Computing

Lesson 4: Numbers in Binary

Representations- from Clay to Silicon

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Materials from the Teach Computing Curriculum created by the National Centre for Computing Education

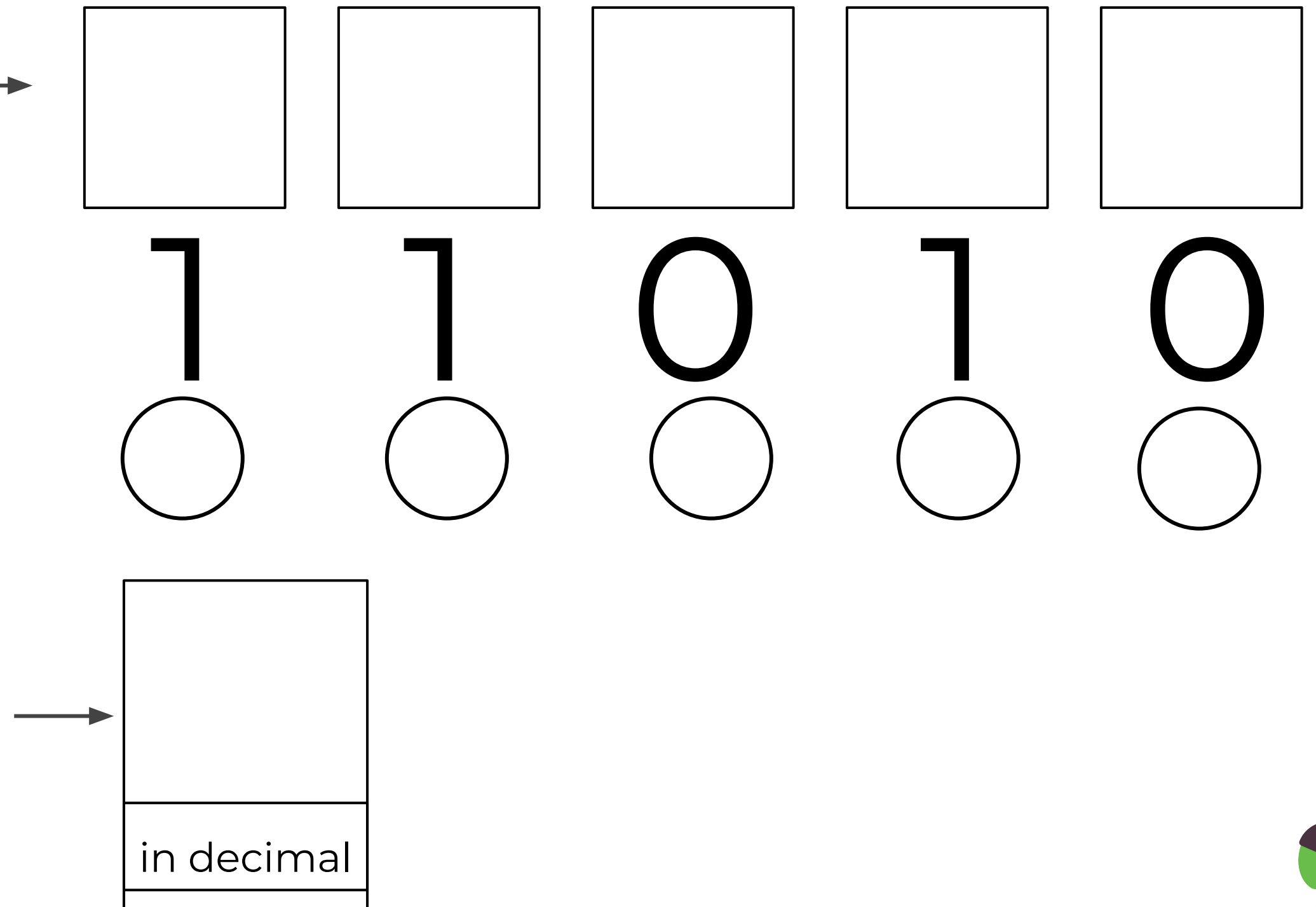# Task 1 - Convert binary 11010 to decimal (Solution)

Instructions:

Write multipliers over the bits: ⟶

Start with 1 on the right, and double as you go from right to left.

For each bit set to 1, select its corresponding multiplier.

