

Watch the video in the link then in groups answer the following questions.

K-Map

Use Karnaugh's map to simplify the following Boolean expressions.

1. You need first to enter the values in the map then
2. work out the simplification, write the simplified expression in the space provided.

No.	Boolean expression	K-map	Simplified expression
1	$C'D'A'B' + C'D'A'B + C'D'AB + C'D'AB'$		
2	$C'D'A'B' + C'D'A'B + C'D'AB + C'D'AB' + CD'A'B' + CD'A'B + CD'A'B + CD'AB + CD'AB'$		
3	$C'DA'B + CDA'B + C'DAB + CDAB$		
4	$C'D'A'B' + CD'A'B'$ ↑		

Solved examples:

$$\text{Out} = \overline{A}\overline{B}CD + \overline{A}B\overline{C}D + A\overline{B}CD + A\overline{B}\overline{C}D + AB\overline{C}\overline{D} + AB\overline{C}D + ABC\overline{D}$$

$\begin{array}{c} \text{CD} \\ \text{A/B} \end{array}$	00	01	11	10
00			1	
01			1	
11	1	1	1	1
10			1	

$$\text{Out} = AB + CD$$

$$\begin{aligned} \text{Out} = & \overline{A}\overline{B}\overline{C}\overline{D} + \overline{A}\overline{B}C\overline{D} + \overline{A}B\overline{C}\overline{D} + \overline{A}B\overline{C}D \\ & + B\overline{C}\overline{D} + B\overline{C}D + A\overline{B}\overline{C}\overline{D} + A\overline{B}D + A\overline{B}C\overline{D} \end{aligned}$$

$\begin{array}{c} \text{CD} \\ \text{A/B} \end{array}$	00	01	11	10
00	1	1	1	1
01	1			1
11	1			1
10	1	1	1	1

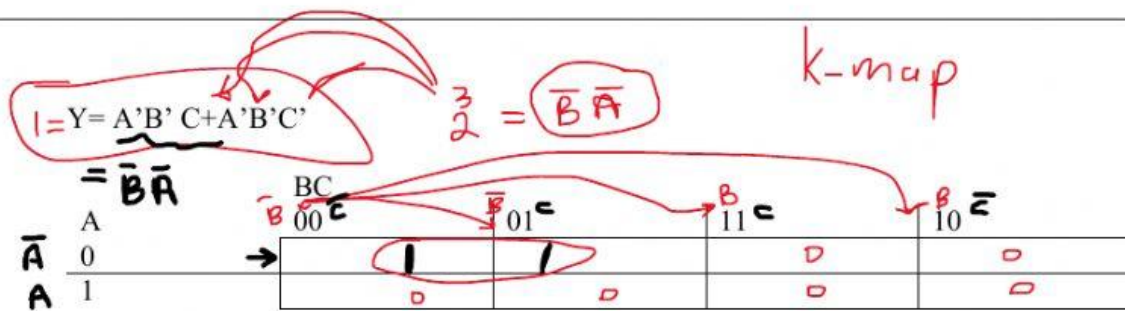
$\begin{array}{c} \text{CD} \\ \text{A/B} \end{array}$	00	01	11	10
00	1	1	1	1
01	1			1
11	1			1
10	1	1	1	1

$$\text{Out} = \overline{B} + \overline{D}$$

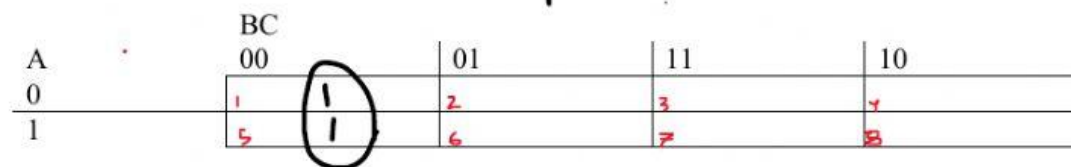
$$\text{Out} = \overline{A}\overline{B}\overline{C}\overline{D} + \overline{A}\overline{B}C\overline{D} + A\overline{B}\overline{C}\overline{D} + ABCD$$

$\begin{array}{c} \text{CD} \\ \text{A/B} \end{array}$	00	01	11	10
00	1			1
01				
11			1	
10	1			

$$\text{Out} = \overline{B}\overline{C}\overline{D} + \overline{A}\overline{B}\overline{D} + ABCD$$



$Y = \overline{A}\overline{B}\overline{C} + \overline{A}\overline{B}C = \overline{B}\overline{C}$



$Y = \overline{A}B\overline{C} + \overline{A}BC + A'B'C + A'BC$

$= \overline{A}C + BC + BA$

