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Week #11 Math Reading Quiz

Prof. - Dr. Ruiz

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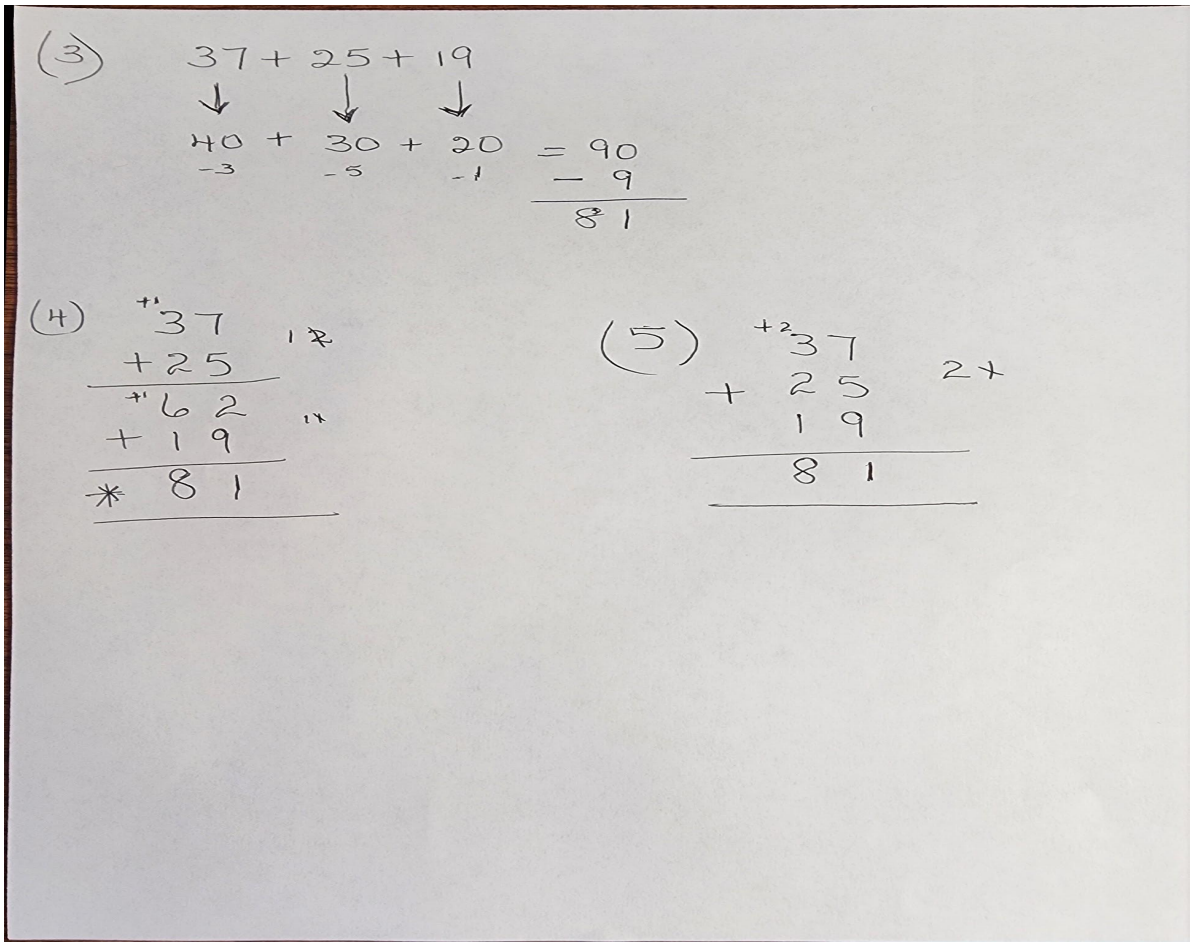
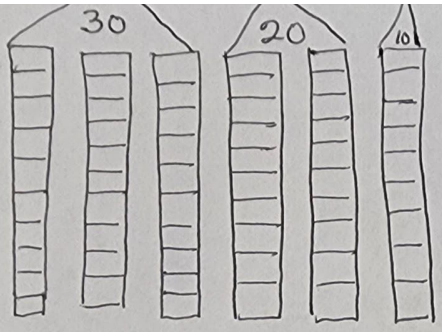
Question #1

Create an addition word problem and show 5 possible ways to solve the problem.

Jack has 37 baseball cards, Mike has 25 baseball cards and Tom has 19 baseball cards. How many baseball cards do they have altogether?



