

part B

Q1

$$\begin{array}{c}
 \text{1011} \\
 \begin{array}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
 \hline
 2^{12} & 2^{11} & 2^{10} & 2^9 & 2^8 & 2^7 & 2^6 & 2^5 & 2^4 & 2^3 & 2^2 & 2^1 & 2^0 \\
 \hline
 1 & 0 & 1 & 1 & 0 & 0 & 1 & 1 & 1 & 0 & 1 & 0 & 1 \\
 \hline
 \end{array}
 \end{array}$$

$$2^{12} + 2^{10} + 2^9 + 2^6 + 2^5 + 2^4 + 2^2 + 2^0 = 505749_{10}$$

Q2

$$\begin{array}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
 \hline
 2^5 & 2^4 & 2^3 & 2^2 & 2^1 & 2^0 & . & 2^{-1} & 2^{-2} & 2^{-3} & 2^{-4} & 2^{-5} & 2^{-6} & 2^{-7} & 2^{-8} & 2^{-9} & 2^{-10} \\
 \hline
 1 & 0 & 1 & 1 & 1 & 0 & . & 1 & 0 & 0 & 1 & 1 & 1 & 1 & 0 & 1 & 1 \\
 \hline
 \end{array}$$

$$2^5 + 2^3 + 2^2 + 2^1 + 2^{-1} + 2^{-4} + 2^{-5} + 2^{-6} + 2^{-7} + 2^{-9} + 2^{-10} =$$

$$101110.100111011 = 46.62011719$$

part C

Q1

$$\begin{array}{r}
 10010111 \\
 + 01011111 \\
 \hline
 11110110_2
 \end{array}$$

Q2

$$\begin{array}{r}
 100100101 \\
 + 001101101 \\
 \hline
 101000010_2
 \end{array}$$

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Part A

Q#2

	total 45001	Remainder	Binary
65,536	0	45001	0
32,768	32768	12233	1
16,384	32768	12233	0
8,192	40960	4041	1
4,096	40960	4041	0
2,048	43008	1943	1
1,024	44032	969	1
512	44544	457	1
256	44800	201	1
128	44928	73	1
64	44992	9	1
32	44992	9	0
16	44992	9	0
8	45000	1	1
4	45000	1	0
2	45000	1	0
1	45000	0	1

$$45001_{10} = 0101011111001001$$

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part A
Q1

	<u>365</u>		
	total	Remainder	
512	0	365	0
256	0 256	109 365	0 1
128	128 256	109 237	1 0
64	320	45	1
32	352	13	1
16	352	13	0
08	360	5	1
4	364	1	1
2	364	1	0
1	365	0	1

$$365_{10} = 101101101_2$$