

Hand out simple 2^x $1 \dots 1024$ strips.

① Pick 2 numbers between 1, 32
#1, #2

② Find #1 on bottom strip

③ Line up the "1" of the top
strip w/ #1

④ Don't move anything!

⑤ Find #2 on top strip

⑥ Look below it, to the corresponding
number on the bottom strip

⑦ That number equals

$$(\#1) \times (\#2) !$$

(Try examples)

What's the problem?

- Accuracy

- Limited to 1, ..., 32

Hand out better 1...1024 strips

(try more)

What's going on?

Well, I have all the numbers laid out on a ruler, so let's talk measurement.

Let's say that the measurement of a number is how many inches it is away from 1.

Ex $\text{Meas}(1) = 0$, $\text{Meas}(13.5) = 3 \frac{3}{4}$

Ex 9.5×23

$$\text{Meas}(9.5) = 3\frac{1}{4} \text{ inches}$$

$$\text{Meas}(23) = 4\frac{1}{2} \text{ inches}$$

When you find 9.5 on the bottom, you are $3\frac{1}{4}$ inches away from 1.

When you line up the "1" of the top strip, and find 23 on the top, you ~~move~~ another $4\frac{1}{2}$ inches away from 1, i.e.

the "corresponding number on the bottom" is $3\frac{1}{4} + 4\frac{1}{2} = 7\frac{3}{4}$ inches away from 1.

We have seen that

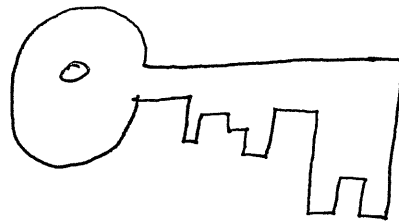
the number ~~is~~ 9.5×23 we find

So $\text{Meas}(9.5 \times 23) = 7\frac{3}{4}$

That means

$$\text{Meas}(9.5 \times 23) = \text{Meas}(9.5) + \text{Meas}(23)$$

The



$\text{Meas}(\#)$

= How many 2's you must multiply
to get that number.

