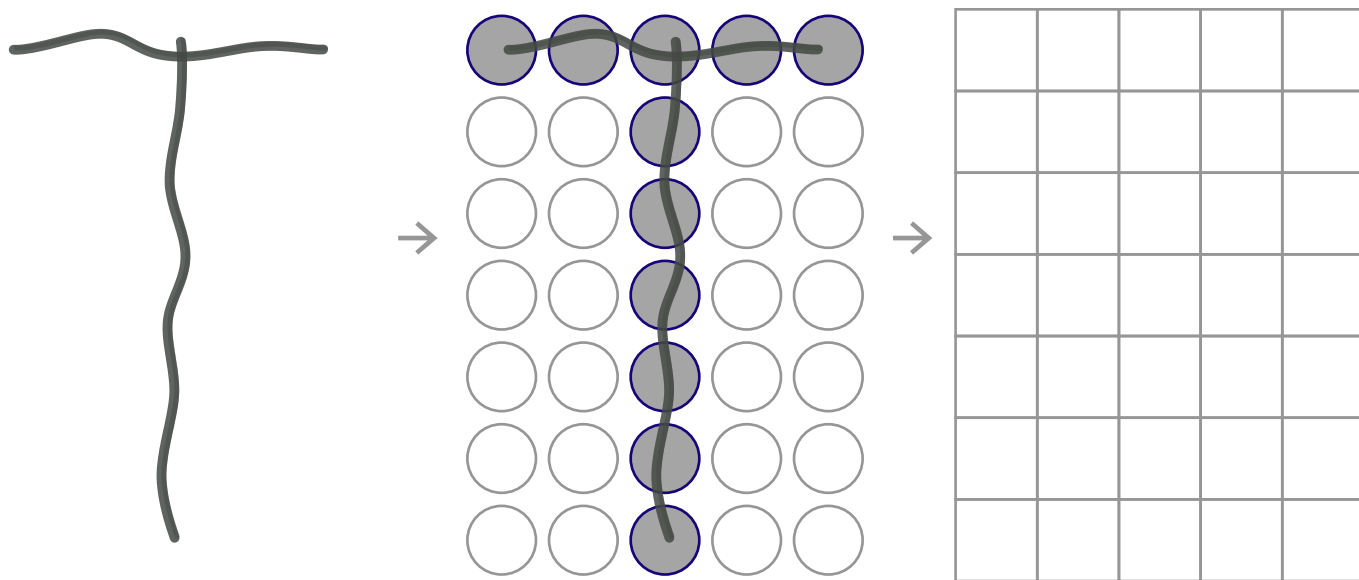


From the letter to the bits

Someone wrote this letter by hand. The circles the stroke goes through are already coloured in: coloured is 1, empty is 0. Write the 35 bits.



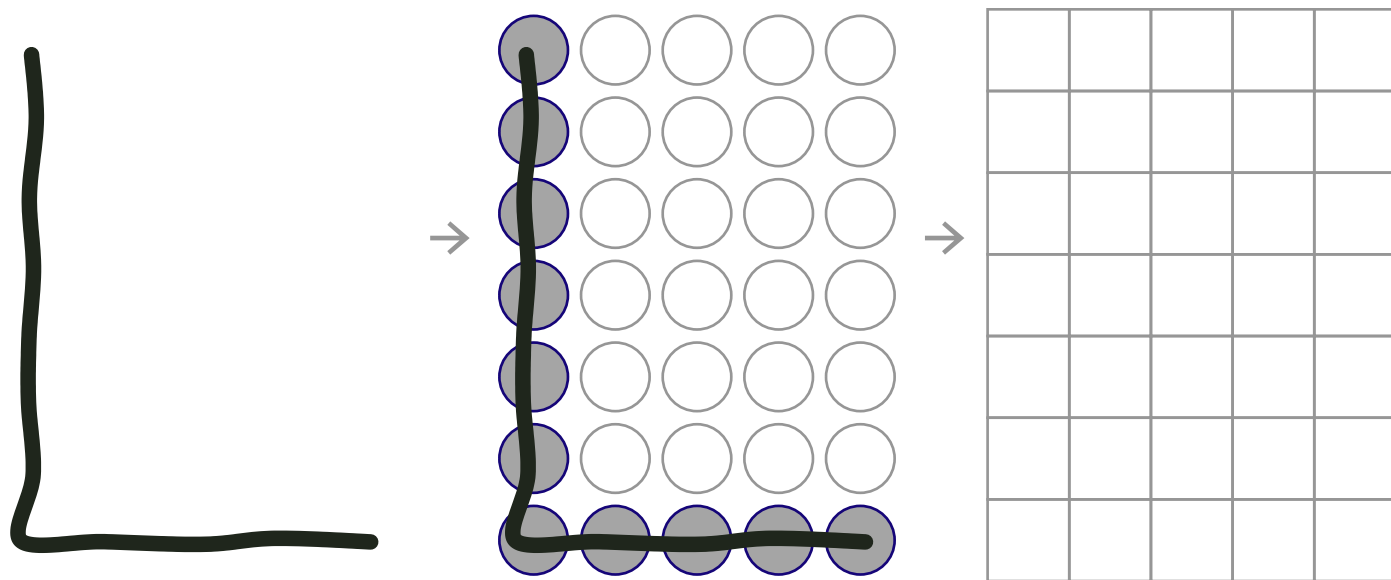
How many bits set to 1 does this letter have? _____

And how many bits does the whole grid have? _____

Name _____

From the letter to the bits

Someone wrote this letter by hand. The circles the stroke goes through are already coloured in: coloured is 1, empty is 0. Write the 35 bits.

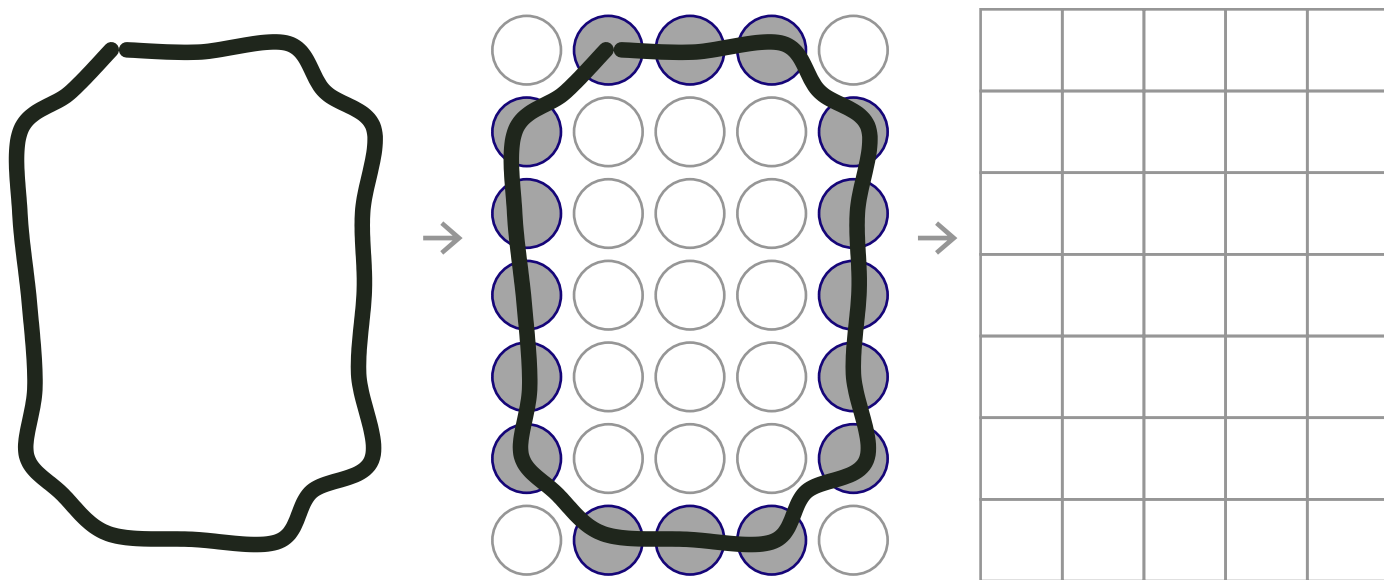


How many bits set to 1 does this letter have? _____

And how many bits does the whole grid have? _____

From the letter to the bits

Someone wrote this letter by hand. The circles the stroke goes through are already coloured in: coloured is 1, empty is 0. Write the 35 bits.

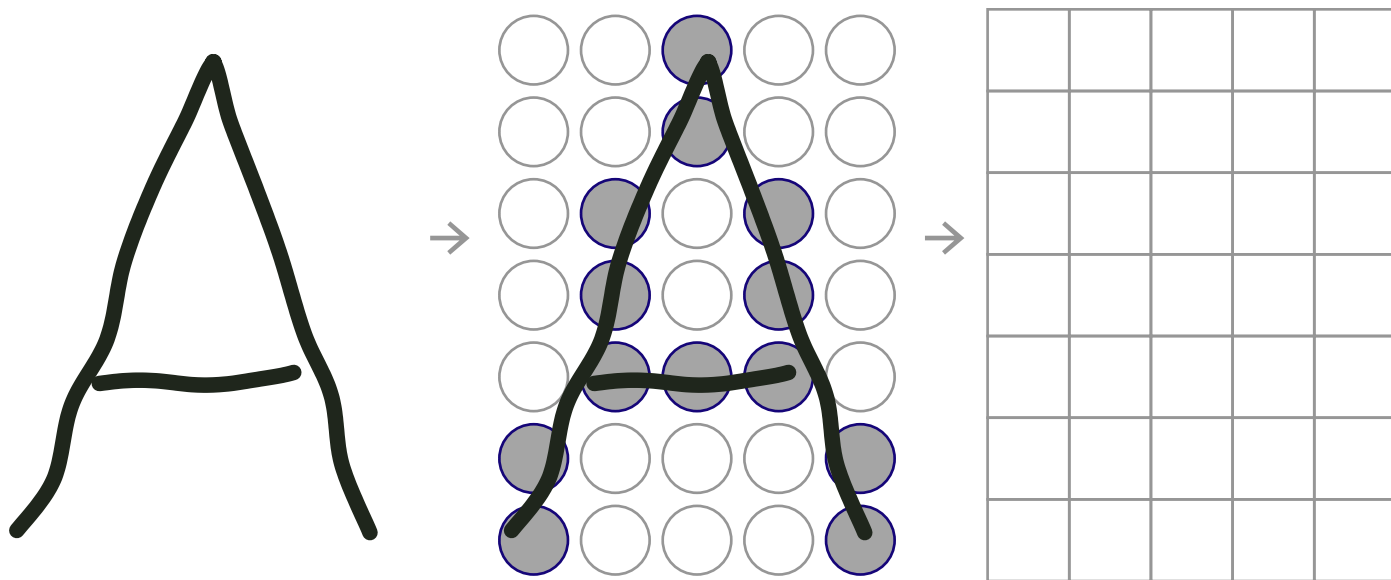


How many bits set to 1 does this letter have? _____

And how many bits does the whole grid have? _____

From the letter to the bits

Someone wrote this letter by hand. The circles the stroke goes through are already coloured in: coloured is 1, empty is 0. Write the 35 bits.

