

Lab 2 Worksheet

1. Convert the following decimal numbers to our 8-bit minifloat format with a **3-bit exponent e** and a **4-bit significand g** : $s\ e_2e_1e_0\ g_3g_2g_1g_0$.

a.

2.25

b.

1.7

2. Convert the following floats from our 8-bit floating-point format with a **3-bit exponent e** and a **4-bit significand** into decimal numbers.

a.

1 101 1100

b.

0 010 0110

3. Add or multiply the following numbers together using the minifloat format.

a.

0 011 1100 + 0 100 0010 (1.75 + 2.25)

b.

0 011 0100 × 1 100 0100 (1.25 × -2.50)

c.

0 011 1100 × 0 100 0010 (1.75 × 2.25)

4. BONUS QUESTION: What are the largest and smallest finite positive numbers that can be represented as 32-bit IEEE 754 single precision floats? *Remember: 8-bit exponent, 23-bit significand*