# Students' Representations and Solution Methods to the Task: "Which Subject Did Lisa Outperform Her Classmates the Most?" (SAMMPLE) 

a. Solution A

|  | Math | Science | English |
| :---: | :---: | :---: | :---: |
| Mean | 81.00 | 81.00 | 81.00 |
| Mean (without Lisa's score) | 80.36 | 80.36 | 80.31 |
| Change in mean | 0.64 | 0.64 | 0.69 |

Based on the changes in the mean without Lisa's score, Lisa performed the best in English, since the mean changed the most without her score.

[^0]b. Solution B

Percentage change of Lisa's score compared to lowest scorer of each subject

|  | $\frac{\text { Lisa's Score - Minimum Score }}{\text { Minimum Score }} \times 100 \%$ |
| :---: | :---: |
| Change of Lisa's score from Math's |  |
| minimum score |  |$\quad \frac{90-72}{72}=25 \%$

Lisa performed equally well in all three subjects, since the difference between her score and the lowest scorer is the same.

[^1]|  | Math | Science | English |
| :---: | :---: | :---: | :---: |
| Mean | 81.00 | 81.00 | 81.00 |
| Lisa's score - Mean | 9.00 | 9.00 | 9.00 |
| SD | 6.35 | 4.94 | 6.00 |

Since the difference between Lisa's score to the mean is the same, we will next look at the spread of scores in each subject. Since Science's scores are the most consistent, Lisa's performance is the most outstanding here, since she is compared to a consistent group.


[^0]:    Source: Productive Failure (OER 50/08 MK), funded by the Education Research Funding Programme, National Institute of Education (NIE), Nanyang Technological University, Singapore. Adapted by Knowledge Mobilisation Unit, Office of Education Research, NIE, 2017. This resource may be reproduced for educational and non-commercial purposes only. If you wish to adapt or reproduce this resource, please contact Dr Lee Ngan Hoe: nganhoe.lee@nie.edu.sg.

[^1]:    Source: Productive Failure (OER 50/08 MK), funded by the Education Research Funding Programme, National Institute of Education (NIE), Nanyang Technological University, Singapore. Adapted by Knowledge Mobilisation Unit, Office of Education Research, NIE, 2017. This resource may be reproduced for educational and non-commercial purposes only. If you wish to adapt or reproduce this resource, please contact Dr Lee Ngan Hoe: nganhoe.lee@nie.edu.sg.