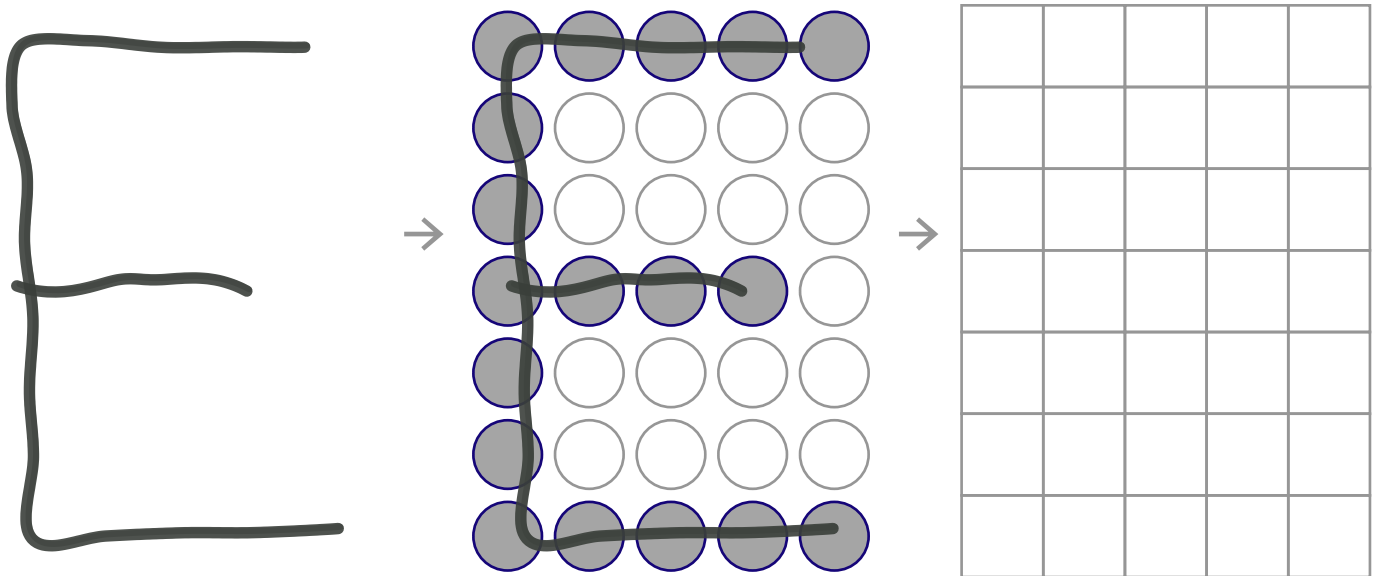


How many bits set to 1 does this letter have? _____

And how many bits does the whole grid have? _____

From the letter to the bits

Someone wrote this letter by hand. The circles the stroke goes through are already coloured in: coloured is 1, empty is 0. Write the 35 bits.

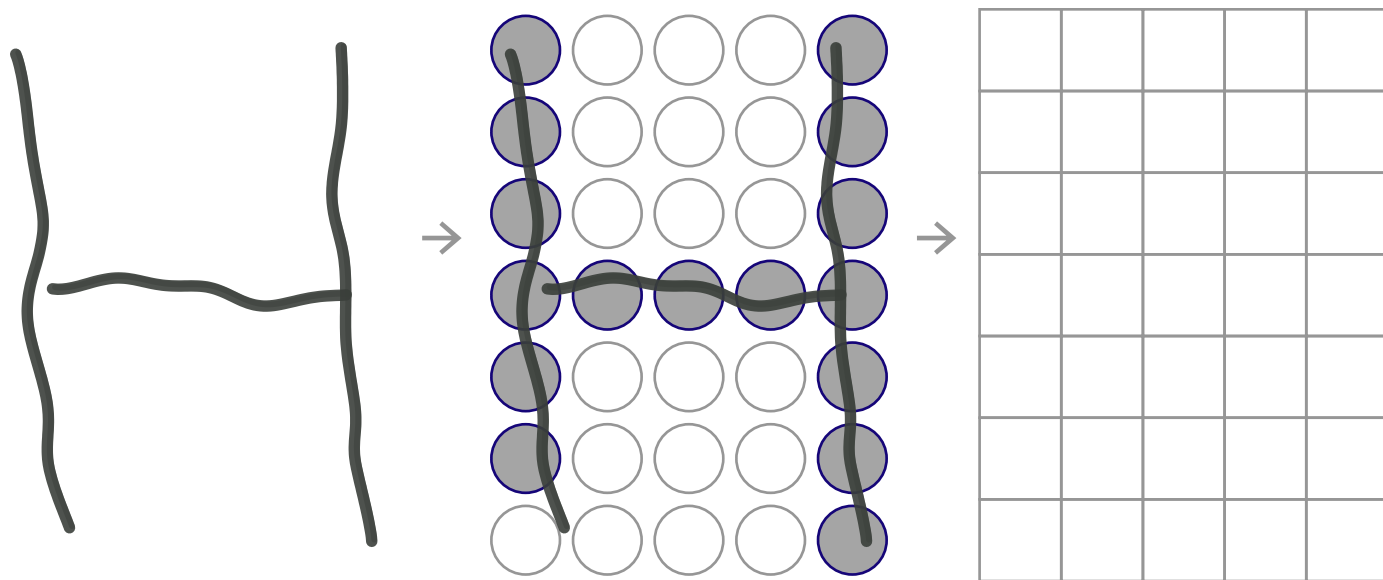


How many bits set to 1 does this letter have? _____

And how many bits does the whole grid have? _____

From the letter to the bits

Someone wrote this letter by hand. The circles the stroke goes through are already coloured in: coloured is 1, empty is 0. Write the 35 bits.

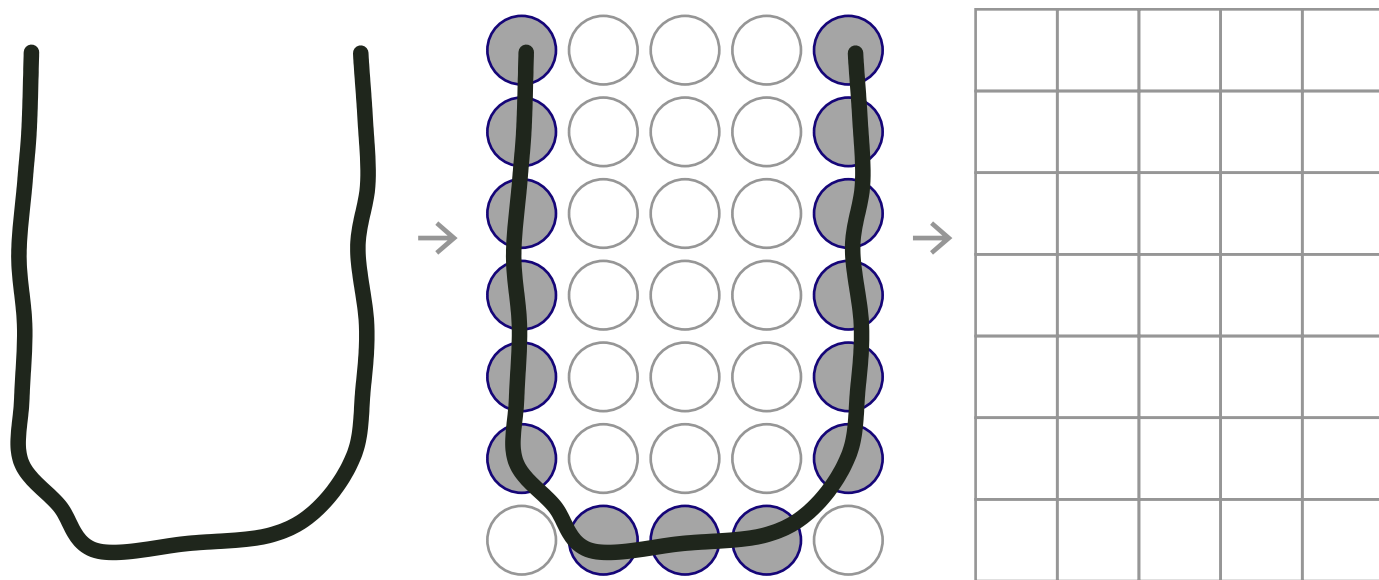


How many bits set to 1 does this letter have? _____

And how many bits does the whole grid have? _____

From the letter to the bits

Someone wrote this letter by hand. The circles the stroke goes through are already coloured in: coloured is 1, empty is 0. Write the 35 bits.

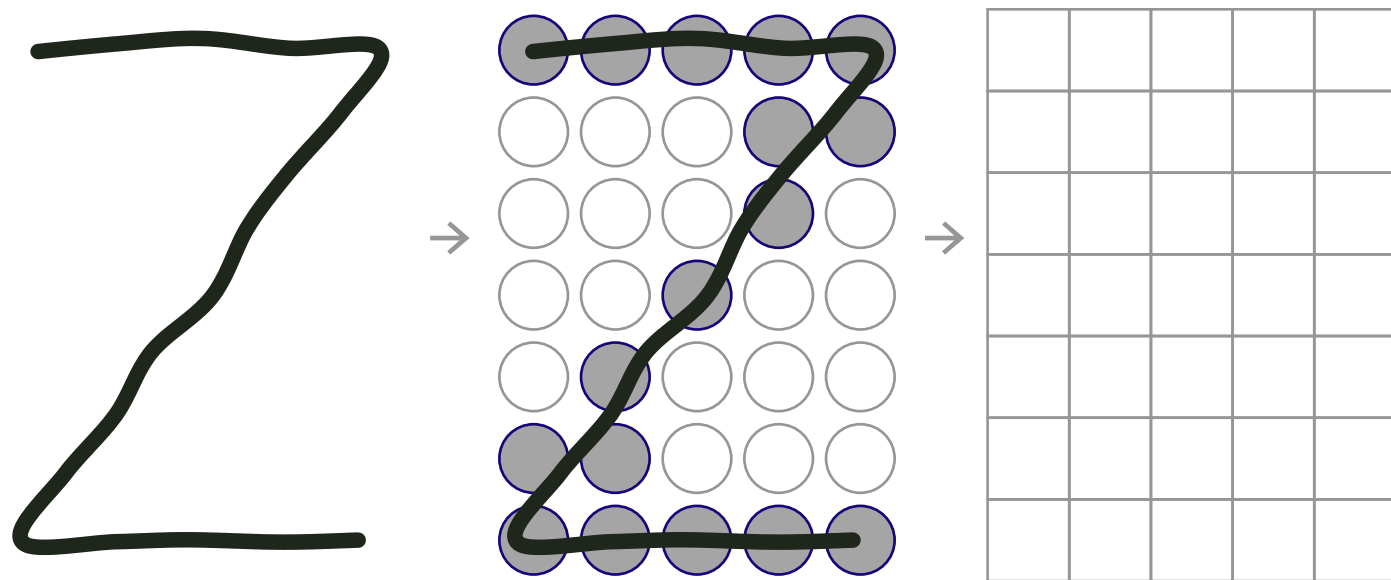


How many bits set to 1 does this letter have? _____

And how many bits does the whole grid have? _____

From the letter to the bits

Someone wrote this letter by hand. The circles the stroke goes through are already coloured in: coloured is 1, empty is 0. Write the 35 bits.

