Focus on Place Value with Grayson County MITs

More Place Value
Welcome!

Your hosts

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About Sloan!

- mother of 2, Jessika-25, Hunter-21
- married to Kent for 30 years
- 27th year of teaching, 3rd year as an MIT
  - before becoming an MIT, I taught special education and 5th grade
About Brandy!

- mother of 3, Isaac-16, Brayden-11, Breanna-8
- married to Brad for 11 years
- 12th year teaching, 3rd year as an MIT
KCM Website

https://www.kentuckymathematics.org/
Agenda

• The Research
• The Standards
• The Progression of Addition and Subtraction (gfletchy)
• Invented Strategies/Number Talks
• Activities from Teaching Student Centered Mathematics
• Share Out
Children are expected to “develop, discuss, and use efficient, accurate, and generalizable methods to compute sums and differences of whole numbers in base-ten notation, using their understanding of place value and properties of operations.” *Invented Strategies generate procedural proficiency.
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.

2.NBT.7-Add and subtract within 1000.
*Use concrete models or drawings
*Use strategies based on place value
*Understand that in adding or subtracting 3-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds
The Progression of Addition and Subtraction

Graham Fletcher

https://www.youtube.com/watch?v=nRGZSc1Qvng&authuser=0
How can we help students to progress?
An *invented strategy* is any strategy, other than the standard algorithm, that does not involve the use of physical materials or counting by ones.
Benefits:

• Children make fewer errors
• Less reteaching is required
• Children develop number sense
• Invented strategies are the basis for mental computation and estimation
• Flexible Methods are often faster than the standard algorithms
• Strategy invention is itself a significantly important process of doing mathematics
Examples of strategies our kids have “invented”

Invented Strategies cont.

2nd Grade Addition and Subtraction Strategies

- **Number Line**
  - $48 + 37 = 85$
  - $48 + 30 = 70$
  - $8 + 7 = 15$
  - $70 + 15 = 85$

- **Partial Sums**
  - $48 + 37$
  - (Associative Property)
  - $40 + 30 = 70$
  - $8 + 7 = 15$
  - $70 + 15 = 85$

- **Number Bond**
  - $48 + 37$
  - (Associative Property)
  - $40 + 8 + 30 + 7$
  - $40 + 30 = 70$
  - $8 + 7 = 15$
  - $70 + 15 = 85$

- **Unit Form**
  - $48 + 37$
  - 4 tens + 8 ones
  - 3 tens + 7 ones
  - 7 tens + 15 ones
  - = 8 tens and 5 ones
  - = 85

- **HTO chart**
  - (Hundreds, Tens, Ones Chart)
  - $48 + 37$
  - $8 + 5 = 13$
  - $10 + 13 = 23$
  - $20 + 23 = 43$

- **Expanded Form**
  - $48 + 37$
  - $40 + 8$
  - $30 + 7$
  - $70 + 15 = 85$

- **Part Part Whole**
  - $84$
  - $46$
  - $?$
  - $76$
  - $6$
  - $70$
Invented Strategies cont.

2nd Grade Addition and Subtraction Strategies

**Number Line**

\[ 50 - 24 = \underline{\quad} \]
\[ 24 + \underline{\quad} = 50 \]

**OR**

\[ 50 - 20 = 30 \]
Count down to 26, 27, 28, 29

**Tape Diagram**

\[
\begin{array}{c|c}
? & 17 \\
25 & 17 \\
\end{array}
\]

\[
\begin{array}{c|c}
42 & \? \\
25 & \? \\
\end{array}
\]

Use with word problems, missing addend and subtraction

Use with word problems, missing addend and subtraction
Activities
Arrow Cards
Activities

Equal Representations = Deeper Understanding

\[
27 + 16 \\
\underline{2 \text{ tens} 7 \text{ ones}} \\
\underline{1 \text{ ten} 6 \text{ ones}} \\
\overline{3 \text{ tens} 13 \text{ ones} = 4 \text{ tens} 3 \text{ ones}}
\]
Activities

Multiple Representations of a Number

57
- 5 tens 7 ones
- 4 tens 17 ones
- 3 tens 27 ones
- 2 tens 37 ones
- 1 ten 47 ones
- 0 tens 57 ones

241
- 2 hundreds 4 tens 1 one
- 1 hundred 14 tens 1 one
- 0 hundreds 24 tens 1 one
- 23 tens 11 ones
- 22 tens 21 ones
- (and many other)
Activities

Which One Doesn’t Belong?
Why?  Defend your answer.

<table>
<thead>
<tr>
<th>256</th>
<th>53</th>
</tr>
</thead>
<tbody>
<tr>
<td>137</td>
<td>529</td>
</tr>
</tbody>
</table>
Activities

Power Number

*Make largest number using 3 cards.
*Make the smallest number you can using 3 cards
*Each card can only be used one time.
*Extension: Subtract the smallest number from the largest number.
Upcoming Virtual Professional Learning

APRIL 13 - 17
2:00-2:30 PM EST

Focus on Place Value!

Monday, April 13 - Place Value to 10
Tuesday, April 14 - Place Value to 100
Wednesday, April 15 - More Place Value to 100
Thursday, April 16 - Place Value with Multi-digit Numbers
Friday, April 17 - Place Value with Decimals
Visit Our Website

https://www.kentuckymathematics.org/kcm_virtual.php

KCM Virtual

At this time of social distancing due to COVID-19, the KCM wants to do our part to support Kentucky teachers, students and mathematics education. So we are providing free online mini-classes to educators. No registration is required. Just click "Join Live Session" to participate in the live class via Zoom or, if you aren't available at the class time, click "View Recorded Session" to view the recorded session when it becomes available.
KCM is here to support you!

Contact Us

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