



AMAZINGMATHS

Materials:

- Video of the puzzle
- Sheets of paper
- Pencils

PUZZLING CARTOON

- MY DAUGHTERS' AGES -

The puzzle

Two mathematics teachers, Catherine and Vincent, discuss together. Vincent asks Catherine: "Do you have children? How old are they?"

Catherine answers: "I have three daughters: Marie, Suzanne and France. The product of their ages is 36."

Noticing Vincent's puzzled look, she adds: "I could give you the sum of their ages, but that would not help you. However, I can tell you that my eldest's name is Marie."

Vincent thinks for a while, then says: "I figured it out! I know your daughters' ages."



Can you find the ages of Catherine's daughters?



PUZZLE SOLUTION



The answer:

Catherine has two twins who are 2 years old and one daughter who is 9 years old.

The solution

First of all, we must find the different ages' products that make 36. Second, we must look at the sum of these ages. We know that the sum of the three daughters' ages is one of the 8 following possibilities:

- $1 \times 1 \times 36 \rightarrow \text{Sum} = 38$
- $1 \times 2 \times 18 \rightarrow \text{Sum} = 21$
- $1 \times 3 \times 12 \rightarrow \text{Sum} = 16$
- $1 \times 4 \times 9 \rightarrow \text{Sum} = 14$
- $1 \times 6 \times 6 \rightarrow \text{Sum} = 13$
- $2 \times 2 \times 9 \rightarrow \text{Sum} = 13$
- $2 \times 3 \times 6 \rightarrow \text{Sum} = 11$
- $3 \times 3 \times 4 \rightarrow \text{Sum} = 10$

Since Catherine says that the ages' sum would not help us, we know that it is a sum that appears several times in the different possibilities. Indeed, if it was a sum of 38, 21, 16, 14, 11 or 10, we would automatically know how old her daughters are. We are then dealing with one of the combinations that make the sum of 13, so 1 year old, 6 years old and 6 years old, or 2 years old, 2 years old and 9 years old.

Finally, we know that her eldest is named Marie. Therefore, it cannot be the combination of 1 year old, 6 years old and 6 years old, because then there would not be only one eldest, but two eldest that are twins.

Catherine's daughters are then 2 years old, 2 years old and 9 years old.