Everyday Mathematics

Lattice Algorithm for Multiplication

Lattice Multiplication

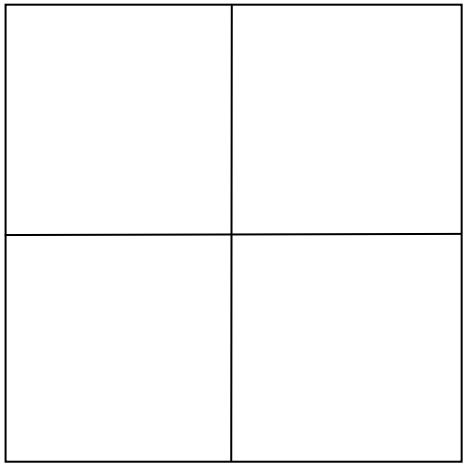
Lattice multiplication involves:

- Using basic facts knowledge,
- Organizing a multiplication problem around a grid based on place value,
- Using the Distributive Property of Multiplication, and
- Following several well-defined steps to find the product.

Lattice Multiplication

Solve 65 × 81.

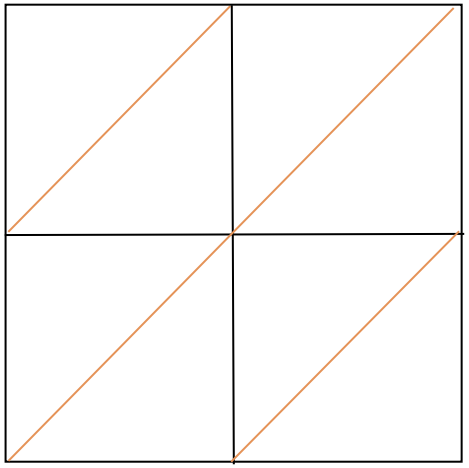
First, draw a 2 × 2 lattice box.



Lattice Multiplication

Solve 65 × 81.

Next, draw a diagonal line from the top right corner to bottom left corner. It helps to do one box at a time.

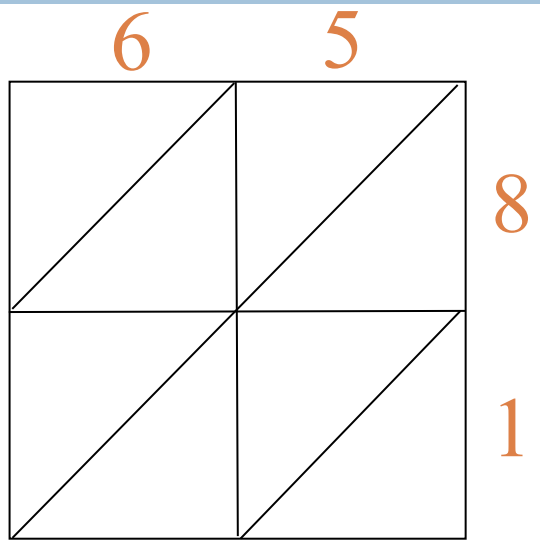


Lattice Multiplication

Solve 65 × 81.

Write one factor (65) across the top.

Write the other (81) down the right side.



Lattice Multiplication

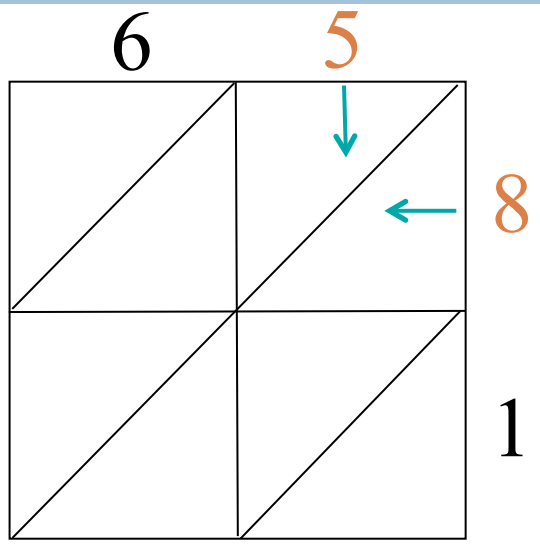
Problem: 65 × 81

Multiply each digit across the top by each digit down the side.

It does not matter in what order you do this.

Let's start with 5 × 8.

Find the box where 5 and 8 intersect.