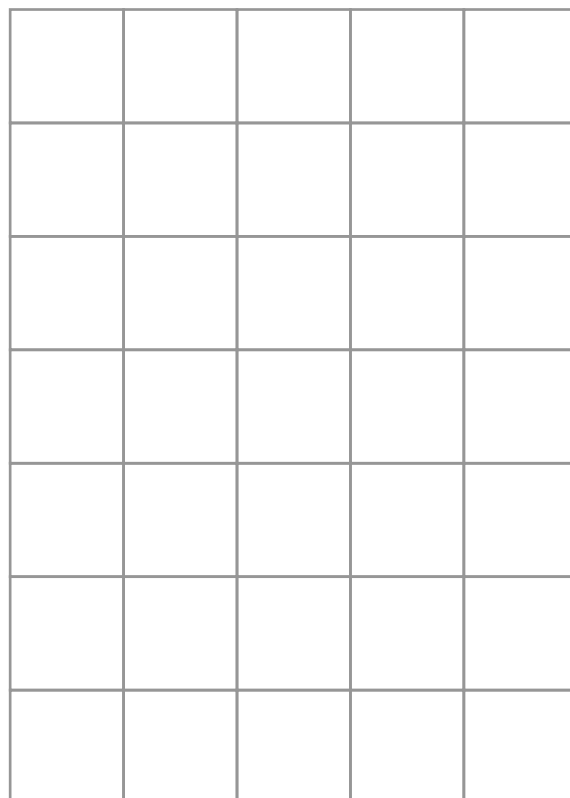
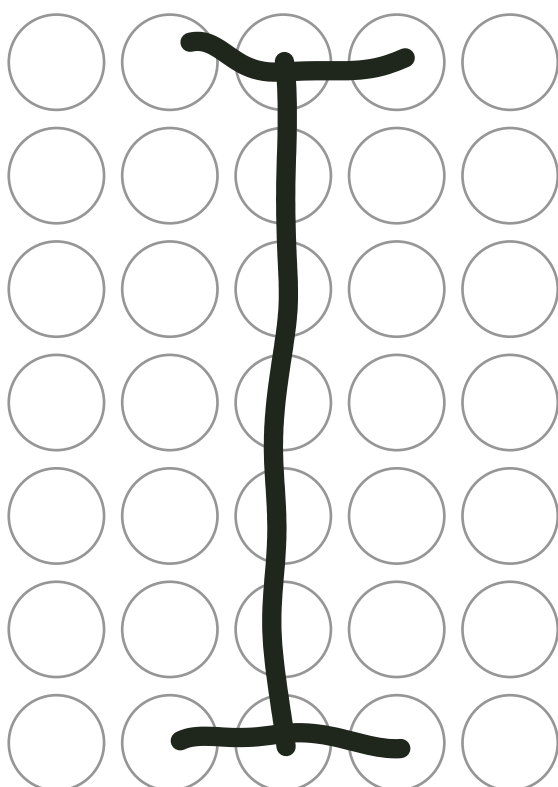


How many bits set to 1 does this letter have? _____

And how many bits does the whole grid have? _____

From the grid to the vector

Colour in the circles the letter goes through. Write the bits and then the vector, row by row.



Vector (rows 1 to 4, then 5 to 7):

--	--	--	--	--

--	--	--	--	--

--	--	--	--	--

--	--	--	--	--

--	--	--	--	--

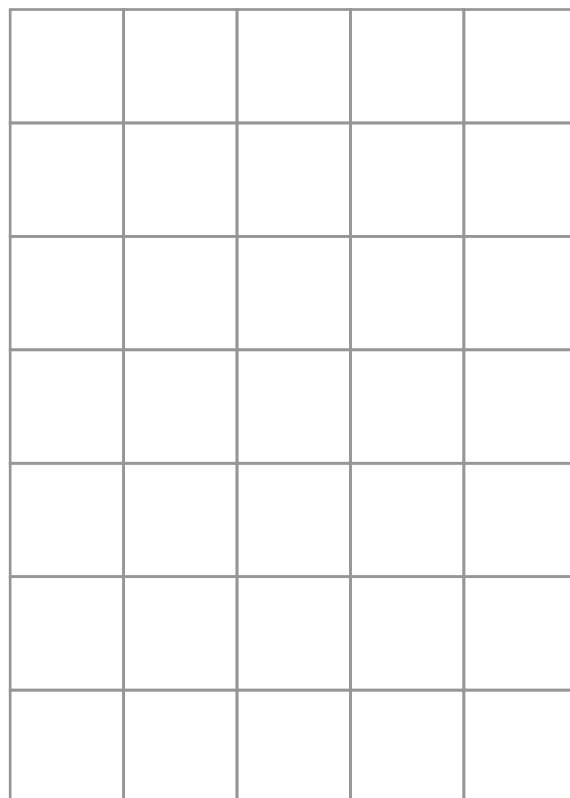
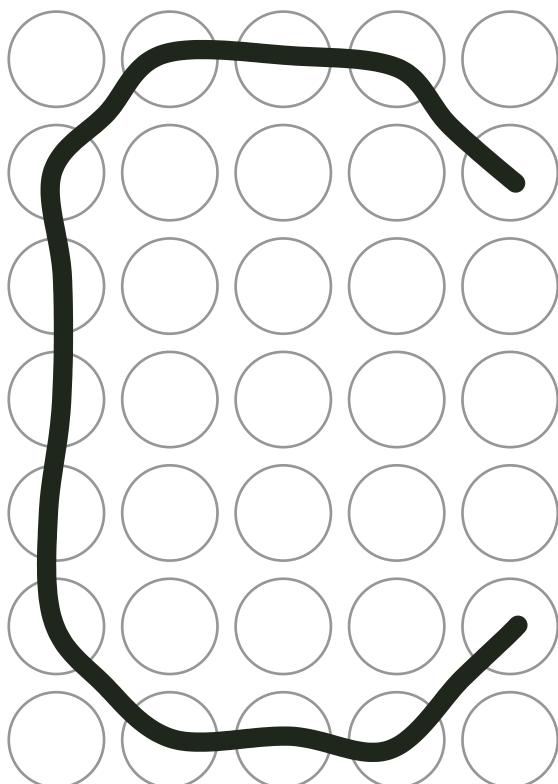
--	--	--	--	--

--	--	--	--	--

Name _____

From the grid to the vector

Colour in the circles the letter goes through. Write the bits and then the vector, row by row.



Vector (rows 1 to 4, then 5 to 7):

--	--	--	--	--

--	--	--	--	--

--	--	--	--	--

--	--	--	--	--

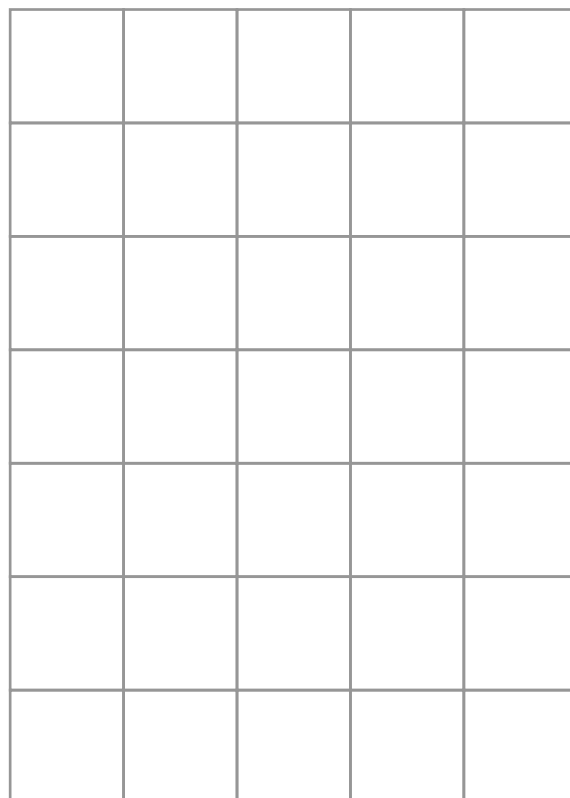
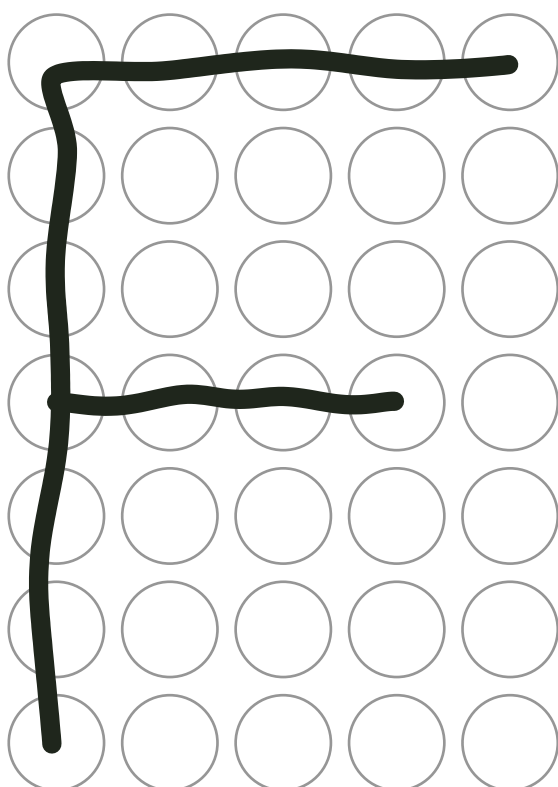
--	--	--	--	--

--	--	--	--	--

--	--	--	--	--

From the grid to the vector

Colour in the circles the letter goes through. Write the bits and then the vector, row by row.



Vector (rows 1 to 4, then 5 to 7):

--	--	--	--	--

--	--	--	--	--

--	--	--	--	--

--	--	--	--	--

--	--	--	--	--

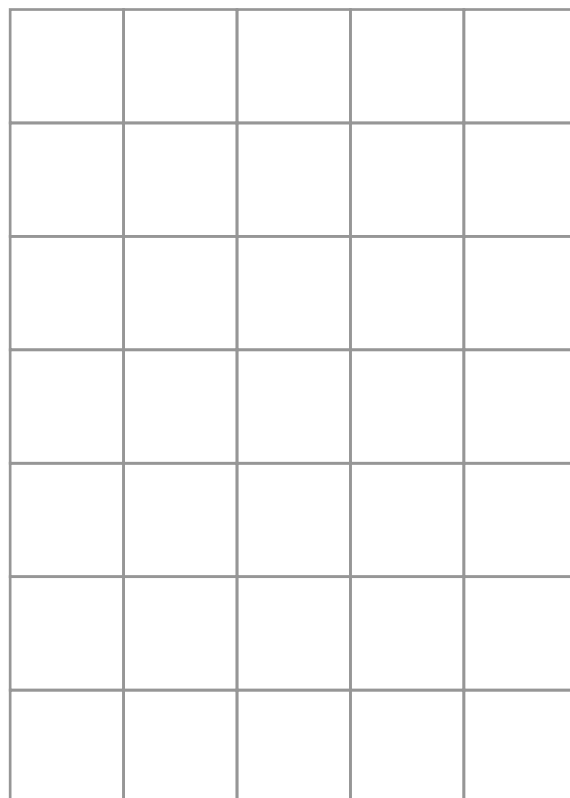
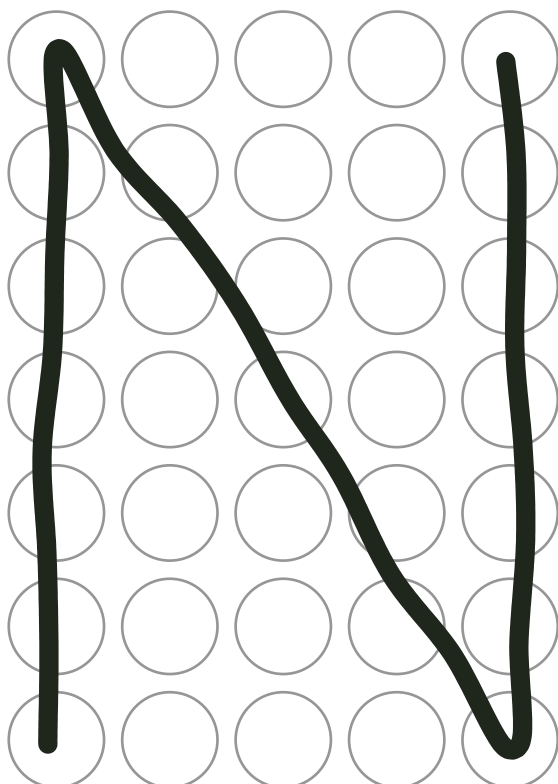
--	--	--	--	--

--	--	--	--	--

Name _____

From the grid to the vector

Colour in the circles the letter goes through. Write the bits and then the vector, row by row.



