

Mathematics Teaching Institute Day Two – Deconstructing the Operations

Mathematics Teaching Institute, July 27-31, 2015



Lunch We will return at 12:45



Debrief: Never say anything a kid can say (Reinhart, 2000)

The importance of considering student solution strategies and invented algorithms



My Favorite No: Learning From Mistakes







Deconstructing Multiplication and Division

- Review the following students' responses to Pigs have 44 teeth and Wristbands at the Fair tasks.
- 2. If this is our evidence of a student's work for this task, what can we say with some degree of certainty that this student knows?











The language of equal groups and fair sharing: Deconstructing multiplication and division

How many groups? How many in each group? How many total?



What strategies do students use to solve these problems?

What specific connections do you see in comparing the students' invented algorithms for division?

How do these examples of student work lend themselves to the language of equal groups?



There are 47 children in a down-hill ski club. A trip to Devil's Head costs 34 dollars for each child. How much does it cost to take everyone in the club on a trip? 8. 204 T . 0 20 · C 20 1,224 Era N 204 1 QK يز. 7 В : ********* 3 ۸., 1200 4 66 • • 4 Т 170

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Robin

6 + 35 = 0 with 6 left over

 $90 \div 35$ 35 + 35 = 70 2 35s with 20 left over

800 \div 35 35 + 35 = 70 70 x 10 = 700 20 35s with 100 left over 2 more 35s with 30 left over

6 + 20 + 30 = 56 leftovers will make one more group of 35 with 21 left over.

0 + 2 + 20 + 2 + 1 = 25 groups of 35

The Student council picked 896 apples and packaged them in bags with 35 apples in each bag. How many bags did they fill?





Break See you in 10 minutes



Number Talks by Sherry Parrish

Video Case: Number Talks in Context from *My Kids Can!*

Developing Mathematical Thinking





Building fluency in basic facts "Faster isn't smarter" by Cathy Seeley "Families Ask about Timed Tests" by Marilyn Burns

Memorization versus thinking skills



Please complete the daily feedback form

Homework: Read "13 Rules that Expire" (Karp, Bush, & Dougherty, 2014)

Please bring your Mathematics Curriculum Teacher's Manual on Wednesday Morning!

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Extra student work as needed

 A card store has 43 boxes of cards for Thanksgiving Day. Each box has 24 cards. How many Thanksgiving Day cards does the card store have?

	24 24 24	Julie
24 24 24 24	72	•
24 24 24	· · · ·	-
24		
240 240 240		•
4992		
1032	-	-

7. A card store has 43 boxes of cards for Thanksgiving Day. Each box has:
24 cards. How many Thanksgiving Day cards does the card store have?

$$24 \times 10 = 240$$

$$24 \times 3 = 72$$

$$(49, 58, 69, 69, 69, 79, 74)$$

. .



An elementary school has 24 classes. If there are 32 children in each class, how many children are there at the school?

Harry 3 4 +C ^ 153 5,06 ١

10. Mr. Party has 153 bags of balloons at his party product store. Each bag has 37 balloons. How many balloons does Mr. Party have at his store?

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ynna 544 10 candies for each friend - 170 374 10 candies for each friend - 170 204 10 candies for each friend <u>- 170</u> 34 Q4. <u>- 34</u> 0 2 candies for each friend 32 candies for each friend Hattie had 544 candies to share with her friends. She gave each of her 17 friends the same amount of candy. How many candies did each friend get?



friend get?

Tiffany $\begin{pmatrix} 10 & 2 \\ 5 & 2 \end{pmatrix}$ $\begin{pmatrix} 10 & 2\\ 5 & 2 \end{pmatrix}$ $\begin{pmatrix} 10 & 2\\ 5 & 2 \end{pmatrix}$ $\begin{pmatrix} 10 & 2 \\ 5 & 2 \end{pmatrix}$ $\begin{pmatrix} 10 & 2\\ 5 & 2 \end{pmatrix}$ $\binom{2}{2}$ $\binom{10}{5}$ $\begin{pmatrix} 10 & 2 \\ 5 & 2 \end{pmatrix} - \begin{pmatrix} 10 & 2 \\ 5 & 2 \end{pmatrix} \begin{pmatrix} 10 & 2 \\ 5 & 2 \end{pmatrix} \begin{pmatrix} 10 & 2 \\ 5 & 2 \end{pmatrix}$ $\begin{pmatrix} 10 & 2\\ 5 & 2 \end{pmatrix}$ $\begin{pmatrix} 10 & 2\\ 5 & 2 \end{pmatrix}$ $\begin{pmatrix} 10 & 2\\ 5 & 2 \end{pmatrix}$

Twelve children were sharing 228 M # M's. How many should each child get?



There are 810 fifth-graders at the District Olympics. They are placed in teams of 6. How many teams will there be?