

$$1 - 11001_{(2)} = 25_{(10)}$$

$$\begin{array}{r} 1 & 1 & 0 & 0 & 1 \\ 2^4 & 2^3 & 2^2 & 2^1 & 2^0 \\ 16 & 8 & 4 & 2 & 1 \\ \hline 16 & 8 & 0 & 0 & 1 \\ & & & & = 25_{(10)} \end{array}$$

$$2 - 101101011_{(2)} = 363_{(10)}$$

$$\begin{array}{r} 1 & 0 & 1 & 1 & 0 & 1 & 0 & 1 & 1 \\ 2^8 & 2^7 & 2^6 & 2^5 & 2^4 & 2^3 & 2^2 & 2^1 & 2^0 \\ 256 & 128 & 64 & 32 & 16 & 8 & 4 & 2 & 1 \\ \hline 256 & 0 & 64 & 32 & 0 & 8 & 0 & 2 & 1 \\ & & & & & & & & = 363_{(10)} \end{array}$$

$$3 - 10001111_{(2)} = 143_{(10)}$$

$$\begin{array}{r} 1 & 0 & 0 & 0 & 1 & 1 & 1 & 1 \\ 128 & 64 & 32 & 16 & 8 & 4 & 2 & 1 \\ \hline 128 & 0 & 0 & 0 & 8 & 4 & 2 & 1 \\ & & & & & & & = 143_{(10)} \end{array}$$

$$4 - 111010010_{(2)} = 233_{(10)}$$

$$\begin{array}{r} 1 & 1 & 1 & 0 & 1 & 0 & 0 & 1 \\ 1024 & 64 & 32 & 16 & 8 & 4 & " & 1 \\ \hline 1024 & 64 & 32 & 0 & 8 & 0 & 0 & 1 \\ & & & & & & & = 233_{(10)} \end{array}$$

$$5 - 10110011101_{(2)} = 1437_{(10)}$$

$$\begin{array}{r} 1 & 0 & 1 & 1 & 0 & 0 & 1 & 1 & 1 & 0 & 1 \\ 1024 & " & 256 & 128 & " & " & 16 & 8 & 4 & " & 1 \\ \hline 1024 & " & 256 & 128 & " & " & 16 & 8 & 4 & " & 1 \\ & & & & & & 1024 & 512 & 256 & 128 & 64 \\ & & & & & & & 256 & 128 & 64 & 32 \\ & & & & & & & & 128 & 64 & 32 \\ & & & & & & & & & 64 & 32 \\ & & & & & & & & & & 32 \\ & & & & & & & & & & & 16 \\ & & & & & & & & & & & 8 \\ & & & & & & & & & & & 4 \\ & & & & & & & & & & & 1 \\ & & & & & & & & & & & = 1437_{(10)} \end{array}$$

$$6 - 11001011010101_{(2)} = 3253_{(10)}$$

$$\begin{array}{r} 1 & 1 & 0 & 0 & 1 & 0 & 1 & 1 & 0 & 1 & 0 & 1 \\ 2048 & 1024 & " & " & 128 & 0 & 32 & 16 & " & 4 & " & 1 \\ \hline 2048 & 1024 & " & " & 128 & 0 & 32 & 16 & " & 4 & " & 1 \\ & & & & 1024 & 512 & 256 & 128 & 64 & 32 & 16 & 8 \\ & & & & & 512 & 256 & 128 & 64 & 32 & 16 & 8 \\ & & & & & & 256 & 128 & 64 & 32 & 16 & 8 \\ & & & & & & & 128 & 64 & 32 & 16 & 8 \\ & & & & & & & & 64 & 32 & 16 & 8 \\ & & & & & & & & & 32 & 16 & 8 \\ & & & & & & & & & & 16 & 8 \\ & & & & & & & & & & & 4 \\ & & & & & & & & & & & 1 \\ & & & & & & & & & & & = 3253_{(10)} \end{array}$$