Vector (rows 1 to 4, then 5 to 7):

--	--	--	--	--

--	--	--	--	--

--	--	--	--	--

--	--	--	--	--

--	--	--	--	--

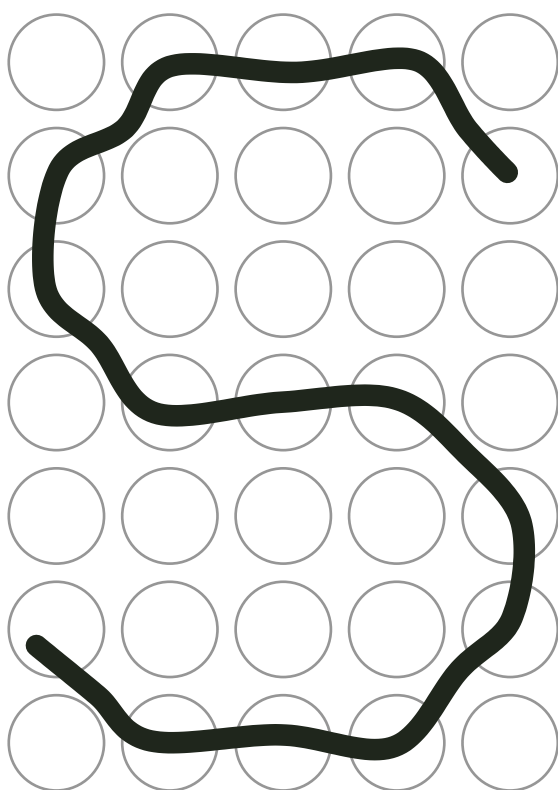
--	--	--	--	--

--	--	--	--	--

Name _____

From the grid to the vector

Colour in the circles the letter goes through. Write the bits and then the vector, row by row.

[illegible]

Vector (rows 1 to 4, then 5 to 7):

--	--	--	--	--

--	--	--	--	--

--	--	--	--	--

--	--	--	--	--

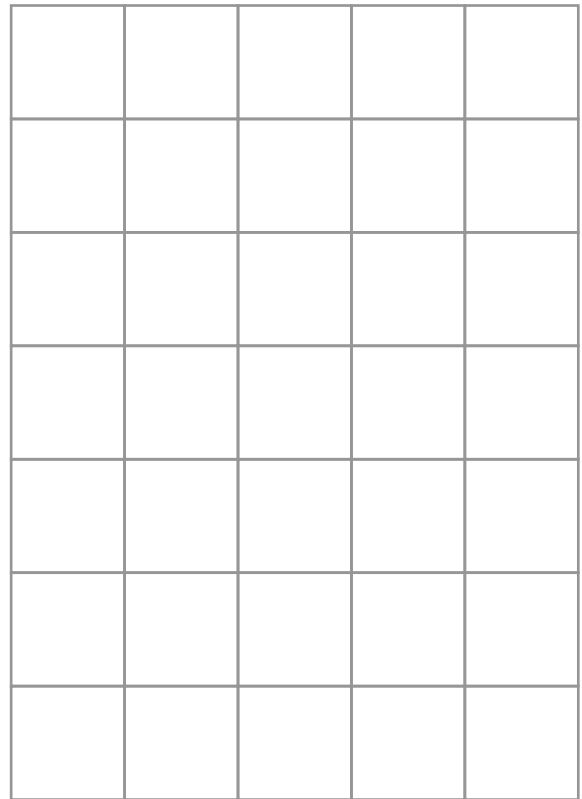
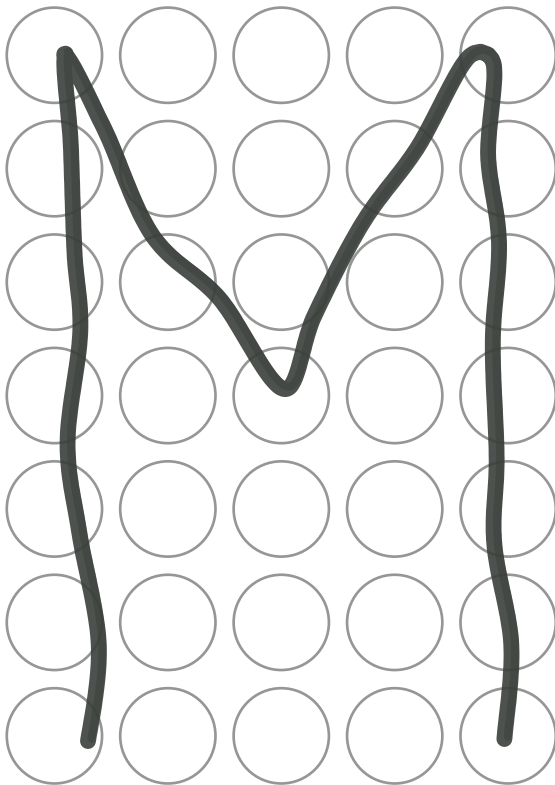
--	--	--	--	--

--	--	--	--	--

--	--	--	--	--

From the grid to the vector

Colour in the circles the letter goes through. Write the bits and then the vector, row by row.



Vector (rows 1 to 4, then 5 to 7):

--	--	--	--	--

--	--	--	--	--

--	--	--	--	--

--	--	--	--	--

--	--	--	--	--

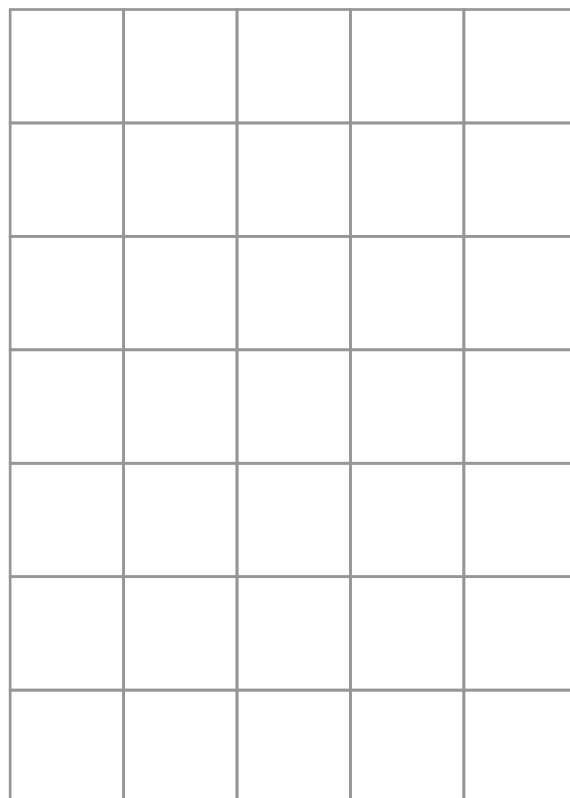
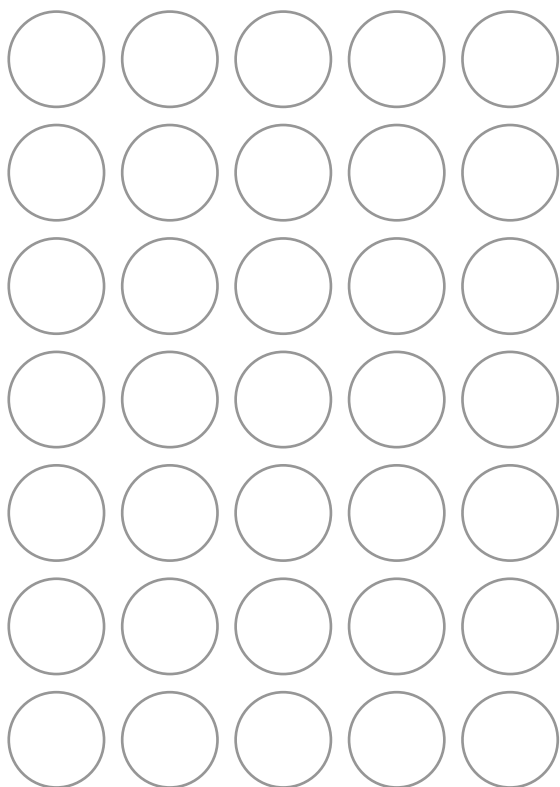
--	--	--	--	--

--	--	--	--	--

Name _____

Write the letter yourself

Write it by hand, large, over the circles: E. Then colour in the circles it went through, and write the bits and the vector.



Vector (rows 1 to 4, then 5 to 7):

--	--	--	--	--

--	--	--	--	--

--	--	--	--	--

--	--	--	--	--

--	--	--	--	--

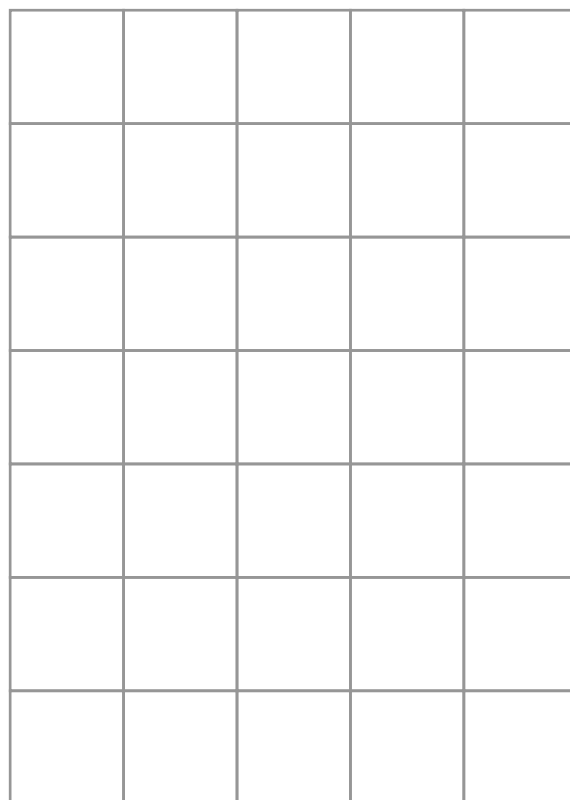
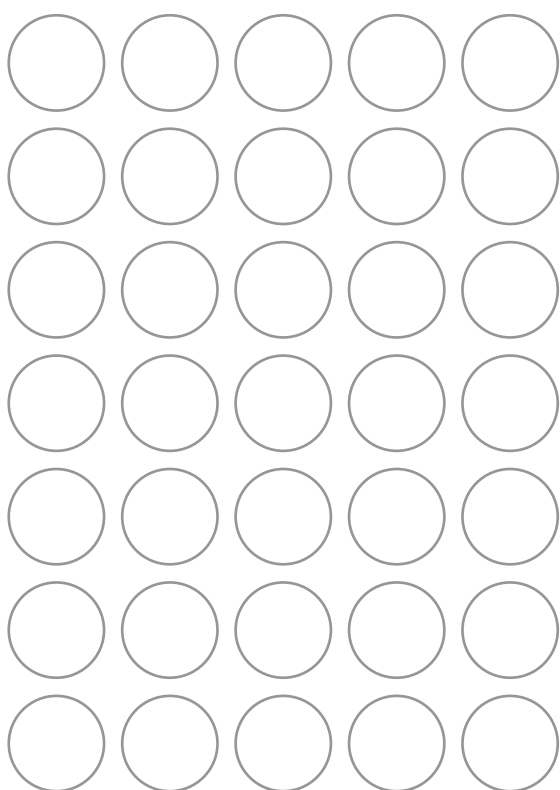
--	--	--	--	--

--	--	--	--	--

Name _____

Write the letter yourself

Write it by hand, large, over the circles: the first letter of your name. Then colour in the circles it went through, and write the bits and the vector.



