**General problem-solving sense-making**

Consider yourself engaged in a maths problem-solving task. Please rate the extent to which you agree or disagree with the following statements, using the following scale for each question.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 0 | 25 | 50 | 75 | 100 |
| Strongly Disagree | Disagree | Neither Agree nor Disagree | Agree | Strongly Agree |

**Explaining Mode (13 items)**

1. I note the key concepts in the statement of the problem.
2. After reading the question, I ask myself: What are the definitions of the concepts?
3. I ask myself: How do the concepts in the question link to other concepts and ideas in my prior knowledge?
4. While reading the problem, I try to recall similar problems for which I have seen the solutions.
5. While reading the problem, I focus on identifying what needs to be done to solve the problem.
6. After reading the question, I look for solutions to similar problems in the course materials, online etc.
7. I think about similar problems and solutions that I have seen, and I ask myself: What is the main principle that made the solution work?
8. I make use of templates and past problems and adjust them for the questions I am given.
9. After reading the question, I ask myself: What is the best first step I can take?
10. While moving on to the next step in the solution, I ask myself: Is the logical connection valid?
11. After finishing the question, I think about how each part was used to solve it.
12. I take responsibility for checking my deductions.
13. I take responsibility for remedying my own confusion.

**Visualising Mode (5 items)**

1. I draw a picture or a diagram to help me understand.
2. After finding a solution, I think about whether it has a visual meaning.
3. I use lines or arrows to show the link throughout my working.
4. I annotate and label my work.
5. Using visualisations helps me lessen my mental efforts.

**Enacting Mode (5 items)**

1. I imagine moving my body (such as climbing up a mountain in the direction of the gradient vector or skiing downhill) to help me think and reason.
2. Using gestures helps me lessen my mental efforts.
3. I use hand gestures (such as gesturing the shape of a graph of a function) to reason.
4. I use gestures to create virtual mathematical constructs to help me develop an understanding of abstract concepts.
5. I use objects, like pens, paper, and rulers to help me think about my ideas.