Add up the selected multipliers: the sum is the decimal number. ⟶

1 1 0 1 0

in decimal

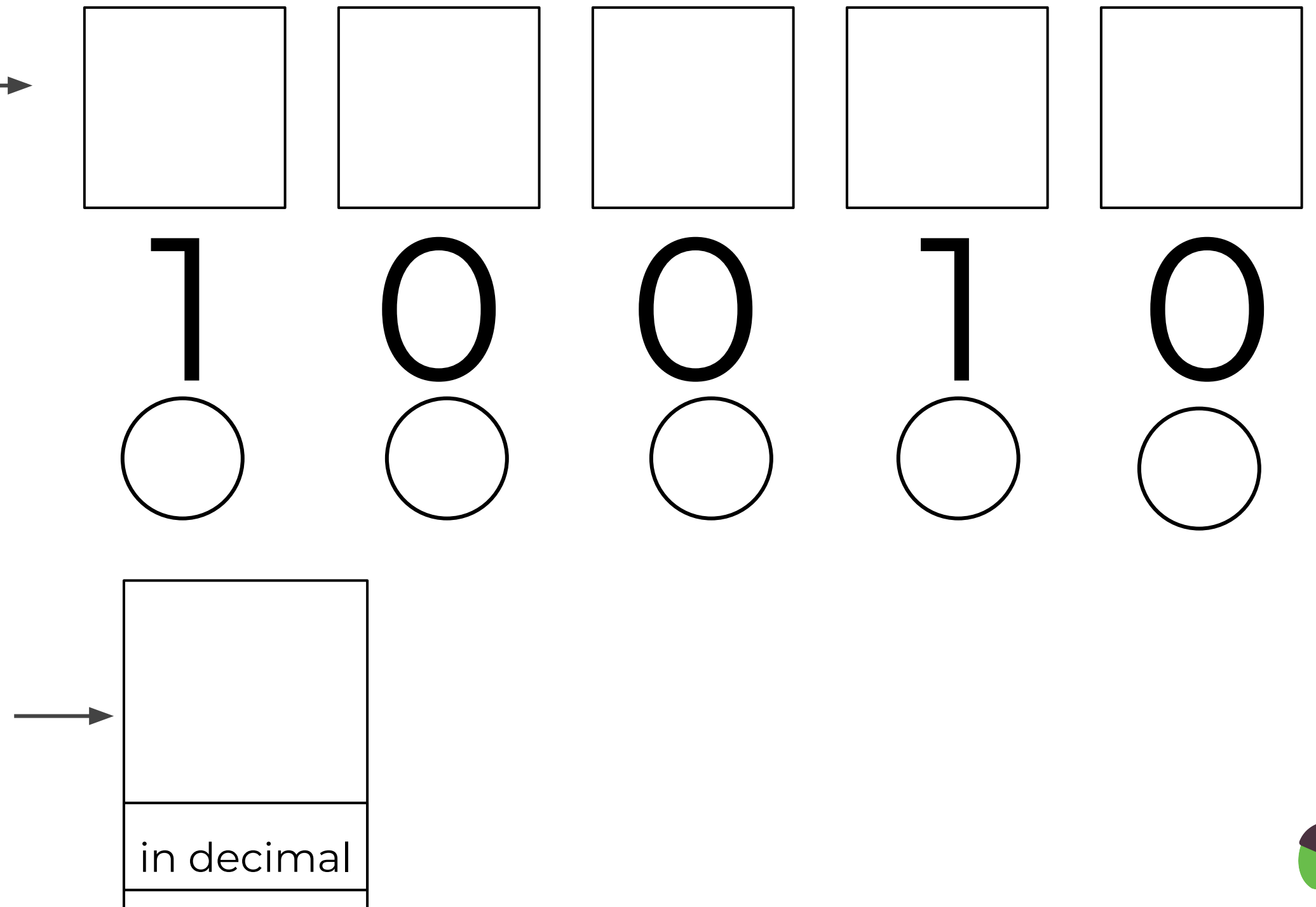# Task 2 - Convert binary 11010 to decimal (Solution)

Instructions:

Write multipliers over the bits: →

Start with 1 on the right, and double as you go from right to left.

For each bit set to 1, select its corresponding multiplier.