Vector (rows 1 to 4, then 5 to 7):

--	--	--	--	--

--	--	--	--	--

--	--	--	--	--

--	--	--	--	--

--	--	--	--	--

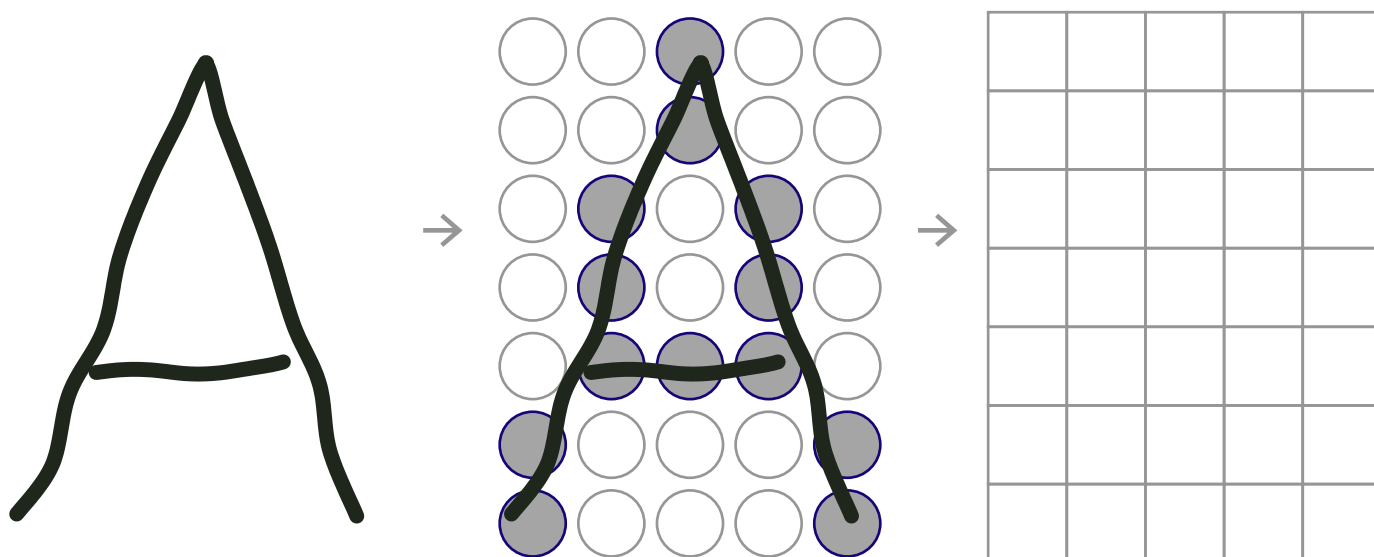
--	--	--	--	--

--	--	--	--	--

Name _____

Which letter is it?

Write the bits of the letter. For each letter in the memory, count in each row the 1s in the same position; add them up. The biggest total wins.



The robot's memory — 1s in the same position: how many?

A

O

T

0	0	1	0	0	
0	0	1	0	0	
0	1	0	1	0	
0	1	0	1	0	
0	1	1	1	0	
1	0	0	0	1	
1	0	0	0	1	

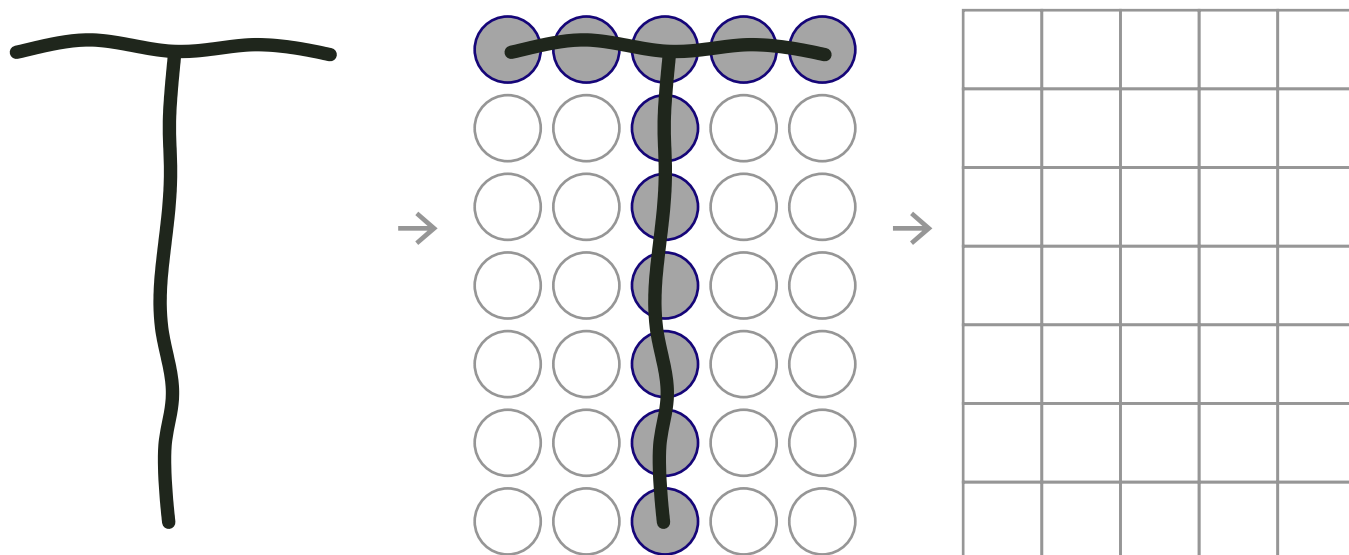
0	1	1	1	0	
1	0	0	0	1	
1	0	0	0	1	
1	0	0	0	1	
1	0	0	0	1	
1	0	0	0	1	
0	1	1	1	0	

1	1	1	1	1	
0	0	1	0	0	
0	0	1	0	0	
0	0	1	0	0	
0	0	1	0	0	
0	0	1	0	0	
0	0	1	0	0	

The robot read the letter: _____

Which letter is it?

Write the bits of the letter. For each letter in the memory, count in each row the 1s in the same position; add them up. The biggest total wins.



The robot's memory — 1s in the same position: how many?

A

O

T

0	0	1	0	0	
0	0	1	0	0	
0	1	0	1	0	
0	1	0	1	0	
0	1	1	1	0	
1	0	0	0	1	
1	0	0	0	1	

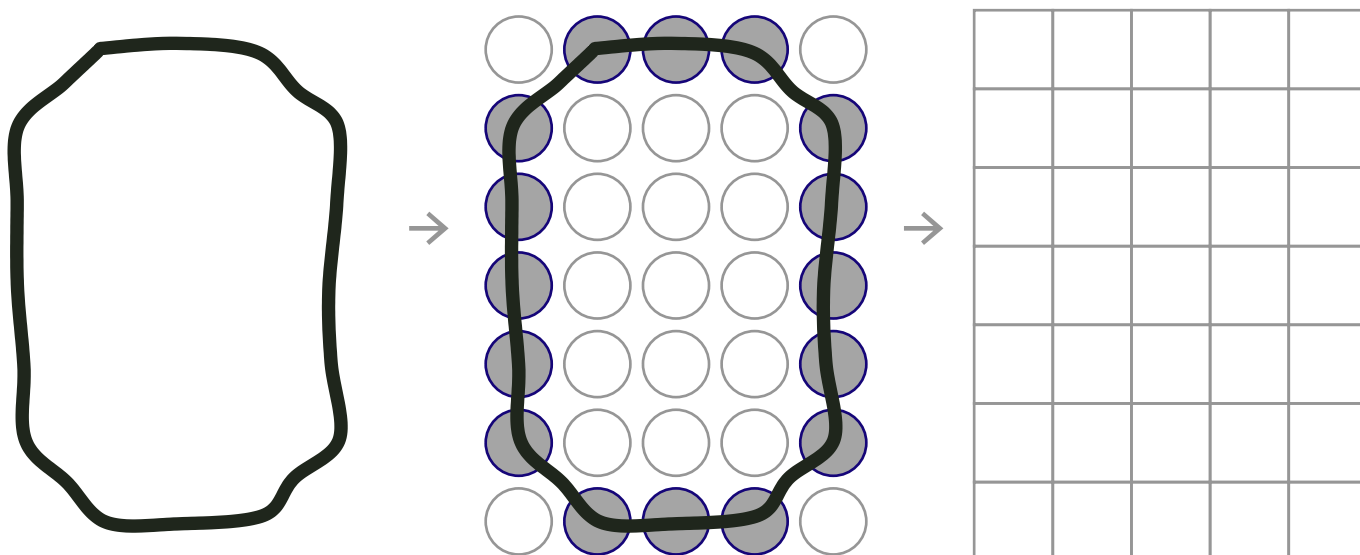
0	1	1	1	0	
1	0	0	0	1	
1	0	0	0	1	
1	0	0	0	1	
1	0	0	0	1	
1	0	0	0	1	
0	1	1	1	0	

1	1	1	1	1	
0	0	1	0	0	
0	0	1	0	0	
0	0	1	0	0	
0	0	1	0	0	
0	0	1	0	0	
0	0	1	0	0	

The robot read the letter: _____

Which letter is it?

Write the bits of the letter. For each letter in the memory, count in each row the 1s in the same position; add them up. The biggest total wins.



The robot's memory — 1s in the same position: how many?

A

0	0	1	0	0	
0	0	1	0	0	
0	1	0	1	0	
0	1	0	1	0	
0	1	1	1	0	
1	0	0	0	1	
1	0	0	0	1	

O

0	1	1	1	0	
1	0	0	0	1	
1	0	0	0	1	
1	0	0	0	1	
1	0	0	0	1	
1	0	0	0	1	
0	1	1	1	0	

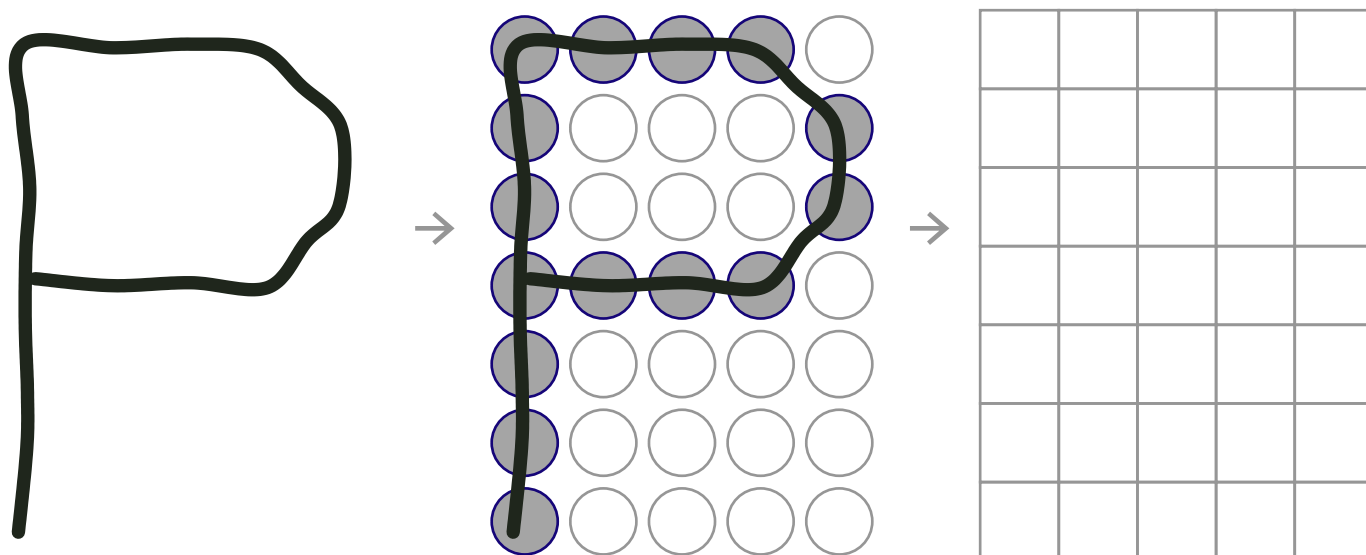
T

1	1	1	1	1	
0	0	1	0	0	
0	0	1	0	0	
0	0	1	0	0	
0	0	1	0	0	
0	0	1	0	0	
0	0	1	0	0	

The robot read the letter: _____

Which letter is it?

