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Week # 4 Math Quiz

Prof. - Dr. Ruiz

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Question #1

What are three criteria to determine if a math task is “rich” enough, relevant and rigorous to engage students.

Three criteria that determines if a task is rich, relevant, rigorous and engaging to students are:-

1. Tasks must have meaningful context. Students must be able to relate to the context of the problem, and the context should relate to mathematics used in the real world. These tasks need to be age appropriate, so students can have some background knowledge to bring to the table. Another opportunity for relevance is having tasks that are culturally relevant.

2. Math tasks should align to the grade-level standards. Opportunities to assess those standards formatively are provided throughout the task.

3. Provide opportunities for students to have multiple solution paths to solve a problem or complete a task. Teachers should avoid showing students how to solve a problem and then have students replicate the process. Instead, teachers should tell students that there are other ways to solve the problem, and have them try different paths to a solution.

Question # 2

List ten topics in math and ten manipulatives you can use to teach the concept.

Topic	Manipulatives
Addition and Subtraction	Linking cubes/cube towers
Shapes/Geometry	Pattern blocks
Compare and construct fractions	Fraction tiles
Place value	Place value disks
Time	Clock
Probability	Foam dice
Number concepts	Bead strings
Area and perimeter	Color tiles
Cuisenaire rods	Measurements
Ten frames	Representing number

Question # 3

How is Literature best woven into the math classroom?

Literature is best woven into the math classroom by selecting great children's books that have a clear math focus. Teachers can choose books that feature mathematics or provide a context or purpose for learning a math skill or concept. *Two of Everything*, is a Chinese folktale about a magic pot that doubles everything placed inside it. This is a fun way for students to explore patterns and algebraic reasoning. Teachers can integrate literature in math lessons or units as a

tool to promote problem posing and sense making. They can also provide students with opportunities to act out mathematics in books to help them make sense of the math concept explored (SanGiovanni et al., 2021).

Question #4

Give an example of a physical representation, a visual representation and a symbolic representation.

Visual representation (drawing) - 🍎🍎🍎 🍎🍎

Physical representation (counting bears manipulatives) 🧸🧸🧸

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Symbolic 3 + 2 = 5

Question # 5

What are five types of math questions?

1. Questions to help students get started on a task or problem. **-** What do you know about the task or problem?

2. Questions to help you monitor students' progress and support perseverance. **-** Can you explain what you've done so far?
3. Questions to ask to help students make connections among ideas and applications. **-** Do you see a pattern? Can you explain the pattern?
4. Questions to ask to help students make sense of mathematics during class discussions. **-** Find a classmate who used a different strategy from yours. Can you explain your classmate's strategy?
5. Questions to ask to support the use of representations. **-** Can you make a model to show your work?

SanGiovanni, J. J., Katt, S., Knighten, L. D., & Rivera, G. (2021). *Answers to Your Biggest Questions About Teaching Elementary Math*. Corwin Press.