$$7 - 111_{(2)} = 7_{(10)}$$

$$\begin{array}{r} 1 & 1 & 1 \\ 4 & 2 & 1 \\ \hline & 7 & 101 \end{array}$$

$$8 - 1001_{(2)} = 9_{(10)}$$

$$\begin{array}{r} 1001 \\ 8 " " 1 \\ \hline & 9 & 101 \end{array}$$

$$9 - 10000_{(2)} = 32_{(10)}$$

$$\begin{array}{r} 1 & 0 & 0 & 0 & 0 \\ 32 & " & " & " & " \\ \hline & & & & = 32_{(10)} \end{array}$$

$$10 - 111000_{(2)} = 56_{(10)}$$

$$\begin{array}{r} 1 & 1 & 1 & 0 & 0 \\ 32 & 16 & 8 & " & " \\ \hline & & & & = 56_{(10)} \end{array}$$

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$$12 - 10110111_{(2)} = 91_{(10)}$$

$$\begin{array}{r} 1 & 0 & 1 & 1 & 0 & 1 & 1 \\ 64 & " & 96 & 8 & " & 2 & 1 \\ \hline & & 64 & " & 96 & 8 & 1 \\ & & & & 32 & 16 & 8 \\ & & & & & 16 & 8 \\ & & & & & & 4 \\ & & & & & & 1 \\ & & & & & & = 91_{(10)} \end{array}$$

$$13 - 1100101_{(2)} = 101_{(10)}$$

$$\begin{array}{r} 1 & 1 & 0 & 0 & 1 & 0 & 1 \\ 64 & 32 & " & " & 4 & " & 1 \\ \hline & 64 & 32 & " & 4 & " & 1 \\ & & 32 & " & 4 & " & 1 \\ & & & & 16 & " & 1 \\ & & & & & 8 & 1 \\ & & & & & & 4 \\ & & & & & & 1 \\ & & & & & & = 101_{(10)} \end{array}$$

$$14 - 0011101_{(2)} = 29_{(10)}$$

$$\begin{array}{r} 0011101 \\ " " 1684 " 1 \\ \hline = 29_{(10)} \end{array}$$

$$15 - 11104011_{(2)} = 235_{(10)}$$

$$\begin{array}{r} 11101011 \\ 1286432 " 8 " 21 \\ \hline = 235_{(10)} \end{array}$$

$$16 - 11101000_{(2)} = 232_{(10)}$$

$$\begin{array}{r} 11101000 \\ 1286432 " 8 " " \\ \hline = 232_{(10)} \end{array}$$

$$17 - 110100011001_{(2)} = 3353_{(10)}$$

$$\begin{array}{r} 110100011001 \\ 20481024 " 256 " " 168 " " 1 \\ \hline = 3353_{(10)} \end{array}$$

$$18 - 100011101_{(2)} = 285_{(10)}$$

$$\begin{array}{r} 100011101 \\ 256 " " 1684 " 1 \\ \hline = 285_{(10)} \end{array}$$

$$19 - 11011111110_{(2)} = 1790_{(10)}$$

$$\begin{array}{r} 11011111110 \\ 1024512 " 128643216842 " \\ \hline = 1790_{(10)} \end{array}$$

$$20 - 0011101_{(2)} = 29_{(10)}$$

$$\begin{array}{r} 00011101 \\ " " 1684 " 1 \\ \hline = 29_{(10)} \end{array}$$

$$1 - 10_{(10)} = 1010_{(2)}$$

$$\begin{array}{r} 10 \boxed{1} \\ \times 0 \boxed{1} \\ \hline 1 \boxed{2} \\ \times 0 \boxed{1} \\ \hline 1 \boxed{0} \end{array}$$

$= 1010_{(2)}$

$$2 - 67_{(10)} = 100011_{(2)}$$

$$\begin{array}{r} 67 \boxed{1} \\ \times 1 \boxed{3} \\ \hline 1 \boxed{1} \\ \times 0 \boxed{8} \\ \hline 0 \boxed{4} \\ \times 0 \boxed{2} \\ \hline 1 \boxed{0} \end{array}$$

