Mastering Long Multiplication with Max

Max the Monkey's Guide to Multiplying Big Numbers: Break it down, keep it neat, and solve it with speed!

- **When multiplying by the tens digit, always remember to place a zero in the ones column first. This acts as a place holder to show your answer is ten times larger.**
- **Always align your digits carefully in their correct columns: thousands, hundreds, tens, and ones. A messy layout is the most common cause of calculation errors.**
- **If you have a carry-over digit, write it clearly above the next column. Remember to add this value *after* you have completed the multiplication for that step.**
- **Long multiplication is simply two separate multiplication problems added together. First, multiply by the ones; second, multiply by the tens; finally, find the total sum.**
- **Check your work by estimating. If you are calculating 42 × 31, round to 40 × 30 to see if your answer is roughly 1200. If your answer is very different, check your steps!**

Did you know? Did you know? Before modern calculators were invented, mathematicians used 'grid multiplication' and even 'Napier's bones'—a set of numbered rods—to help them multiply massive numbers quickly. Today, the long multiplication method we use is a powerful shortcut that saves us time every day!

Key vocabulary: Multiplicand · Multiplier · Product · Place holder · Column addition · Regrouping