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Abacus: Mystery of the Bead
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Hexadecimal Multiplication - an alternative method

In a recent tutorial I illustrated a hex multiplication method that needed no multiplication tables. Here's another method that's very fast and powerful in part because it does use an [Octal Multiplication/Division Table](#). The table was devised by Yahoo [Soroban/Abacus Group](#) member Hannu Hinkka. The process is as follows;

- Use an abacus to find the binary number.
- Find the Octal number (base 8).
- Use the Octal Multiplication table to multiply the two octal numbers together.
- Convert the Octal number to Hexadecimal using [Hannu's conversion method](#)

Example: 2A * 3B = 9AE

Convert the Hex numbers 2A & 3B to Binary & then to Octal (base 8)

Place the Hex number onto the abacus in it's binary form. Separate the binary rods into groups of three. The result is the Octal number.

Hex 2A = 101010 binary which is 101 010 or **52 octal**

Hex 3B = 111011 binary which is 111 011 or **73 octal**

Use the [octal table](#) and multiply the two octal numbers together

Octal 52*73 = 4656 octal

Using [Hannu's method](#) convert the Octal answer to Hexadecimal

Divide octal 4656 by octal 20

ABCDEFGHIJ			
20	4656	:	set the problem onto the abacus and divide...
20	20656	:	4/2=Forward 2
20	23056	:	6/2=Forward 3
20	23216	:	5/2=Forward 2+1

Interim Answer: The integer part of the answer is 232 and the remainder is 16. Continue to divide integer part 232 by 20.

ABCDEFGHIJ			
20	103216	:	2/2=Forward 1
20	111216	:	3/2=Forward 1+1

Done: Now look at your abacus. Every two rods of the answer represents one of the hex numbers. Group the answer like this, 11\12\16.

octal 11 --> is 9 in hex (8+1=9)
 octal 12 --> is A in hex (8+2=10)
 octal 16 --> is E in hex (8+6=14)

Answer: 4656 octal converts to 9AE hex

- Totton Heffelfinger & Hannu Hinkka