

Prime numbers are 1, everything else is 0

| | X | Y | Z | W | output | |
|----|---|---|---|---|--------|-----------|
| 0 | 0 | 0 | 0 | 0 | 0 | |
| 1 | 0 | 0 | 0 | 1 | 0 | |
| 2 | 0 | 0 | 1 | 0 | 1 | $X'Y'ZW'$ |
| 3 | 0 | 0 | 1 | 1 | 1 | $X'Y'ZW$ |
| 4 | 0 | 1 | 0 | 0 | 0 | |
| 5 | 0 | 1 | 0 | 1 | 1 | $X'YZ'W$ |
| 6 | 0 | 1 | 1 | 0 | 0 | |
| 7 | 0 | 1 | 1 | 1 | 1 | $X'YZW$ |
| 8 | 1 | 0 | 0 | 0 | 0 | |
| 9 | 1 | 0 | 0 | 1 | 0 | |
| 10 | 1 | 0 | 1 | 0 | 0 | |
| 11 | 1 | 0 | 1 | 1 | 1 | $XY'ZW$ |
| 12 | 1 | 1 | 0 | 0 | 0 | |
| 13 | 1 | 1 | 0 | 1 | 1 | $XYZ'W$ |
| 14 | 1 | 1 | 1 | 0 | 0 | |
| 15 | 1 | 1 | 1 | 1 | 0 | |

| X\Y | 00 | 01 | 11 | 10 |
|-----|----|----------|----------|-----------|
| 00 | | | $X'Y'ZW$ | $X'Y'ZW'$ |
| 01 | | $X'YZ'W$ | $X'YZW$ | |
| 11 | | $XYZ'W$ | | |
| 10 | | | $XY'ZW$ | |

$$X'Y'Z + X'YW + YZ'W + Y'ZW$$