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EDG565 - Chapter 9 Math Quiz

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Question #1

Give an example of a student's completed problem that shows that they are ready to work on reasoning strategies.

After students have progressed through counting strategies, where they demonstrated the ability to count verbally or by using their fingers or objects, to determine the answer , they can then work on reasoning strategies. Example : 5 + 9 = ?. The student will start at 9 and count on verbally 10, 11,12,13,14. Answer, 5 + 9 = 14

Question #2

What is the problem with a memorization approach vs. strategy approach to basic fact learning?

The memorization approach moves from presenting concepts of addition and multiplication directly to memorization of facts and this approach does not work because there is no time devoted to developing strategies and this leads to numerous limitations. There are too many facts to memorize,over 100 addition facts, 100 multiplication, and 200 subtraction and division facts. Without the knowledge of strategies, students are inflexible, use inappropriate applications, and misapply the facts, without having the strategies to use to confirm if the sum of a product is correct(Van de Walle et al., 2019)

Question #3

What is the purpose of quick image use in teaching basic facts?

The purpose of a quick image is to move students beyond counting to seeing the ways numbers can be composed or decomposed. For younger students, this is a high leverage routine. Dot charts, five-frames and ten-frames can be used. The process is to flash the image for a few seconds, hide it , then flash it again(Van de Walle et al., 2019). Ask students how many dots they see but the key is to listen to their responses, how they saw what they saw. For example, a ten-frame with nine dots, some might see it as a column of 5 and a column of 4 , while others see it as 4 rows of 2 + 1

Question #4

Explain the "Making Ten" strategy and give an example.

All of the basic facts with sums greater between 11 and 18 can be solved by using the Making 10 strategy.The making ten strategy is a reasoning strategy which is done by turning one number in an addition problem to 10. Students use their known facts that equal 10 and then add the rest of the numbers onto 10. This strategy is very important and contributed more to developing fluency than using doubles (Henry & Brown, 2008 as cited in Van de Walle et al., 2019). Making 10 strategy can also be applied to larger numbers(Van de Walle et al., 2019).

Examples: 8 + 5 = 10 + 3 and 27 + 6 = 30 + 3

Question #5

List and briefly describe the progression of teaching multiplication facts.

Multiplication facts begin with 2s, 5s, and 10s. These facts connect students' experiences with skip counting and addition doubles. Although tens are not basic facts, it is listed because

knowing tens is an important way to derive facts. Next 0s and 1s are foundational facts, though 0 does not generate other facts. These facts have to be understood and not memorized.

Twos - Facts that have 2 as a factor are equivalent to addition doubles and should already be known by students. Help students realize that 2 x 7 is the same as 7 + 7

Fives - Practice skip counting by fives. Keep track of how many fives have been counted. Use arrays that have rows with five dots. Point out that such an array with six rows is a model for 6 x 5. While twos and fives are developed from skip counting, that is still phase 1. It is important that as students learn these facts, they will develop more efficient ways to know 8 x 5, besides skip counting.

Zeros and ones - these facts look easy on a procedural level but tend to get confused with 'rules' that some students learn for addition. For example, the fact that 6 + 0 stays the same but 6 x 0 is always zero or that 1 + 4 is the next counting number but 1 x 4 remains the same. The concept behind these facts are best developed through story problems.

Nines - They aren't used for deriving the other facts , but there are several reasoning strategies and patterns specific to nines.Nines can be derived from tens. Because students can often multiply by ten and subtract from a decade value, this strategy is effective.(e.g. 7 x 9 can be found by finding 7 x 10 and subtracting a set of 7)(Van de Walle et al., 2019).

Van de Walle, J. A., Karp, K., & Bay-Williams, J. M. (2019). *Elementary and middle school mathematics : teaching developmentally* (10th ed.). Pearson.