Names (pair) _____ Date _____

Bits, Bytes and Pixel Pictures

Remember

A **bit** is one binary digit: 0 or 1. Eight bits make a **byte** (1 B $= 8$ b). Each extra bit doubles the number of codes: with n bits we can write 2^n different codes.

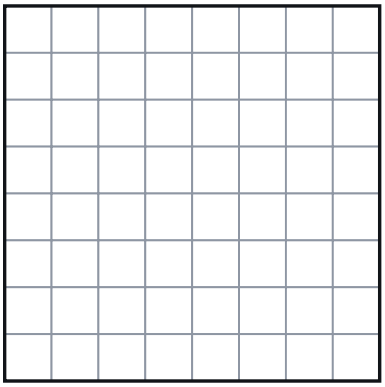
1 IN PAIRS Write all the codes with 2 bits and all the codes with 3 bits. Then complete the table.

2 bits: ☐ ☐ ☐ ☐

3 bits: ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Bits n	1	2	3	4	5	6	7	8
Codes 2^n	☐	☐	☐	☐	☐	☐	☐	☐

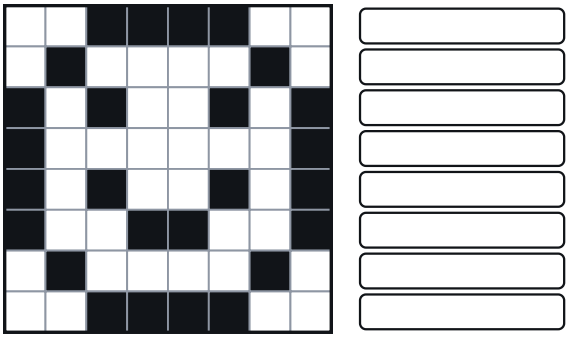
2 ON YOUR OWN **A black and white picture.** Each pixel is one bit: 1 is black and 0 is white. Colour the pixels using the row codes.



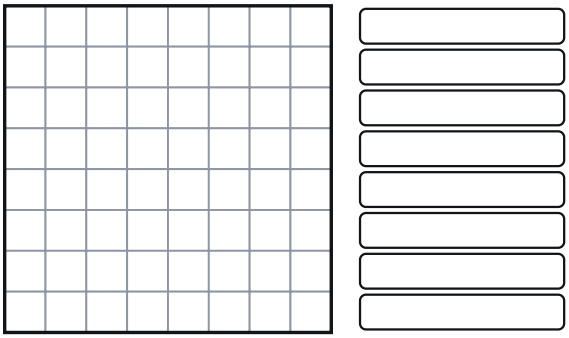
01100110
11111111
11111111
11111111
01111110
00111100
00011000
00000000

Names (pair) _____ Date _____

3 ON YOUR OWN Write the row codes for this picture.



4 IN PAIRS Draw your own 8×8 pixel picture and write only its codes on a slip of paper. Your partner draws the picture from your codes. Are the pictures the same?



5 ON YOUR OWN **How much space does it take?** A black and white picture, 1 bit per pixel.

Picture	Pixels	Bits	Bytes
8×8			
16×16			
1920×1080			

The Pixels and Colours app · otooly.com/pixels-and-colours

Pixels mode: draw a picture and watch the row codes change, or draw a picture from given codes.

★ ON YOUR OWN **Exit card.** How many different codes can we write with 6 bits? ____