Fractured Addition *M008 scoring rubric*

Math Domain

☑ Number/Quantity	☐ Shape/Space	☐ Function/Pattern
☐ Chance/Data	☐ Arrangement	

Math Actions (possible weights: 0 through 4)

0 Modeling/Formulating	2 Manipulating/Transforming
3 Inferring/Drawing Conclusions	2 Communicating

Math Big Ideas

☐ Scale	☐ Reference Frame	☑ Representation
☐ Continuity	☐ Boundedness	☐ Invariance/Symmetry
☐ Equivalence	☐ General/Particular	☑ Contradiction
☐ Use of Limits	☐ Approximation	☐ Other

If only two-digit addends are used, there are seven solutions:

67 + 38 = 105

67 + 48 = 115

67 + 58 = 125

67 + 68 = 135

67 + 78 = 145

67 + 88 = 155

67 + 98 = 165

This is because a seven in the units column is the only number which will add with eight to give a number ending in five, so the first addend must be 67. The six in the tens column plus the one carried from the first addition must add with a number larger than two in order to get a three-digit answer, so the second addend must be a number between 38 and 98.

It is possible, however, to use 108, 118, and 128 as addends, and still stay within the confines of an answer which does not exceed 195. However, many students will not do this because there is a single blank shown before the 8. Students who do include these additional three possibilities should not be marked down in any way, and this idea should be explored with the entire class.

	partial level (1 or 2)	full level (3)
Modeling/ Formulating (weight: 0)		
Transforming/ Manipulating (weight: 2)	The final answer is not consistent with the inserted numbers.	In all cases, the inserted numbers lead to the stated final answer.
Inferring/ Drawing Conclusions (weight: 3)	Student is able to find only some of the possible answers.	Student finds all possible answers.
Communicating (weight: 2)	Explanation in question **3** is not clear, or is incomplete.	Explanation in question **3** clearly describes the assumptions made.