Using The Conversion Procedure

- Convert 2.625 to our 8-bit floating point format.
  A. The integral part is easy, $2_{10} = 10_2$. For the fractional part:

$0.625 \times 2 = 1.25$	$\boxed{1}$	*Generate 1 and continue with the rest.*
$0.25 \times 2 = 0.5$	$\boxed{0}$	*Generate 0 and continue.*
$0.5 \times 2 = 1.0$	$\boxed{1}$	*Generate 1 and nothing remains.*

  B. So $0.625_{10} = 0.101_2$, and $2.625_{10} = 10.101_2$.
  C. Add an exponent part: $10.101_2 = 10.101_2 \times 2^0$.
  D. Normalize: $10.101_2 \times 2^0 = 1.0101_2 \times 2^1$.
  E. Mantissa: 0101
  F. Exponent: $1 + 3 = 4 = 100_2$.
  G. Sign bit is 0.

  The result is 0 100 0101.

- Convert -4.75 to our 8-bit floating point format.
  a. The integral part is $4_{10} = 100_2$. The fractional:

$0.75 \times 2 = 1.5$	$\boxed{1}$	*Generate 1 and continue with the rest.*
$0.5 \times 2 = 1.0$	$\boxed{1}$	*Generate 1 and nothing remains.*

  b. So $4.75_{10} = 100.11_2$.
  c. Normalize: $100.11_2 = 1.0011_2 \times 2^2$.
  d. Mantissa is 0011, exponent is $2 + 3 = 5 = 101_2$, sign bit is 1.

  So -4.75 is = 1 101 0011

  Convert 0.40625 to our 8-bit floating point format.
  . Converting:

$0.40625 \times 2 = 0.8125$	$\boxed{0}$	*Generate 0 and continue.*
$0.8125 \times 2 = 1.625$	$\boxed{1}$	*Generate 1 and continue with the rest.*
$0.625 \times 2 = 1.25$	$\boxed{1}$	*Generate 1 and continue with the rest.*
$0.25 \times 2 = 0.5$	$\boxed{0}$	*Generate 0 and continue.*
$0.5 \times 2 = 1.0$	$\boxed{1}$	*Generate 1 and nothing remains.*

  a. So $0.40625_{10} = 0.01101_2$.
  b. Normalize: $0.01101_2 = 1.101_2 \times 2^{-2}$.
  c. Mantissa is 1010, exponent is $-2 + 3 = 1 = 001_2$, sign bit is 0.

  So 0.40625 is 0 001 1010