|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Multiply 2 x 3 (0010 x 0011)** | | | | |
| Iteration | Step | Multiplier | Multiplicand | Product |
| 0 | Initial Values | 0011 | 0000 0010 | 0000 0000 |
| 1 | 1a: 1 => prod = prod + mcand | 0011 | 0000 0010 | 0000 0010 |
| 2: shift left multiplicand | 0011 | 0000 0100 | 0000 0010 |
| 3: shift right multiplier | 000**1** | 0000 0100 | 0000 0010 |
| 2 | 1a: 1 => prod = prod + mcand | 0001 | 0000 0100 | 0000 0110 |
| 2: shift left multiplicand | 0001 | 0000 1000 | 0000 0110 |
| 3: shift right multiplier | 000**0** | 0000 1000 | 0000 0110 |
| 3 | 1: 0 => no operation | 0000 | 0000 1000 | 0000 0110 |
| 2: shift left multiplicand | 0000 | 0001 0000 | 0000 0110 |
| 3: shift right multiplier | 000**0** | 0001 0000 | 0000 0110 |
| 4 | 1: 0 => no operation | 0000 | 0001 0000 | 0000 0110 |
| 2: shift left multiplicand | 0000 | 0010 0000 | 0000 0110 |
| 3: shift right multiplier | 0000 | 0010 0000 | 0000 0110 |

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| --- | --- | --- | --- | --- |
| **Multiply 5 x 7 (0101 x 0111)** | | | | |
| Iteration | Step | Multiplier | Multiplicand | Product |
| 0 | Initial Values | 0111 | 0000 0101 | 0000 0000 |
| 1 | 1 | 1a 1 => prod = prod + mcand | 0111 | 0000 0101 | 0000 0101 |
| 2: shift left multiplicand | 0011 | 0000 1010 | 0000 0101 |
| 3: shift right multiplier | 0011 | 0000 1010 | 0000 0101 |
| 2 | 1 | 1a 0 => no operation | 0011 | 0000 1010 | 0000 1111 |
| 2: shift left multiplicand | 0011 | 0001 0100 | 0000 1111 |
| 3: shift right multiplier | 0001 | 0001 0100 | 0000 1111 |
| 3 | 1 | 1a 1 => prod = prod + mcand | 0001 | 0001 0100 | 0010 0011 |
| 2: shift left multiplicand | 0001 | 0010 1000 | 0010 0011 |
| 3: shift right multiplier | 0000 | 0010 1000 | 0010 0011 |
| 4 | 1 | 1a 0 => no operation | 0000 | 0010 1000 | 0010 0011 |
| 2: shift left multiplicand | 0000 | 0101 0000 | 0010 0011 |
| 3: shift right multiplier | 0000 | 0101 0000 | 0010 0011 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Multiply 12 x 12 (1100 x 1100)** | | | | |
| Iteration | Step | Multiplier | Multiplicand | Product |
| 0 | Initial Values | 1100 | 0000 1100 | 0000 0000 |
| 1 | 1 | 1a 0 => no operation | 1100 | 0000 1100 | 0000 0000 |
| 2: shift left multiplicand | 1100 | 0001 1000 | 0000 0000 |
| 3: shift right multiplier | 0110 | 0001 1000 | 0000 0000 |
| 2 | 1 | 1a 0 => no operation | 0110 | 0001 1000 | 0000 0000 |
| 2: shift left multiplicand | 0110 | 0011 0000 | 0000 0000 |
| 3: shift right multiplier | 0011 | 0011 0000 | 0000 0000 |
| 3 | 1 | 1a 1 => prod = prod + mcand | 0011 | 0110 0000 | 0011 0000 |
| 2: shift left multiplicand | 0011 | 0110 0000 | 0011 0000 |
| 3: shift right multiplier | 0001 | 0110 0000 | 0011 0000 |
| 4 | 1 | 1a 1 => prod = prod + mcand | 0001 | 0110 0000 | 0011 0000 |
| 2: shift left multiplicand | 0001 | 1100 0000 | 0011 0000 |
| 3: shift right multiplier | 0000 | 1100 0000 | 0011 0000 |