

- [Converting Hexadecimal and base 10](#)
- [Add & Subtract Hexadecimal numbers](#)

Abacus: Mystery of the Bead
[The Bead Unbaffled - An Abacus Manual](#)



Hexadecimal Multiplication

This is a method for solving Hexadecimal multiplication using simple abacus techniques. No multiplication table, no programmers calculator. While we could convert a Hex number directly to Decimal, do the multiplication and convert the Decimal answer back to Hex this method is much faster and much easier because we use an abacus. The process is as follows;

- Use an abacus to find the binary number. From the binary number we find the Octal number (base 8). Then we use a simple technique taught to me by fellow abacist [Steve Treadwell](#) to convert from Octal to Decimal and multiply.
- Finally, the product of the Decimal multiplication is converted back to Octal and placed back onto the abacus giving the correct Hexadecimal answer.

Example: $2A * 3B = 9AE$

Convert the Hex number to Octal (base 8)

Converting a Hex number to an Octal number is remarkably easy. Place the Hex number onto the abacus in it's binary form. Separate the binary numbers into groups of three. The result is the Octal number.

Hex 2A = 101010 binary
 101 010 = 52 octal

3B = 111011 binary
 111 011 = 73 octal

Convert the Octal number to Decimal

Using [Steve Treadwell's Octal Arithmetic](#) convert the octal number to decimal.

52 octal converts to 42 decimal
 73 octal converts to 59 decimal

Multiply the two Decimal numbers together

Decimal $42 * 59 = 2478$

Convert the Decimal answer to Octal

Using [Steve Treadwell's Octal Arithmetic](#) convert the decimal answer to octal

2478 converts to 4656 octal

Place the Octal number onto the abacus

100 110 101 110 = 4656 octal
 100110101110 binary
 1001 1010 1110 = 9AE hex

Thanks especially to Steve Treadwell for sharing his wonderful Abacus Techniques.

- Totton Heffelfinger