Hello all,

I just came up with a way to multiply and divide fractions of an inch. Before you can do it, though, you have to understand how to add and subtract fractions of an inch. I wrote a tutorial on this which Totton Heffelfinger hosts on his website here: Add & Subtract Fractions of an Inch
You can also find the emails about it in the archive.

Here's how you do it. First, multiplication.

Assume the inch unit rod is on B. To the right of the inch column you have the 1/2" column, then the 1/4" column, then the 1/8" column, the 1/16" column, etc.

```
_._____
ABCDEFG
0000000
```

Let's take a simple example of 1/4" times 3.

```
Enter 1/4"
ABCDEFG
0001000

Multiply each column by 3
ABCDEFG
0003000
```

Now normalize the beads by taking 2 away from a column, and adding one to the column to the left. In this case, take two away from the 1/4" column and adding 1 to the 1/2" column, like this:

```
ABCDEFG
0011000
```

That's 3/4", the answer.

Let's take a more complicated example of 5/8" times 5.

```
Enter 5/8"
ABCDEFG
0010100

Multiply each column by 5
ABCDEFG
0050500
```

Now normalize in a few simple steps.

```
ABCDEFG
0131300

ABCDEFG
0212100

ABCDEFG
0220100
```

(Note that you don't normalize the inch columns)

ABCDEFG
0300100
That's 3-1/8", the correct answer.

Let's try one more multiplication: 1-5/16" times 5

Enter 1-5/16"
ABCDEFG
0101010

Multiply by 5
ABCDEFG
0505050

And normalize in a few steps
ABCDEFG
0513130

ABCDEFG
0521210

ABCDEFG
0602010

ABCDEFG
0610010
That’s 6-9/16”, the correct answer.

Dividing is the same but but in reverse. Let’s start with a simple example of dividing 3/8” by 3.

Enter 3/8”
ABCDEFG
0001100

Now you reverse-normalize by taking a bead away from a column on the left and adding two to the column to its right. And you keep doing this until you get the number of beads in a columns which equals your divisor.

Reverse normalize
ABCDEFG
0000300

Now that you have 3 in one column, you’re ready to divide by 3.
ABCDEFG
0000100
That’s 1/8”, the correct answer.

Now a more difficult problem: 15/16” divided by 5.

Enter 15/16”
ABCDEFG
0011110

Reverse normalize in steps until you get 5 in a column. Start on the

left and move to the right.

ABCDEFG
0003110

ABCDEFG
0002310

ABCDEFG
0001510

ABCDEFG
0000710

ABCDEFG
0000630

ABCDEFG
0000550

And now you’re ready to divide each column by 5.
ABCDEFG
0000110
That’s 3/16”, the correct answer.

For irrational divisions, where you don’t end up with a nice, neat set of columns to divide, you just keep normalizing to the right until you’ve reached the level of precision you’re looking for. The further you move to the right, the more precise your answer gets.

I realize that this info is probably only useful for Americans!

Dino