

Anchor Paper Scoring and Rationales

Task: Talking Sticks

Student: A

Criteria	Performance Level (Advanced, Proficient, Developing, Emerging)	Rationale
Mathematical Understanding	Proficient	The student demonstrates an understanding of the whole (17) being decomposed into parts as represented in the equations.
Problem Solving	Developing	The student uses ten-frames and counters to solve the problem; however, for each new solution the student must recount to establish the total of 17. The equations represent relevant solutions but do not consistently match the ten-frame representations, therefore do not confirm the reasonableness of the solutions.
Communication and Reasoning	Developing	The representations do not consistently match the symbolic notation and provide inconsistent evidence to support student reasoning.
Representations and Connections	Developing	The equations represent solutions relevant to the problem, but the ten-frame representations are incomplete and do not consistently match the symbolic notation. There are no labels to represent the context of the problem.

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Student: B

Criteria	Performance Level (Advanced, Proficient, Developing, Emerging)	Rationale
Mathematical Understanding	Proficient	The student demonstrates an understanding of the whole being decomposed into parts as represented in the blocks separated by a line. The student keeps the whole constant (17).
Problem Solving	Proficient	The pictorial representations confirm the reasonableness of each equation. Each solution is relevant to the context of the problem.
Communication and Reasoning	Proficient	The student communicates thinking using symbolic notation and pictorial representations. The student justifies his/her thinking by using multiple representations, equations and counters, to demonstrate an understanding of combinations that make 17.
Representations and Connections	Proficient	The student uses both equations and pictorial representations to model the problem. The representations demonstrate an understanding of combinations that make 17.

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Student: C

Criteria	Performance Level (Advanced, Proficient, Developing, Emerging)	Rationale
Mathematical Understanding	Proficient	The student records multiple solutions that demonstrate an understanding of combinations that make a total of 17, except for one equation ($18+1=17$).
Problem Solving	Proficient	The student uses a strategy of testing different number combinations to make 17. Although it is not an organized list, all solutions are reasonable and relevant to the context of the problem, except for one.
Communication and Reasoning	Developing	The student communicates his/her reasoning using symbolic notation. The student's thinking is unorganized and contains one misconception ($18+1=17$). This represents inconsistent and imprecise evidence to support reasoning.
Representations and Connections	Developing	The student uses symbolic notation to represent combinations that make 17. If the student had used multiple representations maybe the incorrect solution would have been eliminated.

Anchor Paper Scoring and Rationales

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Student: D

Criteria	Performance Level (Advanced, Proficient, Developing, Emerging)	Rationale
Mathematical Understanding	Advanced	The student demonstrates an understanding of combinations for 17 by creating a list of possible solutions. The organized list of combinations represents an understanding of the relationship among numbers and how to adjust both addends to keep the total constant.
Problem Solving	Advanced	The student begins with a known fact, $10+7=17$, and continues to +1 to one addend and -1 one from the other addend to find multiple solutions to the problem. This represents an efficient and organized problem-solving strategy.
Communication and Reasoning	Proficient	The student uses symbolic notation to communicate the possible combinations for the number 17. Labels on each of the addends communicate the connection between the numbers and the context of the problem.
Representations and Connections	Proficient	The student uses an organized list of equations with labels to explore the possible solutions to the problem. The list highlights the patterns and connections among the combinations to 17.

Anchor Paper Scoring and Rationales

Task: Talking Sticks

Student: E

Criteria	Performance Level (Advanced, Proficient, Developing, Emerging)	Rationale
Mathematical Understanding	Advanced	The student demonstrates an understanding of combinations for 17 by creating a list of possible solutions. The organized list of combinations represents an understanding of the relationship among numbers and how to adjust both addends to keep the total constant.
Problem Solving	Advanced	The student begins by using the counters to model the context of the problem and create a combination equal to 17. The student continues to add one and subtract one from each addend (as shown by the arrows) to create new combinations equal to 17. This demonstrates an organized and efficient problem-solving strategy.
Communication and Reasoning	Proficient	The student uses symbolic notation to communicate the possible combinations for the number 17. Arrows are used to communicate the connection between the addends and from one solution to the next.
Representations and Connections	Proficient	The student uses counters on ten-frames and an organized list of equations to represent solutions to the problem. The list of equations highlights patterns and connections among the combinations to 17.

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Student: F

Criteria	Performance Level (Advanced, Proficient, Developing, Emerging)	Rationale
Mathematical Understanding	Emerging	The student draws circles to represent counters used to create two sets equal to 17. The pictorial representation provides little understanding that the two parts combine to equal 17. The student also provides an incorrect equation, $17+0=10$, that demonstrates no understanding of the underlying mathematical concepts.
Problem Solving	Emerging	The student uses counters to find two numbers that equal 17, but there is no evidence the student connects the parts to the whole to find a viable solution. The equation, $17+0=10$, does not produce a solution relevant to the problem.
Communication and Reasoning	Emerging	The pictorial representation provides little evidence to communicate reasoning and understanding of combinations for 17. The equation $17+0=10$ does not support reasoning or understanding of number combinations that equal 17.
Representations and Connections	Emerging	The student draws counters and attempts to write an equation to represent combinations for 17. There is no evidence that the student understands the total number of counters drawn equals 17 and the equation does not equal 17. The representations do not accurately or completely model the problem.