Colors can be described as amounts of red, green, and blue mixed together[1] Mathematically, a color can be represented as a 3-tuple (r, g, b) where r represents the red component, g the green component, b the blue component and where each of r, g, b must be a value from this collection of numbers:

$$\{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255\}$$

1. **True** or **False**: $(1, 3, 4)$ fits the definition of a color above.
2. **True** or **False**: $(1, 100, 200, 0)$ fits the definition of a color above.
3. **True** or **False**: $(510, 255)$ fits the definition of a color above.
4. **True** or **False**: There is a color (r_1, g_1, b_1) where $r_1 + g_1 + b_1$ is greater than 765.
5. **True** or **False**: There is a color (r_2, g_2, b_2) where $r_2 + g_2 + b_2$ is equal to 1.
6. **True** or **False**: Another way to write the collection of allowed values for red, green, and blue components is
$$\{x \in \mathbb{N} \mid 0 \leq x \leq 255\}$$
.
7. **True** or **False**: Another way to write the collection of allowed values for red, green, and blue components is
$$\{n \in \mathbb{Z} \mid 0 \leq n \leq 255\}$$
.
8. **True** or **False**: Another way to write the collection of allowed values for red, green, and blue components is
$$\{y \in \mathbb{Z} \mid -1 < y \leq 255\}$$
.

[1] This RGB representation is common in web applications. Many online tools are available to play around with mixing these colors, e.g. `https://www.w3schools.com/colors/colors_rgb.asp`.