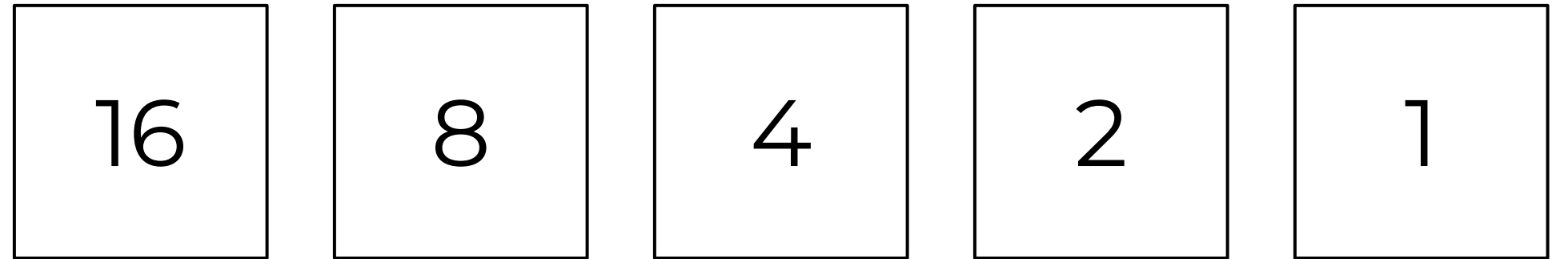Add up the selected multipliers: the sum is the decimal number. →
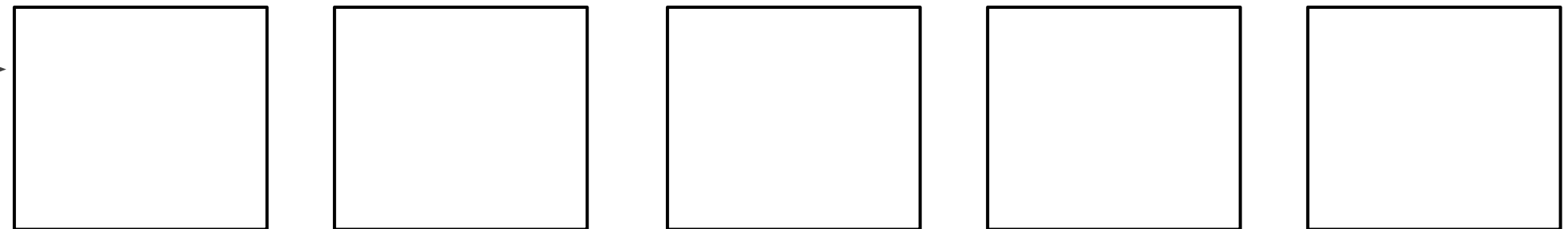
1 0 0 1 0

in decimal

Task 3 - Convert decimal 16 to binary

Instructions:

16
decimal

Go through the multipliers from left to right →

16	8	4	2	1

Set binary digit to 1 if the multiplier (place value) needs to be included in the sum, otherwise set to 0. →

Task 4 - Convert decimal 16 to binary

Instructions:

19
decimal

Go through the multipliers from left to right ⟶
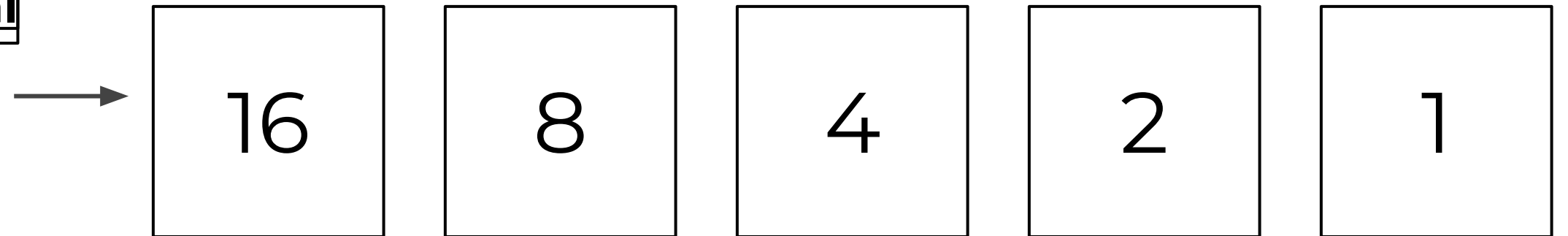
16	8	4	2	1

Set binary digit to 1 if the multiplier (place value) needs to be included in the sum, otherwise set to 0. ⟶
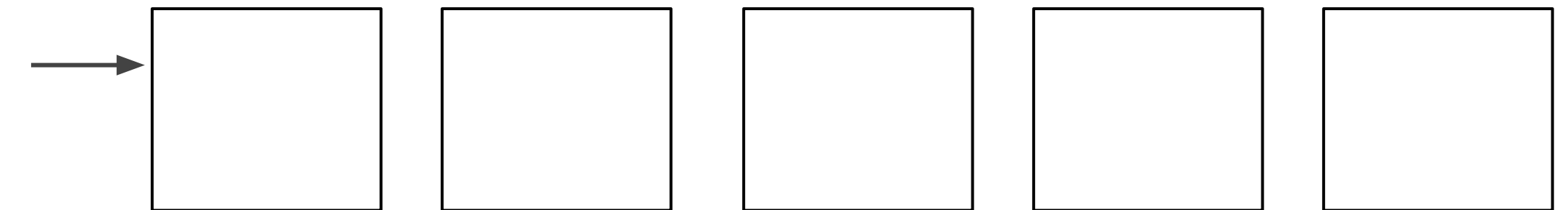
Task 5 - Birthday bits

Anna loves binary numbers. She writes her birthday on paper as:

11001
1100

Then she draws a birthday cake with binary candles!

Credit: Draw this birthday cake - Wikimedia

When is Anna's birthday?

How old is she?
Hint: Think of the candles as binary digits

Answers: