches?
Make Connections
## Hundreds Chart

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### Diagram

- **Take From:**
  - Start at the number 10.
  - Subtract 6 from 10 to get 4.

- **Compare:**
  - Start at the number 6.
  - Add the distance of 2 to 6 to compare the difference.
Partner A: Describe your problem solving on a hundreds chart.

Partner B: Represent your partner’s thinking on a number line.

Compare the representations.

What other strategies would have worked? How could you have communicated more precisely?
Dialogue Frames

I agree with _____ because _____.

I don’t understand _____. Can you explain that again?

I disagree with _____ because _____.

How did you decide to _____?

*Number Talks*, by Sherri Parrish
FORMATIVE ASSESSMENT
<table>
<thead>
<tr>
<th>Fluency</th>
<th>Accuracy</th>
<th>Efficiency</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>What is the answer to 10 - 6?</td>
<td>Which facts do you “just know”?</td>
</tr>
<tr>
<td></td>
<td>How do you know it is correct?</td>
<td>Which facts do you use a strategy to solve?</td>
</tr>
<tr>
<td></td>
<td>(How might you check it?)</td>
<td></td>
</tr>
<tr>
<td>Flexibility</td>
<td>Solve 10 - 6 using one strategy.</td>
<td>Appropriate Strategy Selection</td>
</tr>
<tr>
<td></td>
<td>Now try solving it using another strategy.</td>
<td>Emily solved 10 - 6 by changing it in her mind to 6 + ? = 10. What did she do? Is this a good strategy? Tell why or why not.</td>
</tr>
</tbody>
</table>
Next Steps

• What next step will you take?

• Write it down.

• Share your next step with a partner.
### SESSION: 49383

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

Send your text message to this Phone Number: 37607

**Poll Code for this Session**

Speaker was well-prepared and knowledgeable (0-3)

Speaker was engaging and an effective presenter (0-3)

Session matched title and description in program book (0-3)

Other comments, suggestions, or feedback (words)

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**Example:**

49383 323 Inspiring, good content

**Non-Example:**

49383 3 2 3 Inspiring, good content

**Non-Example:**

49383 3-2-3 Inspiring, good content
Thank You

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Your feedback is greatly appreciated.