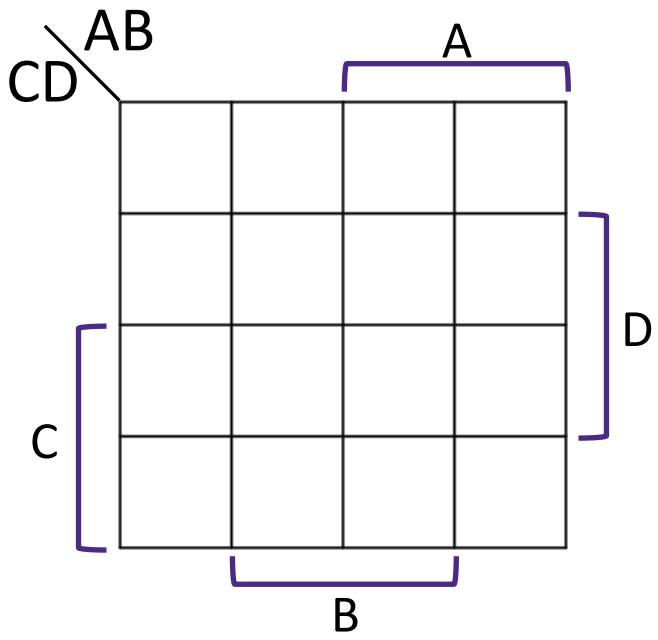
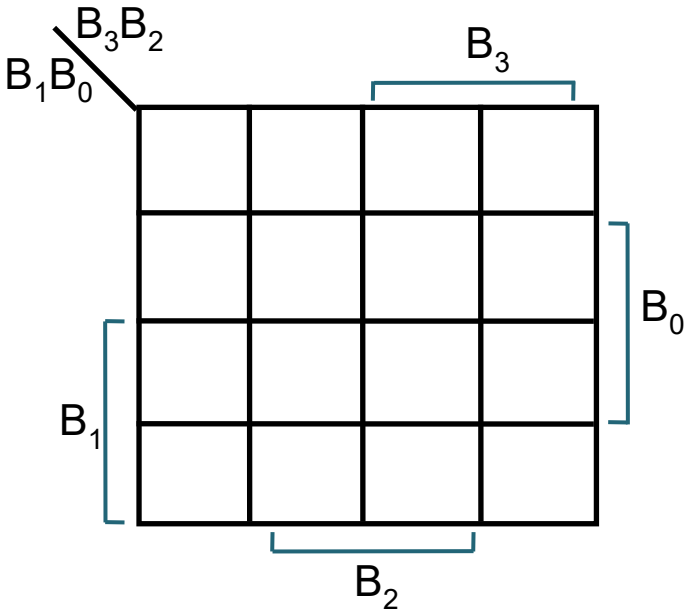
First K-Map Example

$$F = \overline{A}D + BD + \overline{B}C + A\overline{B}D$$



7-Segment Display (Digit “5”)

B3	B2	B1	B0	L5
0	0	0	0	1
0	0	0	1	0
0	0	1	0	0
0	0	1	1	0
0	1	0	0	1
0	1	0	1	1
0	1	1	0	1
0	1	1	1	0
1	0	0	0	1
1	0	0	1	1



2-Bit Adder K-Maps

K-map for X

CD \ AB	00	01	11	10
00	0	0	0	0
01	0	0	1	0
11	0	1	1	1
10	0	0	1	1

A, B, C, D

K-map for Y

CD \ AB	00	01	11	10
00	0	0	1	1
01	0	1	0	1
11	1	0	1	0
10	1	1	0	0

A, B, C, D

K-map for Z

CD \ AB	00	01	11	10
00	0	1	1	0
01	1	0	0	1
11	1	0	0	1
10	0	1	1	0

A, B, C, D

$X =$

$Y =$

$Z =$

Verilog Signals

```
logic [4:0] apple; logic [3:0] pear; logic [9:0] orange;
assign apple = 5'd20;
assign pear = {1'b0, apple[2:1], apple[4]};
```

What's the value of `pear`?

If we want orange to be the *sign-extended* version of apple, what is the appropriate Verilog statement?

```
assign orange =
```