

## Math Domain

- |   |                                      |   |
|---|--------------------------------------|---|
| <input checked="" type="checkbox"/> Number/Quantity | <input type="checkbox"/> Shape/Space | <input type="checkbox"/> Function/Pattern |
| <input type="checkbox"/> Chance/Data                | <input type="checkbox"/> Arrangement |   |

## Math Actions (possible weights: 0 through 4)

- |  |  |
|--|--|
| <input type="checkbox"/> 0 Modeling/Formulating          | <input type="checkbox"/> 2 Manipulating/Transforming |
| <input type="checkbox"/> 2 Inferring/Drawing Conclusions | <input type="checkbox"/> 2 Communicating             |

## Math Big Ideas

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> Scale         | <input type="checkbox"/> Reference Frame    | <input type="checkbox"/> Representation      |
| <input type="checkbox"/> Continuity    | <input type="checkbox"/> Boundedness        | <input type="checkbox"/> Invariance/Symmetry |
| <input type="checkbox"/> Equivalence   | <input type="checkbox"/> General/Particular | <input type="checkbox"/> Contradiction       |
| <input type="checkbox"/> Use of Limits | <input type="checkbox"/> Approximation      | <input type="checkbox"/> Other               |

The student's answer to each problem must be arithmetically correct and also meet the requirement that the three numbers be different.

1. One possible answer:  $2 + 3 + 5 = 10$ .
2. One possible answer:  $6 + 7 + 8 = 21$ .
3. One possible answer:  $20 + 30 + 14 = 64$ .
4. Either kind of answer might be correct, depending on how the student interprets the word "number."

If a student understands "number" as meaning only the whole numbers greater than zero, then there are no possible answers. Here is one possible explanation of why the question cannot be answered with just those numbers: "The three smallest numbers are 1, 2, and 3. These numbers add up to 6, which is more than 5, so it is impossible for the sum to be as small as 5."

However, if a student's interpretation of "number" includes zero, then it is possible to produce three numbers whose sum is 5. One possible answer:  $0 + 2 + 3 = 5$ .

	partial level (1 or 2)	full level (3)
<b>Modeling/ Formulating</b> (weight: 0)		
<b>Transforming/ Manipulating</b> (weight: 2)	The student's responses contain some arithmetic errors.	All of the student's responses are arithmetically correct.
<b>Inferring/ Drawing Conclusions</b> (weight: 2)	The student's work does not always follow the requirement that the numbers in each triplet be different.	In all problems, the student's work follows the requirement that the numbers in each triplet be different. The student gives a valid response to problem 4 (which could be either positive or negative, as explained in the preceding solution).
<b>Communicating</b> (weight: 2)	Some of the student's answers are not communicated clearly.	For any problem where the student gives a numerical answer, the numbers are clearly written. For any problem where the student opts to "Tell why it can't be done," the explanation is well-written.