Understanding Long Multiplication

Long multiplication is a method used for multiplying larger numbers by breaking them down into simpler steps. It allows you to multiply multi-digit numbers efficiently. Let’s walk through the process step by step.

Step 1: Write the Numbers

Place the larger number above and the smaller number below it, aligning them to the right. For example, if you want to multiply 234 by 56, it should look like this:

```
   234
×  56
------
```

Step 2: Multiply the Bottom Number by Each Digit of the Top Number

Start with the rightmost digit of the bottom number (6 in this case). Multiply it by each digit in the top number:

- **6 × 4 = 24** (write down 4, carry over 2)
- **6 × 3 = 18**, plus the carried over 2 gives 20 (write down 0, carry over 2)
- **6 × 2 = 12**, plus the carried over 2 gives 14 (write down 14)

It results in:

```
   234
×  56
------
1404
```

Step 3: Multiply the Next Digit of the Bottom Number

Now take the next digit of the bottom number (5), remembering that it represents 50, not just 5. This means you need to shift all your results one position to the left (add a 0 at the end).

- **5 × 4 = 20** (write down 0, carry over 2)
- **5 × 3 = 15**, plus the carried over 2 gives 17 (write down 7, carry over 1)
- **5 × 2 = 10**, plus the carried over 1 gives 11 (write down 11)

Your result looks like:

```
   234
×  56
------
1404
1170
```

Step 4: Add the Results Together

Now add the two rows from the previous steps together:

```
   1404
```

```
+ 1170
------
13104
```

Final Result

The product of 234 and 56 is 13104.

Tips for Success

- Take your time with each step to minimize errors.
- Always double-check your addition at the end.
- Practice with different numbers to become more comfortable with the process.

Long multiplication might seem complex at first, but with practice, it becomes an easy and effective way to multiply large numbers!