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| --- | --- | --- | --- |
| Video Title | **Puzzle #3 The playful mathematicians** | |  |
| Topic | Logic | |  |
| Aim(s) | Train the ability to extrapolate information from a problem, work by exclusion. | |  |
| Length | 25min | |  |
| Camp Location |  | |  |
| Facilitators |  | |  |
| N. of students |  | |  |
| Date |  | |  |
| Resources  needed | Pen, Paper | |  |
| Preparations | None | |  |
|  | | | |
| **Video time** | **What facilitator does** | **What learners do** | |
| 00:00 - 00:26 | General VMC Video Introduction | |  |
| 00:27 - 00:46 | Video Introduction | |  |
| 00:47 – 02:11 | Riddle | |  |
| After the end of the video | * Assist the process, provoke thoughts * When a possible solution is suggested, ask the learners to enact the series of questions in the case of the suggested solution and check that each answer can be explained. | * Discuss what information they can get from the statement of the riddle * Figure out which cases can be excluded * Enact possible solutions | |

**Solution**

The possible options are (the order does not matter):

|  |  |  |  |
| --- | --- | --- | --- |
| **a** | **b** | **c** | **Sum** |
| 1 | 1 | 36 | **38** |
| 1 | 2 | 18 | **21** |
| 1 | 3 | 12 | **16** |
| 1 | 4 | 9 | **14** |
| 2 | 2 | 9 | **13** |
| 2 | 3 | 6 | **11** |
| 1 | 6 | 6 | **13** |
| 3 | 3 | 4 | **10** |

In order convince someone that these are all the options one can see that 36 is 3222. After that you may write each factor in a sheet of paper and with the papers one can try to form 3 groups. Empty group means one.

Also, try starting with **1 1 36**  and then decrease the last number gradually.

The table above represents what we know thanks to the answers given by the second mathematician (Fil).

But another important information is that the first mathematician (Mike) is not able to know the correct combination, even if he knows the actual value of the sum!

This can only happen if the number corresponding to the correct sum appears more than once in the list! (otherwise he would have guessed the correct numbers after the second question) So, the sum must be 13, and the corresponding combinations are:

|  |  |  |
| --- | --- | --- |
| 2 | 2 | 9 |

|  |  |  |
| --- | --- | --- |
| 1 | 6 | 6 |

The final clue is that the youngest child has blue eyes.

What we get from this clue is that now we know that a youngest child exists!

So **2 2 9** is not possible and **1 6 6** is the only remaining option.