

Staff Development Goals 1. clearly support linguistically appropriate content and language objectives throughout the Math MATTERS lessons? 2. emphasize key vocabulary within Math MATTERS? 3. ... provide frequent opportunities for interaction and discussion during Math MATTERS lessons? 4. ... employ a variety of question types during Math MATTERS lessons? (for example, using questions focusing on knowing, organizing, applying, analyzing, generating, integrating, and evaluating) 5. ... adapt content through graphic organizers, visual representations (non-linguistic representation), or taped texts for Math MATTERS lessons? 6. ... provide differentiated instruction for students with different math learning needs in the Math MATTERS lessons? 7. ... aid students in writing complete number sentences for CGI problems?

What is CGI?

Major Theses

Children bring an intuitive knowledge of mathematics to school with them and this knowledge should serve as the basis for developing formal mathematics instruction in primary school.

Math instruction should be based on the relationship between computational skills and problem solving, which leads to an emphasis on problem solving in the classroom instead of the repetition of number facts.

http://www.promisingpractices.net/program.asp?programid=114



What does this mean?

Children are problem solvers.

Understanding of mathematical concepts comes before algorithms.

Children need to solve problems in their own ways.

Teachers and peers can facilitate connections among different solution strategies.

Teachers can connect strategies to mathematical representations.

What does this look like?

Pose a problem

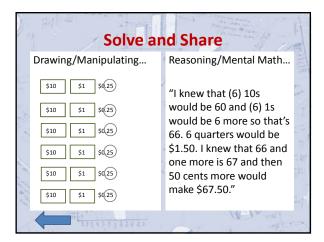
Give students time to solve in their own way

Students share their solution strategies with others

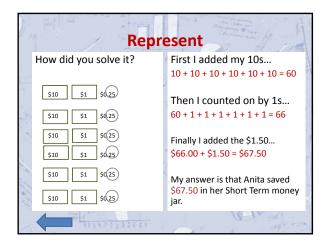
Connect different solution strategies

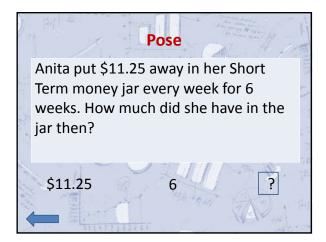
Model mathematical representations

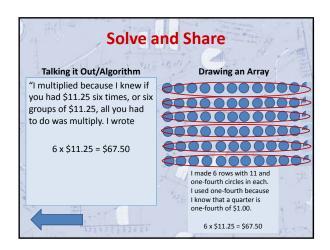
Let's Try It! Pose Solve Share Connect Represent



|), | Con | nect |
|----------------------|--|---|
| | How are these the same? | How are these different? |
| Sec. 14. 14. 14. 14. | \$10 \$1 \$6(25) \$10 \$1 \$6(25) \$10 \$1 \$6(25) \$10 \$1 \$6(25) \$10 \$1 \$6(25) \$10 \$1 \$6(25) \$10 \$1 \$6(25) | "I knew that (6) 10s would be 60 and (6) 1s would be 6 more so that's 66. 6 quarters would be \$1.50. I knew that 66 and one more is 67 and then 50 cents more would make \$67.50." |
| | 351135113551 | M. Jana |







Represent **Oral Explanation Mathematical Representation** Solved mentally... 6 x \$10.00 = \$60.00 6 x \$1.00 = \$6.00 "I knew that (6) 10s would be \$60.00 + \$6.00 = \$66.00 60 and (6) 1s would be 6 more so that's 66. 6 quarters would be \$1.50. I knew that 66 and 6 x \$ 0.25 = \$1.50 one more is 67 and then 50 cents more would make \$66.00 + \$1.00 = \$67.00 \$67.50." \$67.00 + \$ 0.50 = \$67.50

Practice Writing Number Sentences Set it up Pose problem Margo worked in a What do we know? 9 L bakery. She could What are we trying to find out? knead a loaf of bread We want to find the product so we will know how long it will take Margo to every 5.1 minutes. At complete the job. We could use repeated addition, but it would be that rate, how long easier to multiply, so would it take her to 9 x 5.1 = 45.9 It would take 45.9 minutes to knead 9 knead 9 loaves of loaves of bread. bread? *(45 minutes and 54 seconds) Direct Modelers will write the fact this way: 5.1 x 9 = 45.9 Other students may write it this way: 5.1 x 9

