2331

·85 *+2 = 17'
17

8 bit bin → ~~single~~ si,

+41	0	101001
-41	1	101001

sing magnitude

1s complement from

+41 0 1 0 1 0 0 1

-41 0 1 0 1 0 0 1 → 1's

oposit

1 0 1 0 1 1 0

sign

~~+41 0 0 1 0 1 0 0 1~~

2's complement

+41 0 1 0 1 0 0 1

-41 0 1 0 1 0 0 1 → 1's

1 0 1 0 1 1 0

+1

1 0 1 0 1 1 1

0 → plus
1 → Negative

01001100

0	1	0	0	1	1	0	0
2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0

64 + 8 + 4 + = 76

Signed Mag

1	0	1	0	1	1	1	1
2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
128	64	32	16	8	4	2	1

→ -47

1's

1	0	1	0	0	0	0
2^6	2^5	2^4	2^3	2^2	2^1	2^0

64 + 16 ⇒ -80

2's

+1

		1	0	1	0	0	0	1
		2^6	2^5	2^4	2^3	2^2	2^1	1

64 + 16 + 1 ⇒ -81

Floating Point

~~22 → 0.22 × 2 → 0.44~~

~~0.44 × 2 → 0.88~~

0 1001100

S +3 = -2 m²

→ .01.1100

~~0.010110₂~~

0.011100

½ ¼ ⅛ 1/16 = 0.4375

Bias = $2^{(n-1)} - 1$

bit to dec

100

$2^0 \times 0 = 0$

$2^1 \times 0 = 0$

$2^2 \times 1 = 4$

⇒ 0110

Value = $(-1)^S \times 2^{\text{Eactual}} \times M$

00010110

3-1

⇒ $+ \times 2^2 \times$ ~~+0110~~ 0.75

0 0001 0110
S E M

formula $= (-1)^S \times 2^{E_{dec}} \times M$

for E = 001 $\xrightarrow{dec}$ 1

$2^{(3-1)}$ Exact $\Rightarrow 1-3 = -2$

M

1.0110

$1 \times 2^0 = 0$

$1 \times 2^{-1} = 0.5$

$1 \times 2^{-2} \Rightarrow 0.25$

$1 \times 2^{-4} \Rightarrow 0.0625$

M 0.8125

01101

$1 \times 2^0 = 1$

$0 \times 2^{-1} =$

1×2^{-2}

1×2^{-3}

$\Rightarrow 1.375$

-0.39375

Follow up question:

1) I don’t have a partner.
2) 5 hours. Actually, my concept was not clear. So I spend more time to re-watch all the Class again and clear the concept.
3) The hardest part of the assignment is converting bits to decimals. But I was checking how to do that I found a cool function int(). that makes it so easy.
4) I learn a lot of things. How to convert numbers. My binary concept is more clear now.
5) I relied more on YouTube than ChatGPT for this assignment because I wanted to strengthen my foundational knowledge. If you review my preliminary work, you'll see that I performed the math conversions by hand.

Extension: