Puzzle

– *The Long Winter* –

Materials:

- Video of the puzzle
- Pen and paper

The Puzzle

Last year, Mathville had a severe winter. At the beginning of the winter, Augustine had 2005 logs.

On warmer days, Augustine used 25 logs to warm his house. On colder days, he burned twice as many logs.

At the end of winter, Augustine had 205 logs left.

Knowing that there were as many warm days as cold ones, how many days was last year's winter?

Puzzle Solution

The answer:

Last year's winter was 48 days.

Possible solution:

We know that, at the beginning of winter, Augustine had 2005 logs and that, at the end of winter, he had 205 logs. With this information we can calculate the number of logs burned throughout the winter by subtracting the number of left over logs from the initial number of logs.

$$2005 - 205 = 1800$$

This calculation allows us to find out that, throughout the winter, Augustine burned a total of 1800 logs.

The puzzle also states that Augustine burned 25 logs on warmer days and, on the cold days, he burned twice as many logs. We can then conclude that, on cold days, Augustine burned 50 logs.

$$25 \times 2 = 50$$

Additionally, we know there were as many warm days as cold days. Therefore, we can join one warm day with one cold day, and, by knowing the number of times we can link these two days together, we will be able to find out how long last year's winter was.

We can calculate the number of logs burned over the course of 2 days (the number of logs burned on 1 warm day added to the number of logs burned on 1 cold day). By adding the number of logs burned on a warm day to the number of logs burned on a cold day, we can find that, in those 2 days, Augustine burned 75 logs.

$$25 + 50 = 75$$

Since Augustine burned a total of 1800 logs, and that the number of logs burned between a warm and cold day is 75, we can divide the total number of logs burned by 75. This will allow us to find the number of combined warm and cold days.

$$1800 \div 75 = 24$$

With this calculation, we now know that there were 24 warm/cold day combinations. Therefore, we know there was a total of 24 warm days and 24 cold days. So, winter lasted a total of 48 days.

$$24 \times 2 = 48$$

We can check our calculations by verifying the number of logs burned.

On warm days: $24 \times 25 = 600$ logs burned.
On cold days: $24 \times 50 = 1200$ logs burned.

Total number of logs burned: $600 + 1200 = 1800$