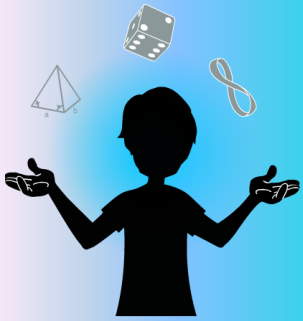


PUZZLING CARTOON

- MATHIAS' CANDLES -



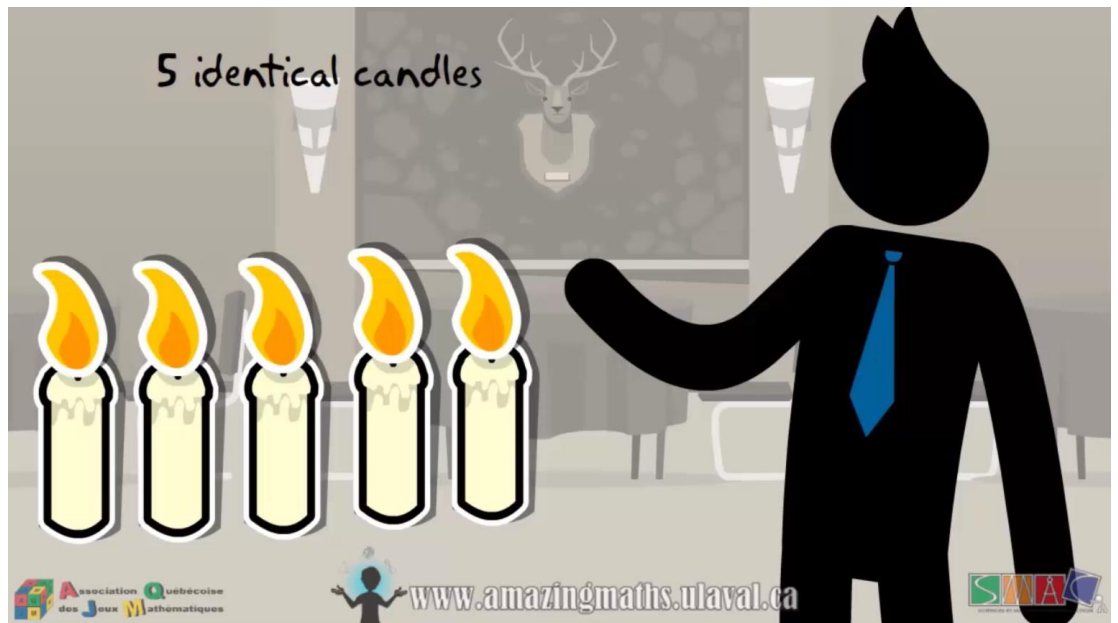
AMAZINGMATHS

Materials:

- Video of the puzzle
- Pen and paper

The Puzzle

Mathias, our favourite waiter, owns 5 identical candles for his restaurant.



To create a welcoming environment, he lights a candle every hour.

Each candle burns for 8 hours.

What is the number of hours during which only 3 candles will burn at the same time?



PUZZLE SOLUTION



The answer:

There are 2 nonconsecutive hours during which only 3 candles will burn (3rd hour and 10th hour).

The solution:

It is important to understand, and to distinguish, that the question asks us to find the number of hours during which only 3 candles burn at the same time, not the number of hours in which at least 3 candles burn at the same time.

Because we know that each candle burns for 8 hours, we can illustrate the problem in a table similar to the one below:

<i>Hours During Which Each Candle Burns</i>												
	1h	2h	3h	4h	5h	6h	7h	8h	9h	10h	11h	12h
Candle #1												
Candle #2												
Candle #3												
Candle #4												
Candle #5												

By representing the hours during which the candles burn, we can notice the periods when there are only 3 candles burning at the same time.

During the 3rd hour, only 3 candles are burning at the same time because, candle #4 will only be lit one hour after candle #3.

We know that candle #1 will shut down after being lit for 8 hours. Therefore, after 9 hours, 4 candles will be burning at the same time (candle #2, #3, #4, and #5).

By using the same reasoning, we can see and understand that it is only after 10 hours that, once again, 3 candles will be burning at the same time (candles #3, #4, and #5).

Therefore, only 3 candles will burn at the same time after 3 hours and after 10 hours.

In other words, only 3 candles will burn at the same time during 2 nonconsecutive hours (during the 3rd and 10th hour).