Write the bits of the letter. For each letter in the memory, count in each row the 1s in the same position; add them up. The biggest total wins.



The robot's memory — 1s in the same position: how many?

P

M

U

1	1	1	1	0	
1	0	0	0	1	
1	0	0	0	1	
1	1	1	1	0	
1	0	0	0	0	
1	0	0	0	0	
1	0	0	0	0	

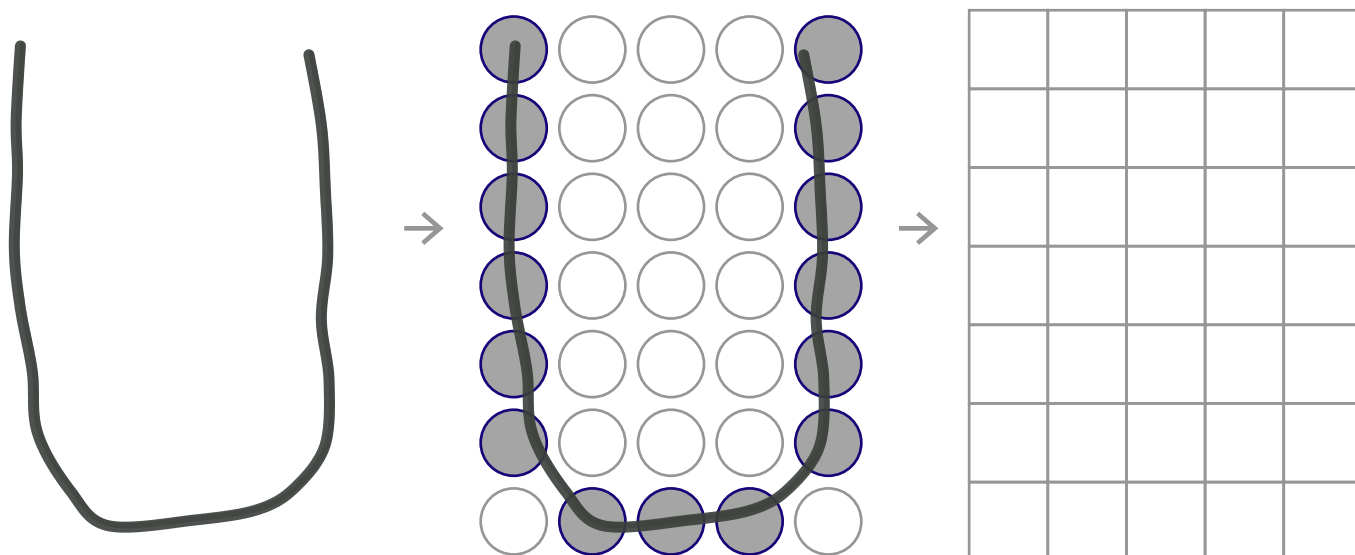
1	0	0	0	1	
1	1	0	1	1	
1	1	0	1	1	
1	0	1	0	1	
1	0	0	0	1	
1	0	0	0	1	
1	0	0	0	1	

1	0	0	0	1	
1	0	0	0	1	
1	0	0	0	1	
1	0	0	0	1	
1	0	0	0	1	
1	0	0	0	1	
0	1	1	1	0	

The robot read the letter: _____

Which letter is it?

Write the bits of the letter. For each letter in the memory, count in each row the 1s in the same position; add them up. The biggest total wins.



The robot's memory — 1s in the same position: how many?

P

M

U

1	1	1	1	0	
1	0	0	0	1	
1	0	0	0	1	
1	1	1	1	0	
1	0	0	0	0	
1	0	0	0	0	
1	0	0	0	0	

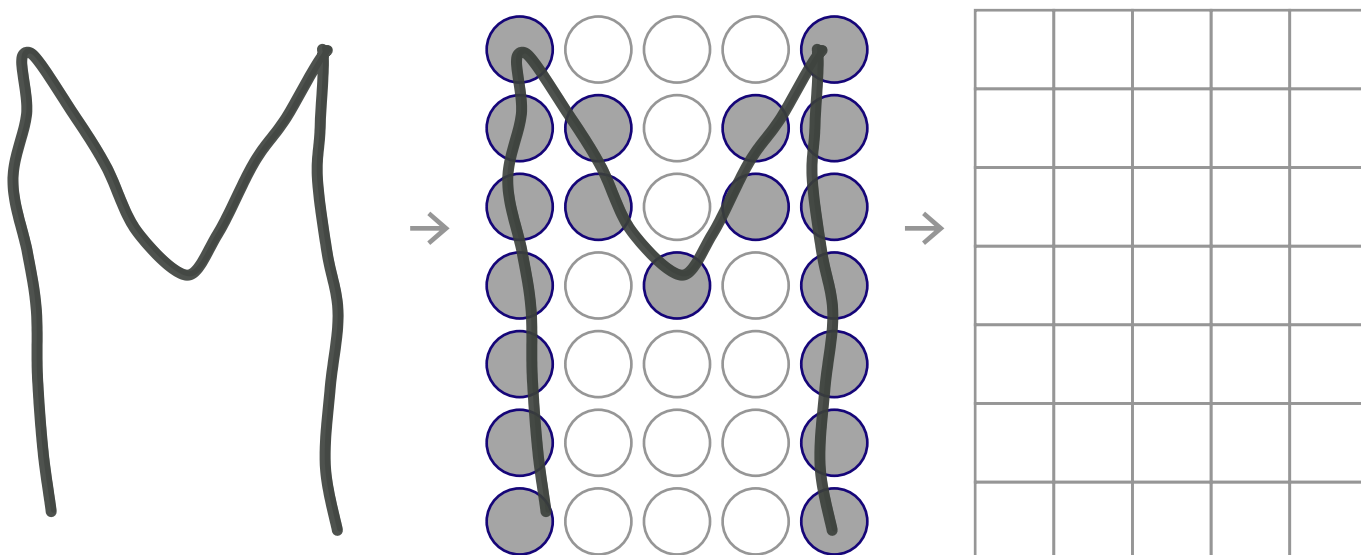
1	0	0	0	1	
1	1	0	1	1	
1	1	0	1	1	
1	0	1	0	1	
1	0	0	0	1	
1	0	0	0	1	
1	0	0	0	1	

1	0	0	0	1	
1	0	0	0	1	
1	0	0	0	1	
1	0	0	0	1	
1	0	0	0	1	
1	0	0	0	1	
0	1	1	1	0	

The robot read the letter: _____

Which letter is it?

Write the bits of the letter. For each letter in the memory, count in each row the 1s in the same position; add them up. The biggest total wins.



The robot's memory — 1s in the same position: how many?

P

M

U

1	1	1	1	0	
1	0	0	0	1	
1	0	0	0	1	
1	1	1	1	0	
1	0	0	0	0	
1	0	0	0	0	
1	0	0	0	0	

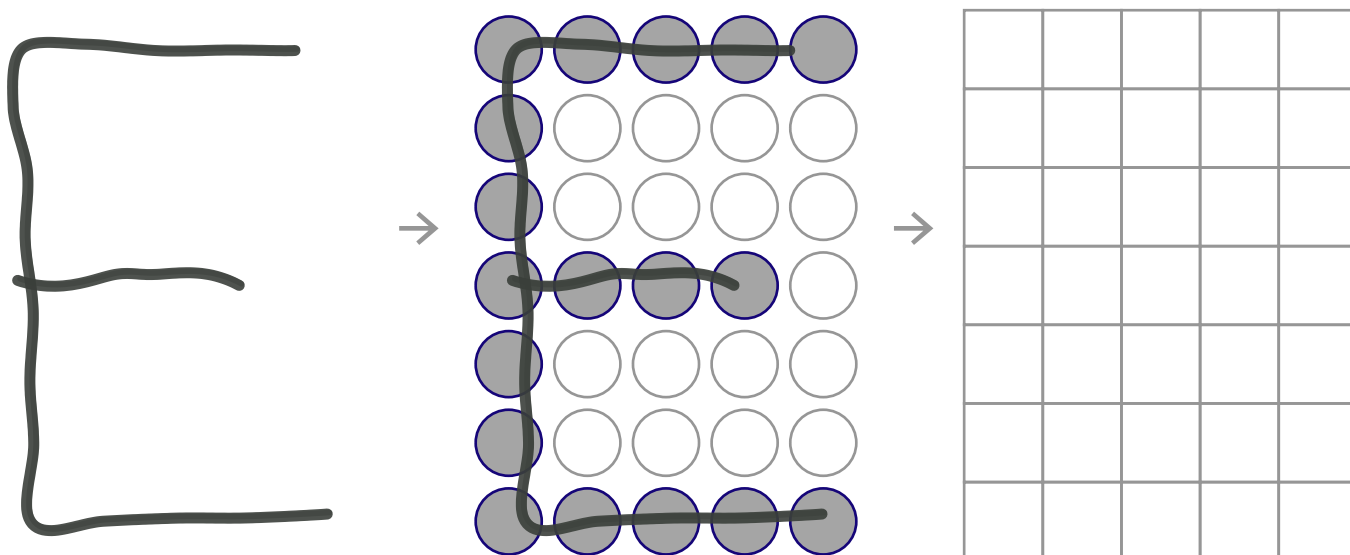
1	0	0	0	1	
1	1	0	1	1	
1	1	0	1	1	
1	0	1	0	1	
1	0	0	0	1	
1	0	0	0	1	
1	0	0	0	1	

1	0	0	0	1	
1	0	0	0	1	
1	0	0	0	1	
1	0	0	0	1	
1	0	0	0	1	
1	0	0	0	1	
0	1	1	1	0	

The robot read the letter: _____

Which letter is it?

Write the bits of the letter. For each letter in the memory, count in each row the 1s in the same position; add them up. The biggest total wins.



The robot's memory — 1s in the same position: how many?

E

1	1	1	1	1	
1	0	0	0	0	
1	0	0	0	0	
1	1	1	1	0	
1	0	0	0	0	
1	0	0	0	0	
1	1	1	1	1	

L

1	0	0	0	0	
1	0	0	0	0	
1	0	0	0	0	
1	0	0	0	0	
1	0	0	0	0	
1	0	0	0	0	
1	1	1	1	1	

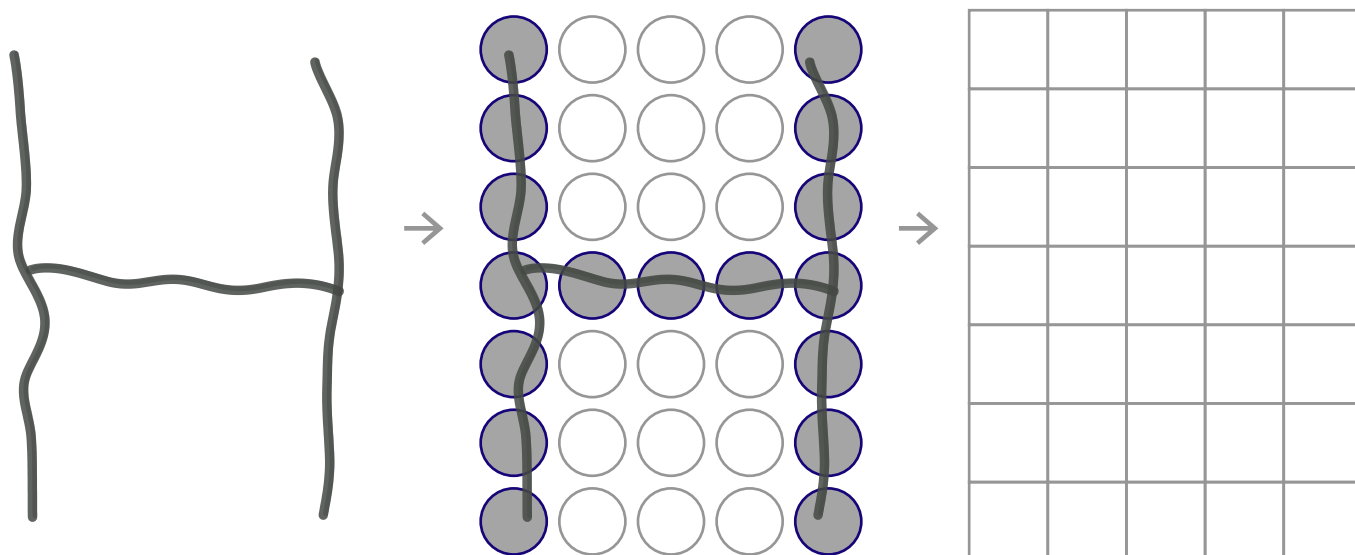
H

1	0	0	0	1	
1	0	0	0	1	
1	0	0	0	1	
1	1	1	1	1	
1	0	0	0	1	
1	0	0	0	1	
1	0	0	0	1	

The robot read the letter: _____

Which letter is it?