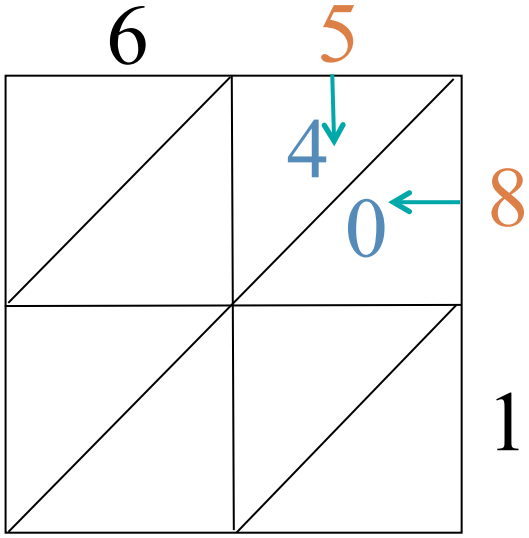


Lattice Multiplication

Problem: 65 × 81

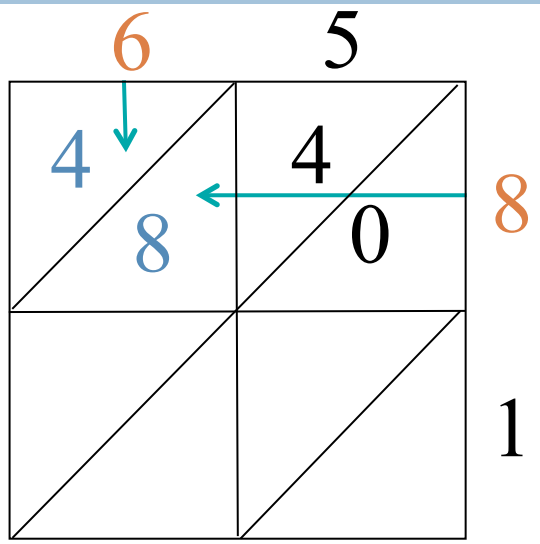
5 × 8 = 40

Record 40 so that the tens place is above the diagonal and the ones place is below the diagonal.



Lattice Multiplication

Problem: 65 × 81



6 × 8

Find the box where
6 and 8 intersect.

6 × 8 = 48

Record 48 in the lattice.

Lattice Multiplication

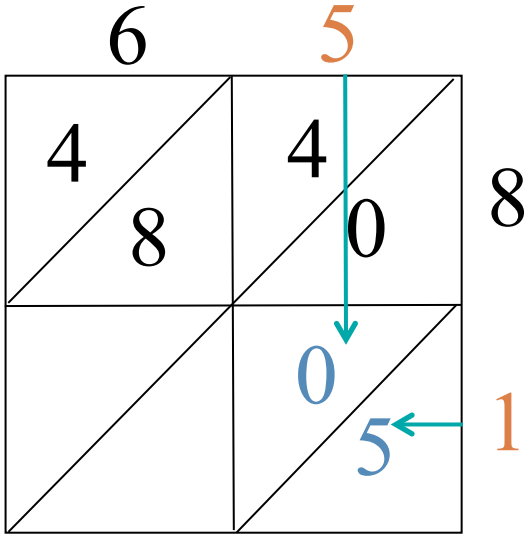
Problem: 65 × 81

5 × 1

Find the box where 5 and 1 intersect.

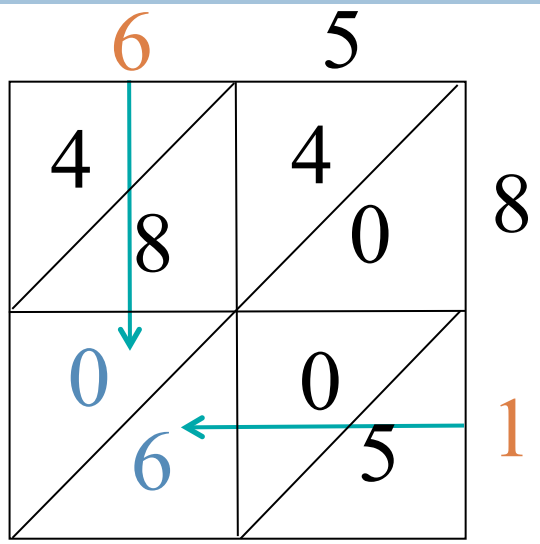
5 × 1 = 05

Record 05 in the lattice.



