Names (pair) _____ Date _____

Colours and Text in a Computer

Remember

The colour of a pixel on a screen is a mix of **red** (R), **green** (G) and **blue** (B) light. The strength of each is stored in 8 bits, from 0 to 255. So one colour pixel needs 24 bits, that is 3 bytes.

1 IN PAIRS Which colour is it? Guess, then check in the app.

R	G	B	Colour
255	0	0	
0	255	0	
0	0	255	
255	255	0	
0	0	0	
255	255	255	
128	128	128	

2 ON YOUR OWN Write the strengths as 8-bit binary numbers.

255 = _____ 200 = _____

128 = _____

3 IN PAIRS **How many colours?** Complete the table.

Bits per colour (R, G, B)	Bits per pixel	Number of colours
1		
2		
8		

Names (pair) _____ Date _____

Remember

Letters are numbers in a computer, too. In **ASCII**, A = 65, B = 66, … , Z = 90, and each letter takes 1 byte. **UTF-8** also has letters such as č, ć, đ, š, ž, but they take 2 bytes.

4 ON YOUR OWN Write the word **HI** in binary (8 bits per letter).

H = 72 = ☐ I = 73 = ☐

5 IN PAIRS **A secret message.** Decode the message.

Byte	Number	Letter
01001111	☐	☐
01001011	☐	☐

6 ON YOUR OWN How many bytes do these words take in UTF-8?

čaša: ☐ casa: ☐ OTOOLY: ☐

7 IN PAIRS Write the first letters of your first name and surname in binary. Give the bytes to your partner to decode.

☐ ☐ → ☐ ☐

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

Colours mode: mix a colour with the R, G and B sliders; **Letters** mode: type a word and see its bytes.

★ ON YOUR OWN **Exit card.** How many bytes does a 10 × 10 colour picture take (24 bits per pixel)?

☐