

Quiz

5.75

$$\begin{array}{l} \textcircled{1} \quad 5 \div 2 = 1 \\ \quad \quad 2 \div 2 = 0 \\ \quad \quad 1 \div 2 = 1 \end{array}$$

divide 5 by 2 keeping
notice of the quotient and
the remainder

101

write the reverse order
from bottom to up

$$0.75 \times 2 = 1 + 0.5 \text{ multiply by 2}$$

$$0.5 \times 2 = 1 + 0 \text{ and write the integer part}$$

out

101.11

$$63/64 = 0.984$$

$$0 \div 2 = 0$$

divide the integer by
2, to quotient and remainder

$$0.984 \times 2 = 1.968 \text{ multiply by 2 keep}$$

$$0.968 \times 2 = 1.936$$

$$0.936 \times 2 = 1.872$$

$$0.872 \times 2 = 1.744$$

$$0.744 \times 2 = 1.488$$

$$0.488 \times 2 = 0.976$$

$$0.976 \times 2 = 1.952$$

$$0.952 \times 2 = 1.904$$

$$0.904 \times 2 = 1.808$$

$$0.808 \times 2 = 1.615$$

0.111101111

9.8125

$$9 \div 2 = 4 \text{ remainder } 1$$

$$4 \div 2 = 2 \text{ remainder } 0$$

$$2 \div 2 = 1 \text{ remainder } 0$$

$$1 \div 2 = 0 \text{ remainder } 1$$

9 divided by 2 keep
notice of quotient
and remainder

1001

collect from bottom
to top

$$0.8125 \times 2 = 1.625 \text{ multiply by 2}$$

$$0.625 \times 2 = 1.25$$

$$0.25 \times 2 = 0.5$$

$$0.5 \times 2 = 1.0$$

notice the integer and
fractional part

1001.1101

collect the decimal
from top to bottom

② 34.890625

$$34 \div 2 = 17 \text{ remainder } 0$$

$$17 \div 2 = 8 \text{ remainder } 1$$

$$8 \div 2 = 4 \text{ remainder } 0$$

$$4 \div 2 = 2 \text{ remainder } 0$$

$$2 \div 2 = 1 \text{ remainder } 0$$

$$1 \div 2 = 0 \text{ remainder } 1$$

$$0.890625 \times 2 = 1.78125 = 1$$

$$0.78125 \times 2 = 1.5625 = 1$$

$$0.5625 \times 2 = 1.125 = 1$$

$$0.125 \times 2 = 0.25 = 0$$

$$0.25 \times 2 = 0.5 = 0$$

$$0.5 \times 2 = 1 = 1$$

I) $34.890625 = 100010.111001$

II) 1.00010111001×2^5

III Positive

$$E_x = 5 + 127 = 132$$

mantissa: 10000100

$$132 \div 2 = 66 \text{ remainder } 0$$

$$66 \div 2 = 33 \text{ remainder } 0$$

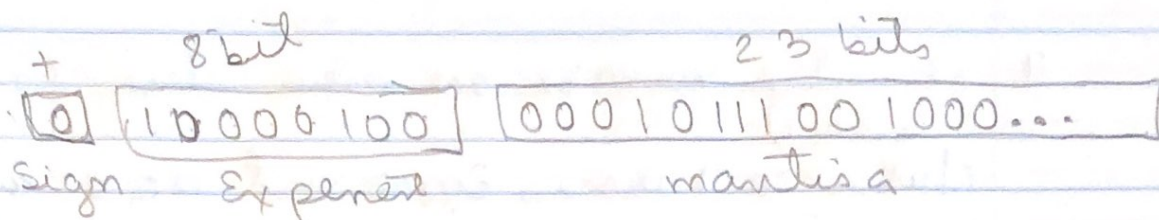
$$33 \div 2 = 16 \text{ remainder } 1$$

$$16 \div 2 = 8 \text{ remainder } 0$$

$$8 \div 2 = 4 \text{ remainder } 0$$

$$4 \div 2 = 2 \text{ remainder } 0$$

$$2 \div 2 = 1 \text{ remainder } 0$$



find the binary value of the decimal
using the step from previous question
look for the sign of given value
if positive 0 or negative 1

move the decimal point to the left side
until the last 1 bit. the number
of move represent the exponent
then add to the Bias and will get
the Exponent and convert it to
binary and then collect all the
rest after the point will be mantissa

③ 0 value is positive

0.1111011

Bias = 127

$$> = 2^6 + 2^5 + 2^4 + 2^3 + 2^1 + 2^0 = 123$$

Get binary format $123 - 127 = -4$

1.000 0000 0000 0000 0000 0000 $\times 2^{-4}$

$$0.0001 = \frac{1}{2^4} = \frac{1}{16} = \boxed{0.0625}$$

calculate the decimal number

4 normalizing numbers are value close to 1 below
closest to 1 above, Exponent 0001 and on

and denormalize numbers are value close number to zero exponent are 0000