(1)



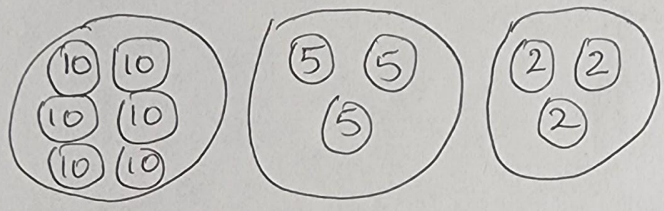
□□□□□□□ - 7

□□□□□ - 5

□□□□□□□□□ - 9

Take the tens from each number and put the remainding ones on the right. This becomes 60+21= 81

(2) Pull the tens, fives & two's



60+5

65 +5

70 +5

75 +2

79 +2

81

Skip count by 5 and 2

Question #2

Why is it important to combine place value with teaching of addition and subtraction?

Research suggests that problems involving addition and subtraction are a good context for learning place-value concepts. If students only understand computation as a digit by digit exercise and not the value of the numbers involved, they make many errors and are often unable to judge the reasonableness of their answers.Place value is not just a basis for computation, students also develop place value understanding as a result of finding their own method of computing (Van de Walle et al., 2019).

Question #3

What are invented strategies and why is it important for students to verbalize their strategies?

An invented strategy refers to any strategy other than the standard algorithm or that does not involve the use of physical materials or counting by ones. Invented strategies can become mental methods after the ideas have been explored, used and understood. There is mounting evidence that students both in and out of school can construct methods for adding and subtracting multi-digit numbers without explicit instructions. One of the best ways for students to grow their repertoire is to listen to the strategies of their classmates as they are shared, explored and tried out by others. Unless students have an understanding of these strategies, they should not be permitted to use them(Van de Walle et al., 2019)

Question #4

What are three differences between invented strategies and standard algorithms?

1. **Invented strategies are number oriented rather than digit oriented** - Using the standard algorithm for 45 +32, students think 4 + 3 instead of 40 + 30. Advocates for invented strategies claim that standard algorithms “unteach” place value. By contrast, inventive strategies work with the complete number. For example an inventive strategy for 618 - 254 might begin with 600 - 200 is 400. The computation is number oriented.

2. **Invented strategies are left-handed rather than right-handed** - Invented strategies often begin with the largest part of the numbers, the leftmost digits, because they focus on the entire number. For example 247 + 131 might begin with 200 + 100 = 300 giving you an idea of the size of the final answer. However the standard algorithm might begin with 7 + 1 = 8 , making the solution hidden until the end.

3. **Invented strategies are a range of flexible options rather than “one right way”** - Invented strategies are dependent on the numbers involved so that students can make the computation easier. Try each of these problems mentally: 465 + 230 and 526 + 98. Did you see the same method? The standard algorithm suggests using the same tool on all problems.The standard algorithm for 7000 - 25 typically leads to student errors, yet a mental strategy is relatively simple (Van de Walle et al., 2019).

Question #5

Give the Latin or European example of the “equal addition” approach.

Equal addition is a subtraction algorithm in Latin and European countries. It is based on the knowledge that adding the same amount to both the minuend and the subtrahend will not change the difference(answer). If given 15 - 5 to solve, there is no change to the answer if you add 12 to the minuend and 12 to the subtrahend and solve 27 - 17(Van de Walle et al., 2019).

Question #6

Explain the "think addition" strategy in teaching subtraction and give one example.

Think addition is one of the best strategies for subtracting mentally. Students are encouraged to use what they know about additions to make a true subtraction number sentence. It is particularly successful with students with disabilities. For example 38 - 19, the idea is to think, "How much do I add to 19 to get to 38?" Using the *join with change unknown* problems or *missing-part* problems will encourage students to use the think-addition strategy.

Example: Xavier had 38 toy soldiers. He got some more toy soldiers for his birthday. He now has 60 toy soldiers. How many did he get for his birthday?

60 - 38 Add tens to get as close as possible, then add ones.

38 + 10 = 48

48 + 10 = 58

58 + 2 = 60

10 + 10 + 2 = 22

Answer - Xavier got 22 toy soldiers for his birthday

Question #7

Explain one misconception in addition and one in subtraction that children may have.

Students incorrectly record the algorithm for addition by not regrouping and ignoring place value. Example: 56 + 97 = 1413. To help, have students show with base- ten materials the value of these two numbers on a place value mat. Have students use partial sums to record and find total. Have the teacher use another strategy to check answers

When subtracting two multi-digit numbers,student always subtract the smaller number(digit) from the larger number(digit) rather than regrouping Example: 70 - 23 = 53. To help the student, start with a reminder about subtracting from 0 or other smaller numbers. Show 3 cubes in your hand and ask, “Can you take away 5?” Reinforce the situation of asking for more than you have.(Van de Walle et al., 2019)

Misconceptions - What it looks like

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  56
 +97
1413
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Students record the entire sum of the digits in each column.

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  70
 -23
  53
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Students say “0 from 3 equals 3 and 2 from 7 equals 5. The answer is 53.”

Van de Walle, John A, et al. *Elementary and Middle School Mathematics : Teaching Developmentally*. 10th ed., Ny, Ny, Pearson, 2019.