About 7

Method

Watch the video "Method Without Subtitles" once.
You can watch it a second time and if you feel lost, ask the teacher for the subtitled version.

Did you need the subtitled version ?   □ YES   □ NO

What's the video about ?

Give another example which shows how the method described in the video works.

Proof

Watch the video "Proof Without Subtitles" once.
You can also watch this one a second time and/or ask the teacher for the subtitled version.

Did you need the subtitled version ?   □ YES   □ NO

Explain why this method is correct.

One step farther

There is another method we can use to work out wether an integer is divisible by 7, here it is showed on an example : is 12345 divisible by 7 ?
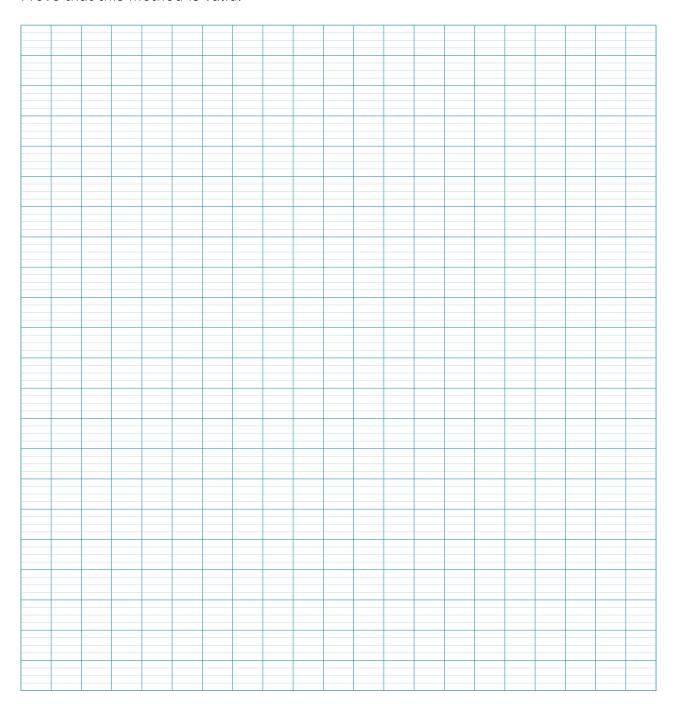
Let's take 12345, split it into 1234 and 5 and calculate $1234 - 2 \times 5$.
This gives us 1224, let's repeat the process :
$122 - 2 \times 4 = 114$
$11 - 2 \times 8 = -5$ so, as -5 is not divisible by 7, 12345 isn't either.

Prove that this method is valid.

APPENDIX : theorems used in the video

Theorem 1

Let a, b and c be three integers, with b and c not equal to zero.

If a is divisible by b then ca is divisible by b.

Example

4 is divisible by 2 so 4×123 is also divisible by 2.

Theorem 2

Let a, b and c be three integers such that $a = b + c$
Suppose that c is divisible by k, then either a and b are also divisible by k, or none of them are.

Example

x is an integer.

1. Suppose $30 = x + 5$, then x is also divisible by 5.

2. Suppose $30 = x + 11$, then x is not divisible by 11.