Appendix

Table A1. Fluency Scoring Codebook

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| Score | Label |
| 1 | Given to strategies that were deemed a complete and legitimate mathematical strategy |
| 0 | Given to strategies that were not legitimate mathematical strategies (e.g. "I could google it") or incomplete strategies (e.g. "I could multiply [strategy ends]]") |

Table A2. Creativity Scoring Codebook

|  |  |  |  |
| --- | --- | --- | --- |
| Score | Label | Guidelines | Strategy types under this category  |
| 1 | Not Very original /creative | A conventional strategy. What is generally taught in school for the given problem.  | Traditional column subtraction, 820-410=410, tallying/counting up/counting down (increments) |
| 2 | Somewhat original /creative  | Shows some deviance from conventional strategies. More elaborate strategies taught in school for the given problem.  | Decomposition (800-400, 20-10 or 810-110, etc.), basic ratio (820/2, 410 \*2, 820 is twice of 410, 410 is half of 820), Arithmetic Salad (adding random numbers), pre-algebra |
| 3 | Original /creative | Creative. Taught in school, but rarely applied to the given problem.  | More advanced ratio (820 \* .5), use of negative numbers, algebra  |
| 4 | Very original /creative | Very unique application, very creative. Not really taught in school, or not in conjunction with arithmetic,  | Use of exponents, fractions, binary, or other  |

Table A3.

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| --- | --- | --- | --- | --- |
| Strategy Number | Average Fluency | Fluency Standard Error | Average Creativity | Creativity Standard Error |
| 1 | 1 | 0 | 1.2 | 0.03 |
| 2 | 0.99 | 0.01 | 1.68 | 0.04 |
| 3 | 0.97 | 0.01 | 1.78 | 0.05 |
| 4 | 0.86 | 0.03 | 1.81 | 0.05 |
| 5 | 0.63 | 0.04 | 1.78 | 0.07 |
| 6 | 0.43 | 0.04 | 1.83 | 0.09 |
| 7 | 0.25 | 0.03 | 1.76 | 0.11 |
| 8 | 0.13 | 0.03 | 2.05 | 0.18 |
| 9 | 0.05 | 0.02 | 2.31 | 0.37 |
| 10 | 0.03 | 0.01 | 1.9 | 0.33 |