

**COMP 122/L
Summer 2023**

Karnaugh Maps (K-Maps)

For each truth table, you must first write the table in an equivalent sum-of-products formula. From there, you'll need to write out a K-map, draw boxes as appropriate, and write out the equivalent optimized sum-of-products formula.

1.)

A	B	Output
0	0	1
0	1	1
1	0	0
1	1	1

1.a.) As an unoptimized sum-of-products formula:

1.b.) As a K-map:

1.c.) As an optimized sum-of-products formula:

2.)

A	B	C	Output
0	0	0	1
0	0	1	1
0	1	0	1
0	1	1	1
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	1

2.a.) As an unoptimized sum-of-products formula:

2.b.) As a K-map:

2.c.) As an optimized sum-of-products formula:

3.)

A	B	C	Output
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	1
1	1	0	1
1	1	1	0

3.a.) As an unoptimized sum-of-products formula:

3.b.) As a K-map:

3.c.) As an optimized sum-of-products formula:

4.)

A	B	C	D	Output
0	0	0	0	1
0	0	0	1	1
0	0	1	0	0
0	0	1	1	0
0	1	0	0	1
0	1	0	1	1
0	1	1	1	0
0	1	1	1	0
1	0	0	0	1
1	0	0	1	1
1	0	1	0	0
1	0	1	1	1
1	1	0	0	1
1	1	0	1	1
1	1	1	0	1
1	1	1	1	0
1	1	1	1	1

4.a.) As an unoptimized sum-of-products formula:

4.b.) As a K-map:

4.c.) As an optimized sum-of-products formula:

5.)

A	B	C	D	Output
0	0	0	0	1
0	0	0	1	1
0	0	1	0	1
0	0	1	1	1
0	1	0	0	1
0	1	0	1	0
0	1	1	0	1
0	1	1	1	0
1	0	0	0	1
1	0	0	1	0
1	0	1	0	1
1	0	1	1	0
1	1	0	0	0
1	1	0	1	0
1	1	1	0	0
1	1	1	1	0
1	1	1	1	0

5.a.) As an unoptimized sum-of-products formula:

5.b.) As a K-map:

5.c.) As an optimized sum-of-products formula: