Are you sure you want to go through with this?

If you’re jumping, I’m jumping.

Let’s review our instructions.

It says that for the first half of our skydive, we’ll be in free fall.

Then, we deploy our parachute.

For the second half of the jump, we float gently to the ground.

For the first third of the free fall, we’ll be accelerating.

So... We accelerate for the first third of the first half of our jump?

Exactly.

What fraction of the whole jump is that?

What fraction equals \( \frac{1}{3} \) of \( \frac{1}{2} \)?
Hmmm...
Good question.

To find \( \frac{1}{3} \) of \( \frac{1}{2} \), we can split each half of our jump into three equal pieces.

Each piece is \( \frac{1}{3} \) of \( \frac{1}{2} \) of the jump.

Finding a fraction of a number is the same as multiplying the fraction by the number.

\[
\frac{1}{3} \text{ of } \frac{1}{2} = \frac{1}{6}
\]

So, \( \frac{1}{3} \) of \( \frac{1}{2} \) is \( \frac{1}{3} \cdot \frac{1}{2} = \frac{1}{6} \).

We’ve never multiplied two fractions before! Let’s try again. What’s \( \frac{1}{7} \cdot \frac{1}{4} \)?
Then, to find $\frac{1}{7}$ of $\frac{1}{4}$, we split each fourth into 7 equal pieces. Each piece is $\frac{1}{7}$ of $\frac{1}{4}$.

There are $4 \times 7 = 28$ pieces between 0 and 1, so each piece is $\frac{1}{28}$.

So, $\frac{1}{7}$ of $\frac{1}{4}$ is right here.

Neat. So, when we multiply $\frac{1}{7} \times \frac{1}{4}$...

...we get $\frac{1}{7} \cdot \frac{1}{4}$.

Does that always work?

Is $\frac{1}{a} \cdot \frac{1}{b}$ always equal to $\frac{1}{a+b}$?
...when we multiply $\frac{1}{7} \cdot \frac{1}{4}$, we split the number line between 0 and 1 into 4 equal pieces.

Then, we split each of the 4 pieces into 7 equal pieces.

When we multiply $\frac{1}{a} \cdot \frac{1}{b}$, we split the number line between 0 and 1 into $b$ equal pieces.

Then, each of those $b$ pieces gets split into $a$ equal pieces.

So, each piece is $\frac{1}{a \cdot b}$.

Right, so we end up with $a \cdot b$ equal pieces between 0 and 1.

Good job! Now, JUMP!