Let's look at Floating Point multiplication
Again, we will start with decimal and
Then do binary.

Multiply $1.110 \times 10^{10} \times 9.200 \times 10^{-5}$

1. Add exponents, so $10 + (-5) = 5$
2. Multiply significands

$$\begin{array}{r} 1.110 \\ \times\ 9.200 \\ \hline 0000 \\ 0000 \\ 2220 \\ 9990 \\ \hline 10.212000 \end{array} \Rightarrow 10.212000 \times 10^{5}$$

3. Normalize and check for over/underflow
   a) 1.0212×10^{6}
   b) can we represent 6?
      yes, so no overflow

4. Round and renormalize if need
   1.0212×10^{6}
   but, we only have 3 significant digits to the right of the decimal point in the original numbers. We round to 3 digits $\Rightarrow 1.021 \times 10^{6}$

5. Figure sign, both positive, so +

Let's do this with binary numbers

$1.000_2 \times 2^{-1}$ (0.5)

$\times -1.110_2 \times 2^{-2}$ (-0.4375)

1. Add exponents

$-1 + (-2) \Rightarrow -3$

See text book on page 219 for discussion on adding biased exponents.

2. Multiply

$$\begin{array}{r} 1.000 \\ \times\ 1.110 \\ \hline 0000 \\ 1000 \\ 1000 \\ 1000 \\ \hline 1.110000 \end{array} = 1.110000 \times 2^{-3}$$

3. Normalize & check for over/underflow, round

1.110×2^{-3}

4. Determine sign

+ve x -ve $\Rightarrow$ -ve

5. Answer $1.110_2 \times 2^{-3} \Rightarrow -0.21875_{10}$