Floating Point HW IEEE form

23.

Divide 63 by 2 until there is a quotient value of 0 and keep the remainder.

63/2 = 31+1

31/2= 15 +1

15/2 = 7 + 1

7/2 = 3 + 1

3/2 = 1 + 1

1/2 = 0 + 1

63 is 111111 using the remainders.

To get the fraction of 0.25. Multiplying by 2 repeatedly and keeping track of each part of the results until there is a fractional part to give 0.

0.24 x 2 = 0.5 + 1

0.5 x 2 = 1 + 0

0.25 = 0.01 in binary.

63.25 is now 111111.01

Shift of 5 positions to the left so that only one nonzero digit remains in front of the period.

1.11111101

Convert it from decimal to 8 bit binary by using the technique of dividing by 2.

5 + 2^7 - 1 = 132

which converted to binary is 100000100

Shift again which makes 10000100 into 1.111110100000000000000

Putting all these together show the numbers 32 bit single precision IEEE754 binary floating point is

0 1000 0100 111 1101 0000 0000 0000 0000

24.

Now we are following the same steps for double precision 1023 which now is represented as

0 100 000 0100 111 1010 000 ... 0000