Anchor Paper Scoring and Rationales - Task: How Are They Equal?

Name: Student A

Criteria	Performance Level (Advanced, Proficient, Developing, Emerging)	Rationale
Mathematical Understanding	Advanced	The student demonstrates understanding and applies mathematical skills associated with task. The student creates a pictorial representation to accurately model equality in one balanced equation.
Problem Solving	Proficient	Student displays a problem solving strategy that is relevant to the problem and confirms the reasonableness of solution. The pictorial representation of counters shows evidence of addition and subtraction operations in finding equal values. Her subtraction strategy in both solutions is a minus one equation.
Communication and Reasoning	Proficient	The student's representation communicates her thinking process. Her pictorial models display operations of addition and subtraction. The student records two symbolic equations, which have equal values that match her pictorial representations.
Representations and Connections	Advanced	The student uses symbolic labels to explore and model the problem. She demonstrates extended thinking with her pictorial representation of a balanced equation. She moves from representing equal values with two separate equations to one pictorial equation with the addition and subtraction expressions balanced.

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<u>Name: Student B</u>

Criteria	Performance Level (Advanced, Proficient, Developing, Emerging)	Rationale
Mathematical Understanding	Advanced	The student demonstrates an understanding of concepts and skills associated with task. The student was able to create multiple valid solutions using his understanding of addition and subtraction facts and flexibly work with digits to create desired quantities.
Problem Solving	Advanced	The student's problem solving strategy produces solutions relevant to the problem. The student uses knowledge of math facts to efficiently create three balanced equations that demonstrate equality.
Communication and Reasoning	Advanced	The student consistently states addition and subtraction expressions in one statement of equality. He is able to demonstrate evidence of equality using a variety of expressions that would produce a value of four in his first two solutions.
Representations and Connections	Proficient	The student uses multiple representations with accurate labels to model equality.

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<u>Name: Student C</u>

Criteria	Performance Level (Advanced, Proficient, Developing, Emerging)	Rationale
Mathematical Understanding	Advanced	The student demonstrates understanding of concepts and skills associated with the task. He demonstrates understanding of the relationship between addition and subtraction. In creating a balanced equation, the student increases the total amount on the addition side by one and then subtracts one in order to keep the values the same (equal). The student works to record his findings on equality in one balanced equation.
Problem Solving	Advanced	The student displays an understanding of the underlying mathematical concepts. The student's strategy of increasing the total amount on the addition side by one more and then subtracting one in order to keep the values equal (balanced) shows an efficient process.
Communication and Reasoning	Proficient	The student's representation demonstrates a method of keeping tracking of what addends he chooses and how it relates to sum for addition side. He shows how the amount is increased for the subtraction side and then removes one (one up, one down strategy) to support his argument.
Representations and Connections	Advanced	The student's representation displays a deeper understanding of equality. He demonstrates evidence of equality in his recording of the equation and how all the values are equal amounts. He represents this as one equation rather than two separate unrelated equations.

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<u>Name: Student D</u>

Criteria	Performance Level (Advanced, Proficient, Developing, Emerging)	Rationale
Mathematical Understanding	Emerging	The student demonstrates no understanding of the concept of equality and applies limited skills in an attempt to find a solution. The student creates an addition and subtraction number sentence but demonstrates no evidence of comparing the quantities produced from the equations. The student views the sum and difference as what defines equal (the answer to the equation rather than a balance of equal values).
Problem Solving	Developing	The student's problem solving strategy displays limited understanding of the underlying mathematical concepts. The student uses digits to create an addition and subtraction equation. She states "4"(the sum to addition equation) is equal.
Communication and Reasoning	Developing	The student's reasoning is limited and contains misconceptions. The student views the equal sign, as here comes the answer to an operation.
Representations and Connections	Developing	The student has created a limited representation. She does not demonstrate that both children in the situation need equal values.

Name: Student E

Criteria	Performance Level (Advanced, Proficient, Developing, Emerging)	Rationale
Mathematical Understanding	Proficient	The student demonstrates understanding of concepts and skills associated with task. She applies the concept of equal values using the operations of addition and subtraction.
Problem Solving	Proficient	The student's problem solving strategy displays an understanding of the underlying concepts and produces a relevant solution. The student demonstrates use of counters to create a balanced equation.
Communication and Reasoning	Proficient	The student demonstrates reasoning for her solution with evidence of one correctly balanced equation to support her argument of equality.
Representations and Connections	Proficient	The student's representation is organized and clearly models the problem. There is pictorial evidence of combining and removing counters to support her thinking process. Symbolic notation is accurate and clear.