Write the bits of the letter. For each letter in the memory, count in each row the 1s in the same position; add them up. The biggest total wins.



The robot's memory — 1s in the same position: how many?

E

L

H

1	1	1	1	1	
1	0	0	0	0	
1	0	0	0	0	
1	1	1	1	0	
1	0	0	0	0	
1	0	0	0	0	
1	1	1	1	1	

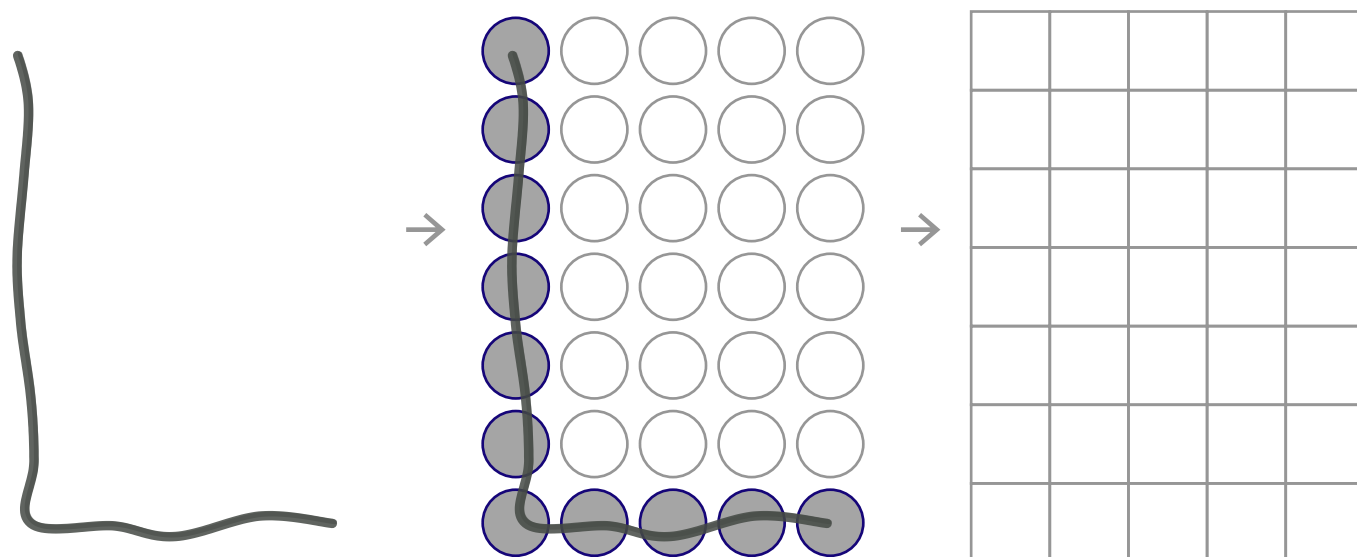
1	0	0	0	0	
1	0	0	0	0	
1	0	0	0	0	
1	0	0	0	0	
1	0	0	0	0	
1	0	0	0	0	
1	1	1	1	1	

1	0	0	0	1	
1	0	0	0	1	
1	0	0	0	1	
1	1	1	1	1	
1	0	0	0	1	
1	0	0	0	1	
1	0	0	0	1	

The robot read the letter: _____

The robot fooled

Count, in each row, the 1s in the same position; add them up. The biggest total wins. Look closely at the result.



The robot's memory — 1s in the same position: how many?

L

1	0	0	0	0	
1	0	0	0	0	
1	0	0	0	0	
1	0	0	0	0	
1	0	0	0	0	
1	0	0	0	0	
1	1	1	1	1	

E

1	1	1	1	1	
1	0	0	0	0	
1	0	0	0	0	
1	1	1	1	0	
1	0	0	0	0	
1	0	0	0	0	
1	1	1	1	1	

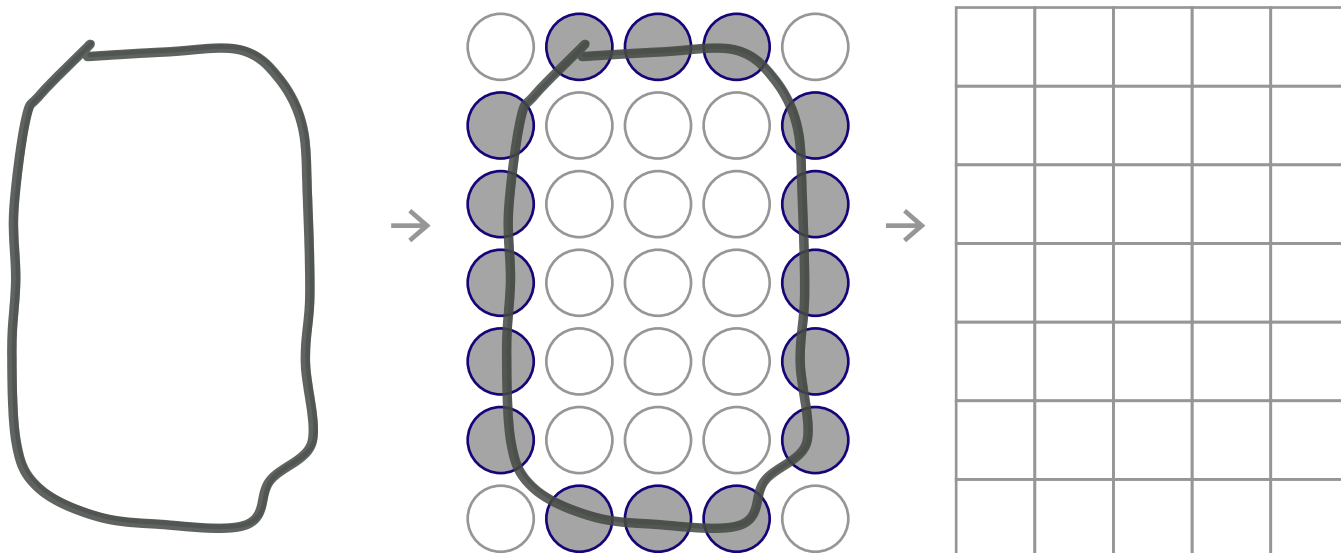
F

1	1	1	1	1	
1	0	0	0	0	
1	0	0	0	0	
1	1	1	1	0	
1	0	0	0	0	
1	0	0	0	0	
1	0	0	0	0	

Which letter wins? Is there a problem? _____

The robot fooled

Count, in each row, the 1s in the same position; add them up. The biggest total wins. Look closely at the result.



The robot's memory — 1s in the same position: how many?

A

O

■

0	0	1	0	0	
0	0	1	0	0	
0	1	0	1	0	
0	1	0	1	0	
0	1	1	1	0	
1	0	0	0	1	
1	0	0	0	1	

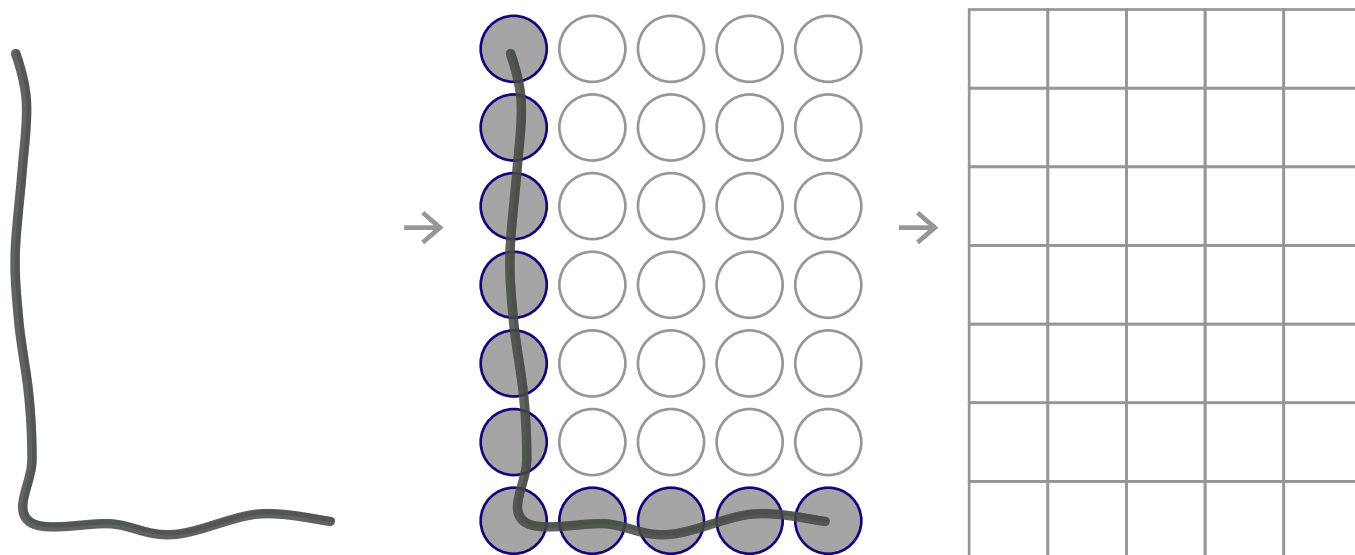
0	1	1	1	0	
1	0	0	0	1	
1	0	0	0	1	
1	0	0	0	1	
1	0	0	0	1	
1	0	0	0	1	
0	1	1	1	0	

1	1	1	1	1	
1	1	1	1	1	
1	1	1	1	1	
1	1	1	1	1	
1	1	1	1	1	
1	1	1	1	1	
1	1	1	1	1	

Which letter wins? Is there a problem? _____

Counting differences

Now count the differences: positions where one has a 1 and the other has a 0. The smallest total wins.



The robot's memory — positions that differ: how many?

