DOINGWHATWORKS

SAMPLE MATERIAL

Problems: Connecting Mathematical Ideas to Notation

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Topic: Improving Mathematical Problem Solving in Grades 4 Through 8

Practice: Problem-Solving Instruction

In the *Connecting Mathematical Ideas to Notation* media piece, Dr. Sybilla Beckmann presented these problems as two examples of how students can connect mathematical concepts and notation. The worked examples include the solution ideas given by Dr. Beckmann.

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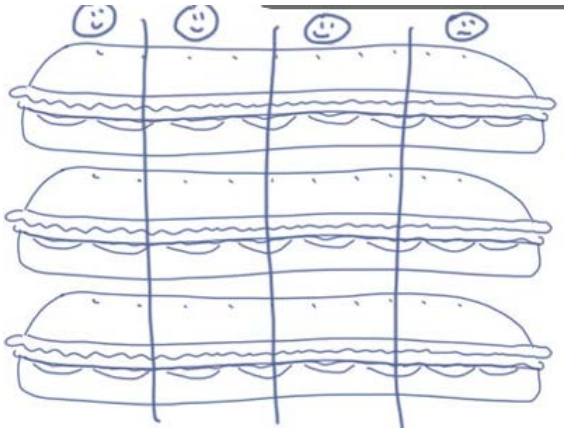
Problems: Connecting Mathematical Ideas to Notation

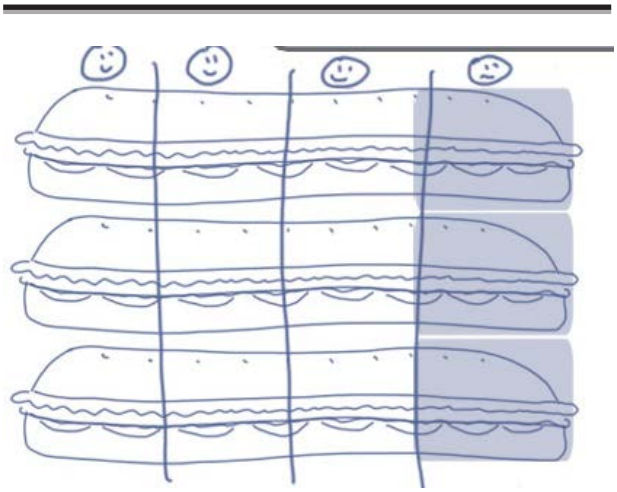
Problem: 3 submarine sandwiches are shared equally among 4 students.

How much of a submarine sandwich does one student get?

Solution:



$3 \div 4$



$3 \times \frac{1}{4} = \frac{3}{4}$

$3 \div 4 = \frac{3}{4}$

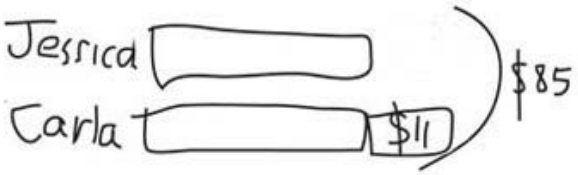
Problem: Carla and Jessica each have some money.

Carla has $11 more than Jessica.

How much does Carla have? How much does Jessica have?

Solutions:

Using a strip diagram:



$$\begin{array}{r} 85 \\ -11 \\ \hline 74 \end{array}$$

$$2\overline{)74}\quad \begin{array}{r} 37 \\ -60 \\ \hline 14 \\ -14 \\ \hline 0 \end{array}$$

Jessica $37
Carla $48

Using guess and check:

Jessica	Carla	Total
30	41	71
35	46	81
38	49	87
37	48	85

Using Algebra

If Jessica has J dollars,
Carla has J + 11 dollars

Together they have: J + J + 11 = 85

2J + 11 = 85

2J = 85 − 11 = 74

J = 74/2 = 37 Jessica has $37

J +11 = 37 + 11 = 48 Carla has $48