$100011_{(2)}$

$$3 - 450_{(10)} = 111000010_{(2)}$$

$$\begin{array}{r} 450 \boxed{1} \\ \times 0 \boxed{2} \\ \hline 1 \boxed{1} \\ \times 0 \boxed{5} \\ \hline 0 \boxed{7} \\ \times 1 \boxed{3} \\ \hline 10 \end{array}$$

$$4 - 999_{(10)} = 111110011_{(2)}$$

$$\begin{array}{r} 999 \boxed{1} \\ \times 1 \boxed{4} \\ \hline 1 \boxed{3} \\ \times 1 \boxed{4} \\ \hline 0 \boxed{6} \\ \times 0 \boxed{3} \\ \hline 0 \boxed{3} \\ \times 1 \boxed{4} \\ \hline 1 \boxed{4} \\ \times 1 \boxed{7} \\ \hline 1 \boxed{3} \\ \times 1 \boxed{1} \\ \hline 10 \end{array}$$

$= 1111100111_{(2)}$

$$5 - 325_{(10)} = 101000101_{(2)}$$

$$\begin{array}{r} 325 \boxed{1} \\ \times 1 \boxed{1} \\ \hline 0 \boxed{8} \\ \times 0 \boxed{2} \\ \hline 0 \boxed{1} \\ \times 0 \boxed{5} \\ \hline 1 \boxed{2} \\ \times 0 \boxed{1} \\ \hline 10 \end{array}$$

$101000101_{(2)}$

$$6 - 77_{(10)} = 1001101_{(2)}$$

$$\begin{array}{r} 77 \boxed{1} \\ \times 1 \boxed{3} \\ \hline 0 \boxed{1} \\ \times 1 \boxed{4} \\ \hline 0 \boxed{2} \\ \times 0 \boxed{1} \\ \hline 10 \end{array}$$

$$7 - 8 - 189_{(10)} = 10111101_{(2)}$$

$$\begin{array}{r} 189 \boxed{1} \\ \times 1 \boxed{9} \\ \hline 0 \boxed{4} \\ \times 1 \boxed{2} \\ \hline 1 \boxed{2} \\ \times 1 \boxed{1} \\ \hline 1 \boxed{5} \\ \times 1 \boxed{2} \\ \hline 1 \boxed{2} \\ \times 0 \boxed{1} \\ \hline 10 \end{array}$$

$10111101_{(2)}$

$$8 - 234_{(10)} = 111010101_{(2)}$$

$$\begin{array}{r} 234 \boxed{1} \\ \times 0 \boxed{7} \\ \hline 1 \boxed{5} \\ \times 1 \boxed{4} \\ \hline 0 \boxed{7} \\ \times 1 \boxed{3} \\ \hline 10 \end{array}$$

$111010101_{(2)}$

$$9 - 650_{(10)} = 1010001010_{(2)}$$

$$\begin{array}{r} 650 \boxed{1} \\ \times 0 \boxed{3} \\ \hline 1 \boxed{6} \\ \times 0 \boxed{8} \\ \hline 1 \boxed{4} \\ \times 0 \boxed{2} \\ \hline 0 \boxed{1} \\ \times 0 \boxed{5} \\ \hline 1 \boxed{2} \\ \times 0 \boxed{1} \\ \hline 10 \end{array}$$

$1010001010_{(2)}$

$$10 - 74_{(10)} = 1001010_{(2)}$$

$$\begin{array}{r} 74_{(2)} \\ \underline{- 037}_{(2)} \\ 117_{(2)} \\ \underline{- 09}_{(2)} \\ 14_{(2)} \\ \underline{- 02}_{(2)} \\ 10_{(2)} \end{array}$$

$$11 - 167_{(10)} = 10100111_{(2)}$$

$$\begin{array}{r} 167_{(2)} \\ \underline{- 183}_{(2)} \\ 141_{(2)} \\ \underline{- 120}_{(2)} \\ 010_{(2)} \\ \underline{- 05}_{(2)} \\ 13_{(2)} \\ \underline{- 04}_{(2)} \\ 10_{(2)} \end{array}$$