L

E

F

1	0	0	0	0	
1	0	0	0	0	
1	0	0	0	0	
1	0	0	0	0	
1	0	0	0	0	
1	0	0	0	0	
1	1	1	1	1	

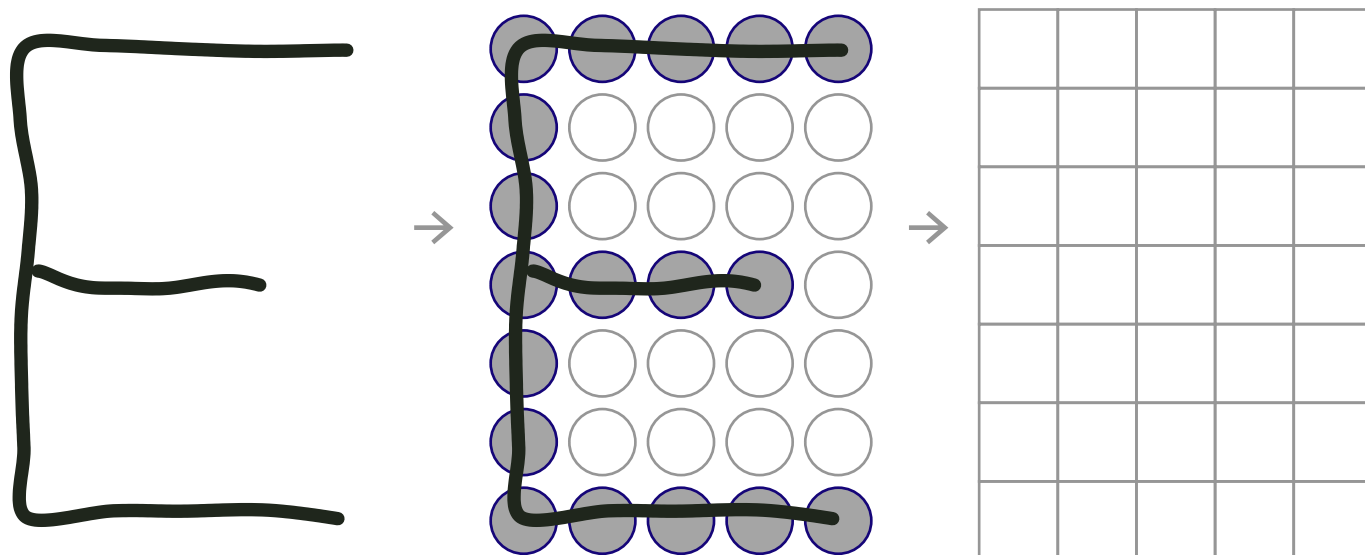
1	1	1	1	1	
1	0	0	0	0	
1	0	0	0	0	
1	1	1	1	0	
1	0	0	0	0	
1	0	0	0	0	
1	1	1	1	1	

1	1	1	1	1	
1	0	0	0	0	
1	0	0	0	0	
1	1	1	1	0	
1	0	0	0	0	
1	0	0	0	0	
1	0	0	0	0	

The robot read the letter: _____

Counting differences

Now count the differences: positions where one has a 1 and the other has a 0. The smallest total wins.



The robot's memory — positions that differ: how many?

L

E

F

1	0	0	0	0	
1	0	0	0	0	
1	0	0	0	0	
1	0	0	0	0	
1	0	0	0	0	
1	0	0	0	0	
1	1	1	1	1	

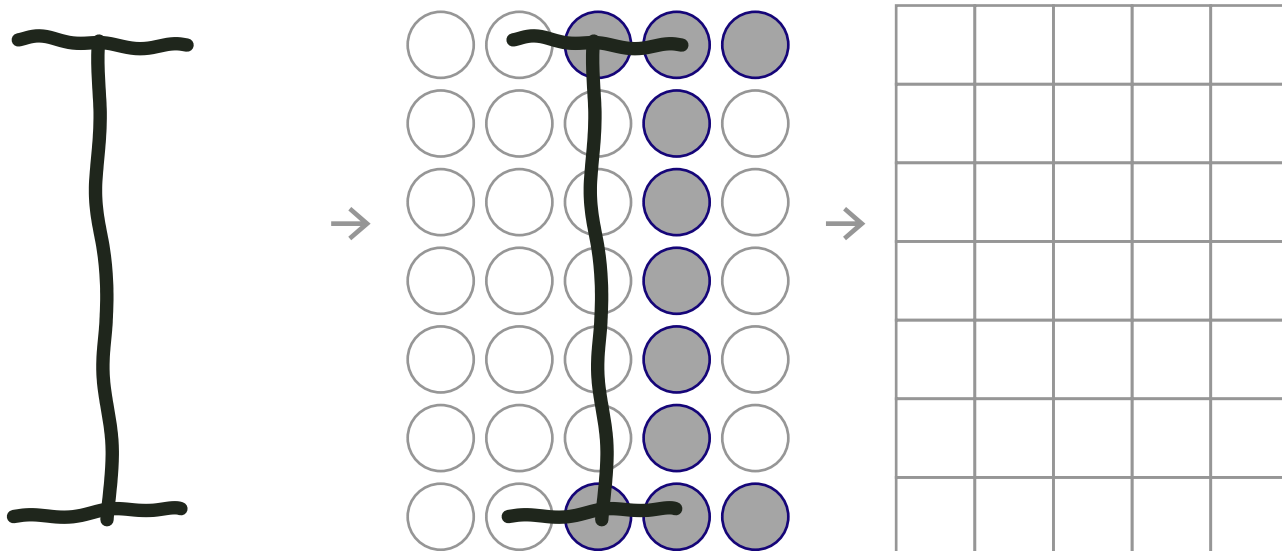
1	1	1	1	1	
1	0	0	0	0	
1	0	0	0	0	
1	1	1	1	0	
1	0	0	0	0	
1	0	0	0	0	
1	1	1	1	1	

1	1	1	1	1	
1	0	0	0	0	
1	0	0	0	0	
1	1	1	1	0	
1	0	0	0	0	
1	0	0	0	0	
1	0	0	0	0	

The robot read the letter: _____

The shifted letter

This letter was written further to the right. Count the differences (the smallest total wins).



I

T

L

0	1	1	1	0	
0	0	1	0	0	
0	0	1	0	0	
0	0	1	0	0	
0	0	1	0	0	
0	0	1	0	0	
0	1	1	1	0	

1	1	1	1	1	
0	0	1	0	0	
0	0	1	0	0	
0	0	1	0	0	
0	0	1	0	0	
0	0	1	0	0	
0	0	1	0	0	

1	0	0	0	0	
1	0	0	0	0	
1	0	0	0	0	
1	0	0	0	0	
1	0	0	0	0	
1	0	0	0	0	
1	1	1	1	1	

The robot read the letter: _____

What would you do to the letter before comparing it? _____

Letters that look alike

Count the differences between each pair of letters in the memory and fill in the table.

O
C
G
Q

0	1	1	1	0
1	0	0	0	1
1	0	0	0	1
1	0	0	0	1
1	0	0	0	1
1	0	0	0	1
0	1	1	1	0

0	1	1	1	0
1	0	0	0	1
1	0	0	0	0
1	0	0	0	0
1	0	0	0	0
1	0	0	0	1
0	1	1	1	0

0	1	1	1	0
1	0	0	0	1
1	0	0	0	0
1	0	1	1	1
1	0	0	0	1
1	0	0	0	1
0	1	1	1	0

0	1	1	1	0
1	0	0	0	1
1	0	0	0	1
1	0	0	0	1
1	0	0	0	1
1	0	0	1	1
0	1	1	1	1

	O	C	G	Q
O	0			
C		0		
G			0	
Q				0

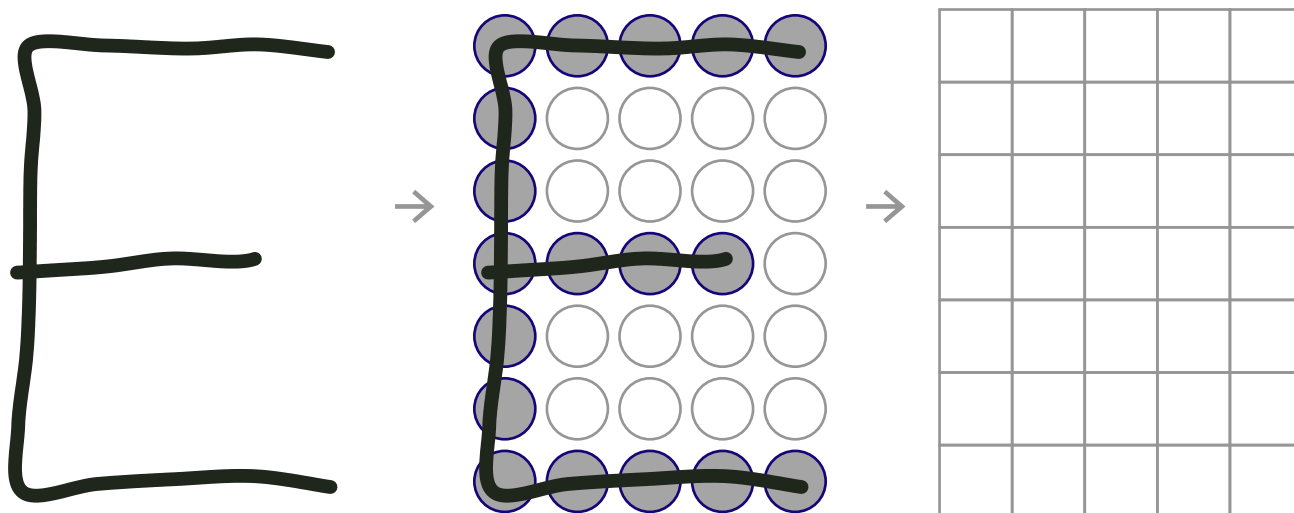
The two letters most alike: _____

The two most different: _____

Name _____

A bigger memory

Five letters in the memory. Count the differences and write only the total under each letter.



B

E

F

L

P

1	1	1	1	0
1	0	0	0	1
1	0	0	1	1
1	1	1	1	0
1	0	0	0	1
1	0	0	0	1
1	1	1	1	0

1	1	1	1	1
1	0	0	0	0
1	0	0	0	0
1	1	1	1	0
1	0	0	0	0
1	0	0	0	0
1	1	1	1	1

1	1	1	1	1
1	0	0	0	0
1	0	0	0	0
1	1	1	1	0
1	0	0	0	0
1	0	0	0	0
1	0	0	0	0

1	0	0	0	0
1	0	0	0	0
1	0	0	0	0
1	0	0	0	0
1	0	0	0	0
1	0	0	0	0
1	1	1	1	1

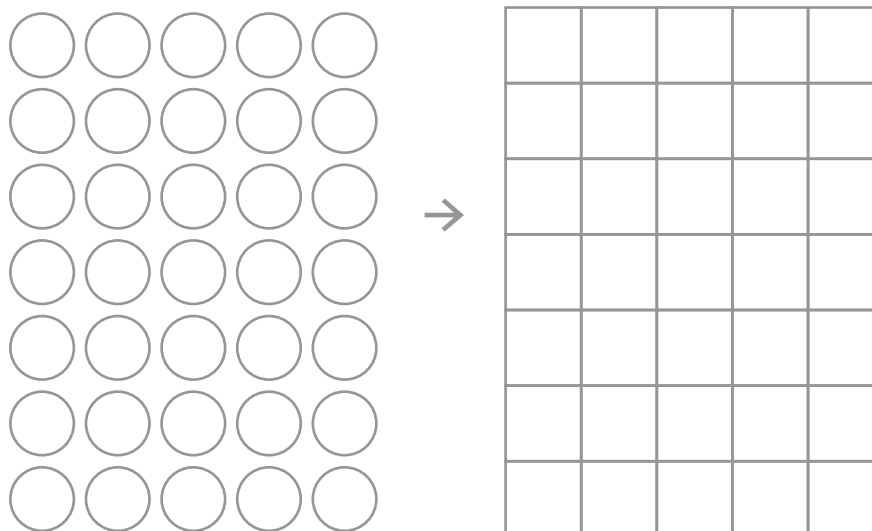
1	1	1	1	0
1	0	0	0	1
1	0	0	0	1
1	1	1	1	0
1	0	0	0	0
1	0	0	0	0
1	0	0	0	0

The robot read the letter: _____

Which letter came second? _____

Invent a letter

Draw a letter in the circles and write the bits. Swap cards with a classmate: which letter does the robot read?



A

O

T

I

L

0	0	1	0	0	0	1	1	1	1	0	1	1	1	1	0	1	0	0	0	0	0
0	0	1	0	0	0	1	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0
0	1	0	1	0	0	1	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0
0	1	0	1	0	0	1	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0
0	1	1	1	0	0	1	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0
1	0	0	0	0	1	1	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0
1	0	0	0	0	1	0	1	1	1	0	0	1	1	1	0	1	1	1	1	1	1

The robot read the letter: _____

Can you draw a letter that the robot reads wrongly? _____