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CS 261
HW9

$$\text{Denormalized} = (-1)^S \times (0.m) \times 2^{1-\text{bias}}$$
$$\text{Normalized} = (-1)^S \times (1.m) \times 2^{e-\text{bias}}$$

	Format A Bias = (011111) = 31		Format B Bias = (01111) = 15	
	Bits Value	Value	Bits Value	Value
Q1	1 000000 01110010 $(-1)(1.11001 \times 2)(2^{-10})$ $(1 + \frac{1}{2} + \frac{1}{8} + \frac{1}{16})$	$(57) \times 2^{-39}$	1 00000 000000001	$-(2^{-14})(2^0)$
Q2	0 100011 000000000	16	0 10011 000000000 $(1 \times 2^4)(1.0)$	16
Q3	0 010001 00101100 $(1) 2^{(17-31)} \cdot (1.00101100)$	$\frac{23}{128} \times 2^{-13}$	0 00001 00101100 2^{-14}	23×2^{-20}
Q4	0 1100101 000000001 2^{-5} 2^{-4} $1 + 13 \times 2^{-7}$	$2^{-5}(1 + 2^{-9})$	0 01010 0000000001 $(1) 2^{-5}$ 1.0000000001 $1 + 2^{-10}$	$2^{-5} \cdot (\frac{1}{1024} + 1)$ $\frac{1}{2^{-15}} + \frac{1}{2^{-5}}$
Q5	1 101000 00000110 $(-1) 2^9 (1.0000011)$	$-(2^9)(\frac{131}{128})$	1 11000 0000011000 $(-1) 2^9 (1.0000011)$	$-2^9 \cdot \frac{131}{128}$
Q6	0 111111 11111111	NaN	0 11111 1111111111	NaN
Q7	0 011101 000000001 $(1) 2^{-2}$ $1 + 5 \times 2^{-10}$	$(2^{-2})(1 + 5 \times 2^{-9})$	0 01101 0000000101 $(1) 2^{-2}$ $1 + 5 \times 2^{-10}$	$(2^{-2})(1 + 5 \times 2^{-10})$ $2^{-2} + 5 \cdot 2^{-12}$
Q8	0 010111 00000 0001	$(2^{-8})(1 + 2^{-9})$	0 00111 0000000001 $(1) 2^{-8}$ $1 + 2^{-10}$	$(2^{-8})(1 + 2^{-10})$
Q9	0 011011 100100011 $(1) 2^{-4}$ $1 + \frac{291}{512}$ $\frac{1}{2} + \frac{1}{16} + \frac{1}{256} + \frac{1}{512}$	$2^{-4}(1 + \frac{291}{512})$	0 01011 1001000110	$2^{-4}(1 + \frac{291}{512})$

$2^{10} = 256$ ...

Q2.

Format A largest: 0 111110 11111111

smallest: 0 00001 00000000

Format B largest: 0 11110 11111111

smallest: 0 00001 000000000