Play School Teacher Students Read the problem to your • Listen to the problem students Ask for the problem to be Provide a visual read again Ask questions Solve the problem in different ways Give time to solve Write a number sentence Ask students to share that matches the steps you Make connections followed Help with numerical • Listen to your tablemates representations

Play School Problem #1 Problem #2 Sister Bear had __ cents from Mama and Papa Bear gave the selling flowers. How many cubs an allowance. They gave more cents will she need in Brother Bear __ cents which was __ cents more than Sister order to meet her goal of raising __ cents? because he is older. How much did Sister get? 10, 50 30, 90 25, 75 50, 10 50, 25 75, 15 Problem #3 Brother Bear had __ cents. He spent __ cents on playing video games. How much does he have now? 50, 50 50, 40 50, 29

When posing a problem... Provide a visual Provide a visual 10 c ? 50 cWhat are we trying to find out? (a + x = c) or (c - a = x)What are we trying to find out? (a - b = x) or (x + b = c)

|), | When posing a problem | | | | |
|--------|--|---------|-----|--------|--|
| 1000 | 50c | 50c | ? | 100 PM | |
| 186.00 | | | | | |
| | What do we kno | w? | | | |
| 60 | What are we trying to find out? | | | | |
| | | (a-b=x) | | | |
| > | A 100 1 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 11641 | 100 | | |

Opportunities for All

Teachers

Pose problems

- Listen to students' thinking
- Ask questions
- Make decisions based on students' understandings
- Differentiate problems
- Help make connections
- Help represent mathematical thinking
- Facilitate

Students

- Solve problems
- Speak (explain)
- Listen (ask questions)
- Challenge themselves to think deeply
- Think flexibly
- Learn from one another
- Make connections
- Represent mathematical thinking

Wrap Up, Questions ... employ a variety of question types during Math MATTERS lessons? or example, using questions focusing on knowing, organizing, applyin nalyzing, generating, integrating, and evaluating) Educationmatters.kim@gmail.com



CGI Problems for Money Sense with Kids

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|---------|------|---|
| \cdot | 1111 | _ |

| | Multiplication | Measurement Division | Partitive Division |
|------------------------------|--|---|---|
| Grouping and Partitioning | Anita put away in her Short Term money jar every week for weeks. How much did she have in the jar then? (\$9.50, 5) (\$11.25, 6) | Anita had She wanted to give several charities each. How many charities could she donate to? (\$45.00, \$15.00) (\$70, \$17.50) | Anita had dollars she wanted to divide equally among her money jars. How much should she put in each jar? (\$363, 3) (\$366, 6) |
| Rate | Margo worked in a bakery. She could knead a loaf of bread every minutes. At that rate, how long would it take her to knead loaves of bread? (10, 5) (7, 8) | Margo worked in a bakery. She could knead loaves of bread in one hour. At that rate, how long did it take them to knead loaf(ves) of bread? (7, 1) (7, 2) (9, 3) | Margo worked in a bakery. She could knead loaves of bread in 40 minutes. At that rate, how many loaves could she knead in minutes? (8, 5) (5, 20) (4, 30) |
| Price | Eloy bought 7 pounds of white fish for \$2.50 a pound. How much did he pay for the fish? | Eloy paid \$21.77 for fish that cost \$7 a pound. How many pounds of fish did he buy? | Eloy paid a total of \$45 for 15 pounds of shrimp. How much did he pay a pound for the shrimp? |
| Fractions | Sammy and his 3 friends had each eaten personal sized pizza for lunch. Each had one-sixth of his pizza leftover. If they put their leftovers together, how much pizza would they have? | Sammy wanted to make pizza dough. The recipe called for ½ cup flour per pizza. If Sammy had 5 cups of flour, how many pizzas could he make? | Sammy's recipe for pizza called for 3/4 cup sausage per pizza. If Sammy could make 8 pizzas, how many cups of sausage did he have? |