

① $2 \mid 2017$

1008	r1
504	r0
252	r0
126	r0
63	r0
31	r1
15	r1
7	r1
3	r1
1	r1
0	r1

111110000_2 (7)

② $\begin{array}{r} 2FACE \\ - 18ABE \\ \hline 17D10_{16} \end{array}$

③ $\begin{array}{r} 1234_8 \\ * 77_8 \\ \hline \text{too tough} \end{array} \rightarrow \begin{array}{r} 1234_8 \\ +1 \quad 100_8 \\ \hline 123400_8 \end{array} \rightarrow -1 \quad 123377_8$

④ $2x + 1010_2 = FE_{16}$

$$X_{10} = \frac{FE_{16} - 1010_2}{2_{10}} = \frac{FE_{16} - A_{16}}{2_{10}} = \frac{F4_{16}}{2_{10}} = 7A_{16}$$

easier
convert to decimal now

$F4_{16} \rightarrow ?_{10}$
 $\frac{240 + 4}{2} = \frac{244}{2} = 122_{10}$

① $A\bar{B} + \bar{A}(A+B)$

TRUTH TABLE

O-F 1-T	A	B	\bar{A}	\bar{B}	A+B	$\bar{A}(A+B)$	$A\bar{B}$	$A\bar{B} + \bar{A}(A+B)$
	0	0	1	1	0	0	0	0
	0	1	1	0	1	1	0	1
	1	0	0	1	1	0	1	1
	1	1	0	0	1	0	0	0

How many?
Ans: 2

② $AB \oplus C + \bar{B}C$

A	B	C	AB	BC	$\bar{B}C$	$AB \oplus C$	$AB \oplus C + \bar{B}C$
1	1	1	1	1	0	0	0
1	1	0	1	0	1	1	1
1	0	1	0	0	1	1	1
1	0	0	0	0	1	0	1
0	1	1	0	1	0	1	1
0	1	0	0	0	1	0	1
0	0	1	0	0	1	1	1
0	0	0	0	0	1	0	1

Which ones are True?

- (1, 1, 0)
- (1, 0, 1)
- (1, 0, 0)
- (0, 1, 1)
- (0, 1, 0)
- (0, 0, 1)
- (0, 0, 0)

③ SIMPLIFY $C(AB + BC\bar{C})\bar{B}$

DISTRIBUTE

$$C(\underbrace{AB\bar{B}} + \underbrace{BC\bar{C}})$$

opposites
w/ AND

$$= C(0 + 0)$$

$$= C(0)$$

$$= C(1)$$

$$= C$$

④ $AB + \overline{\overline{AC}}$

DeMorgan's Law $\overline{AB} \cdot \overline{\overline{AC}}$

double bar
cancels each other

$$\overline{AB} \cdot \overline{AC}$$

DeMorgan Again $(\bar{A} + \bar{B})\bar{A}\bar{C}$

DISTRIBUTE

$$\bar{A}\bar{A}\bar{C} + \bar{A}\bar{B}\bar{C}$$

duplicate

$$\bar{A}\bar{C} + \bar{A}\bar{B}\bar{C}$$

Factor $\bar{A}\bar{C}(1 + \bar{B})$

$$\bar{A}\bar{C}(1)$$

$$\bar{A}\bar{C}$$

TRUE OF ANYTHING
IS TRUE

TRACE the Algorithms

①

$$\frac{X}{\cancel{8}} \quad \frac{A}{7} \quad \frac{B}{6} \quad \frac{C}{15}$$

A+B

$$13 < 15 \quad \text{AND} \quad 6 > 15 \quad \text{ELSE} \rightarrow X = 2$$

T F

$$(15 < 6 \quad \text{AND} \quad) \quad \text{OR} \quad 21 > 7 \quad \text{THEN} \quad X = X + 20$$

F T

X = 22

②

$$\frac{S}{0} \quad J \quad 1, 4, 7, \cancel{10}$$

J=1 → K	2, 6, 10	L	3 7 4 1 10	= 15
J=4 →	5, 9, 10	L	6 10 7 4 10	= 27
J=7 →	8, 10	L	9 10	= 9

SUMS THE L's

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③

$$j = 0, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100$$

$$a[0] = 0$$

$$a[1] = 3$$

$$a[2] = 4$$

$$a[3] = 5$$

$$a[4] = 6$$

$$a[5] = 7$$

$$a[6] = 7$$

$$a[7] = 8$$

$$a[8] = 8$$

$$a[9] = 9$$

$$a[10] = 10$$