$$12 - 83_{(10)} = 1010011_{(2)}$$

$$\begin{array}{r} 83_{(2)} \\ \underline{- 141}_{(2)} \\ 120_{(2)} \\ \underline{- 010}_{(2)} \\ 05_{(2)} \\ \underline{- 12}_{(2)} \\ 09_{(2)} \\ \underline{- 10}_{(2)} \end{array}$$

$$13 - 1600_{(10)} = 11001000000_{(2)}$$

$$\begin{array}{r} 1600_{(2)} \\ \underline{- 0800}_{(2)} \\ 0400_{(2)} \\ \underline{- 0200}_{(2)} \\ 0100_{(2)} \\ \underline{- 050}_{(2)} \\ 025_{(2)} \\ \underline{- 112}_{(2)} \\ 06_{(2)} \\ \underline{- 03}_{(2)} \\ 11_{(2)} \\ \underline{- 10}_{(2)} \end{array}$$

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$$15 - 750_{(10)} = 1011101110_{(2)}$$

$$\begin{array}{r} 750_{(2)} \\ \underline{- 0375}_{(2)} \\ 1181_{(2)} \\ \underline{- 193}_{(2)} \\ 146_{(2)} \\ \underline{- 023}_{(2)} \\ 111_{(2)} \\ \underline{- 15}_{(2)} \\ 12_{(2)} \\ \underline{- 10}_{(2)} \end{array}$$

$$16 - 27_{(10)} = 110112$$

$$\begin{array}{r} 27_{(2)} \\ \underline{- 173}_{(2)} \\ 16_{(2)} \\ \underline{- 03}_{(2)} \\ 11_{(2)} \\ \underline{- 10}_{(2)} \end{array}$$

$$17 - 1991_{(10)} = 11111000111_{(2)}$$

$$\begin{array}{r} 1991_{(2)} \\ \underline{- 1995}_{(2)} \\ 1497_{(2)} \\ \underline{- 1248}_{(2)} \\ 0124_{(2)} \\ \underline{- 062}_{(2)} \\ 031_{(2)} \\ \underline{- 117}_{(2)} \\ 17_{(2)} \\ \underline{- 13}_{(2)} \\ 11_{(2)} \\ \underline{- 10}_{(2)} \end{array}$$

$$18 - 2020_{(10)} = 11111100100_{(2)}$$

$$\begin{array}{r} 2020_{(2)} \\ \underline{- 0101012} \\ 0505_{(2)} \\ \underline{- 1253}_{(2)} \\ 0126_{(2)} \\ \underline{- 063}_{(2)} \\ 131_{(2)} \\ \underline{- 115}_{(2)} \\ 17_{(2)} \\ \underline{- 13}_{(2)} \\ 11_{(2)} \\ \underline{- 10}_{(2)} \end{array}$$

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19 - 23092001<sub>(10)</sub> 1011000000104101100100001<sub>(2)</sub>

23092001<sub>(2)</sub>

1111546000<sub>(2)</sub>

05773000<sub>(2)</sub>

011275<sub>(2)</sub>

13637<sub>(2)</sub>

12818<sub>(2)</sub>

01409<sub>(2)</sub>

1704<sub>(2)</sub>

6352<sub>(2)</sub>

0176<sub>(2)</sub>

088<sub>(2)</sub>

044<sub>(2)</sub>

022<sub>(2)</sub>

011<sub>(2)</sub>

15<sub>(2)</sub>

72<sub>(2)</sub>

011<sub>(2)</sub>

10

101100000010110100100001<sub>(2)</sub>

20 - 18<sub>(10)</sub> = 10010<sub>(2)</sub>

18<sub>(2)</sub>

09<sub>(2)</sub>

14<sub>(2)</sub>

02<sub>(2)</sub>

01<sub>(2)</sub>

10010

10