"On my honor, I have neither given nor received any unauthorized and/or inappropriate assistance for all sessions of this exam. The work done on this exam is totally my own. I understand that by the school code, violation of these principles will lead to a zero grade and is subject to harsh discipline issues."

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[signature]

Q1) 12 bit

	Hexadecimal	Value
T_{min} →	0x 800	-2048
T_{max} →	0x 7ff	2047
(unsigned)((int (12)) →	0x 00C	12
(unsigned)(int(c)-5) →	0x 00C	6001
((unsigned) 0x808) >>3 →	0x 000	0
20 & 12 →	0x 004	4
12 & 4 →	0x0	0
(!0x108-1) & 0x108 →	0x 108	264
(int) (2000+500) →	0x 1C4	452
~0 > 0 →	0x fff	0

Q2) 7 bit exp = 4 bit fraction = 3 bits no sign bits

$V = M \times 2^E$

use round-to-even

	Binary floating point	Rounded Value
32/512 →	0011 000	32/512
231/256 →	0110 110	$\frac{7}{8}$
37 →	1100 001	36
3/512 →	0000 000	0

37 → 100101.000

1001.010

.100

$2\frac{1}{4}$ → $9\frac{1}{2}$

3/512 → $\frac{1}{256} + \frac{1}{512}$

2^8 2^9

0000.00011

0000.00011 ← cant represent this

1024 + 16

96 64

64

32/512 → $\frac{1}{16}$ → 0000.0001...

19/1024

$\frac{1}{1024} + \frac{2}{1024} + \frac{16}{1024}$

2^{10} 2^9 2^6

0000.0000010011

0001.0011

011

1+

$6 \frac{1}{2} + \frac{1}{4}$ $6\frac{3}{4}$