Lattice Multiplication

Problem: 65 × 81



6 × 1

Find the box where 6 and 1 intersect.

6 × 1 = 06

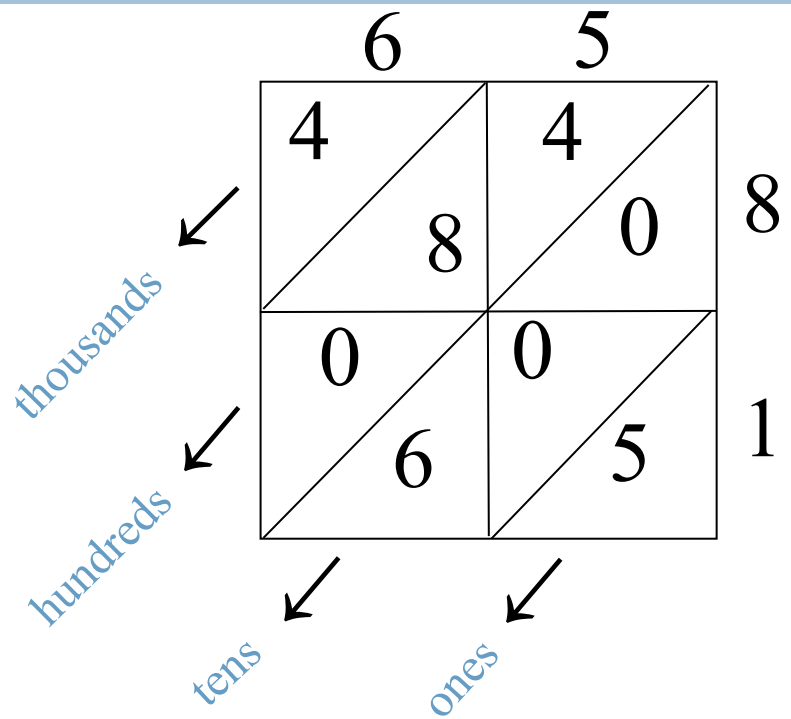
Record 06 in the lattice.

Lattice Multiplication

Problem: 65 × 81

The diagonals separate digits of the products into place-value columns.

The next step is to add along the diagonals.



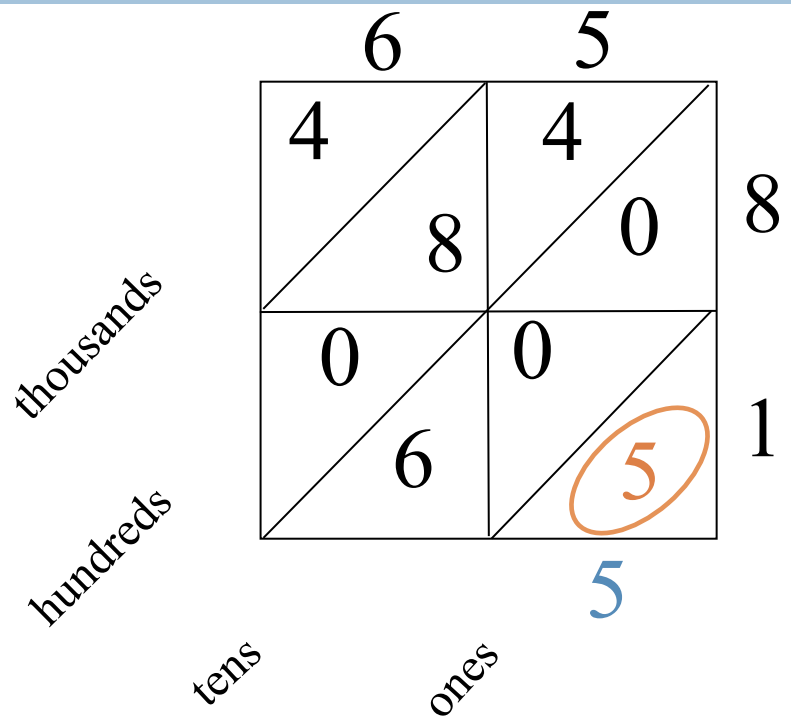
Lattice Multiplication

Problem: 65 × 81

Start with the ones place.

There is a total of 5 ones.

Record 5 ones.



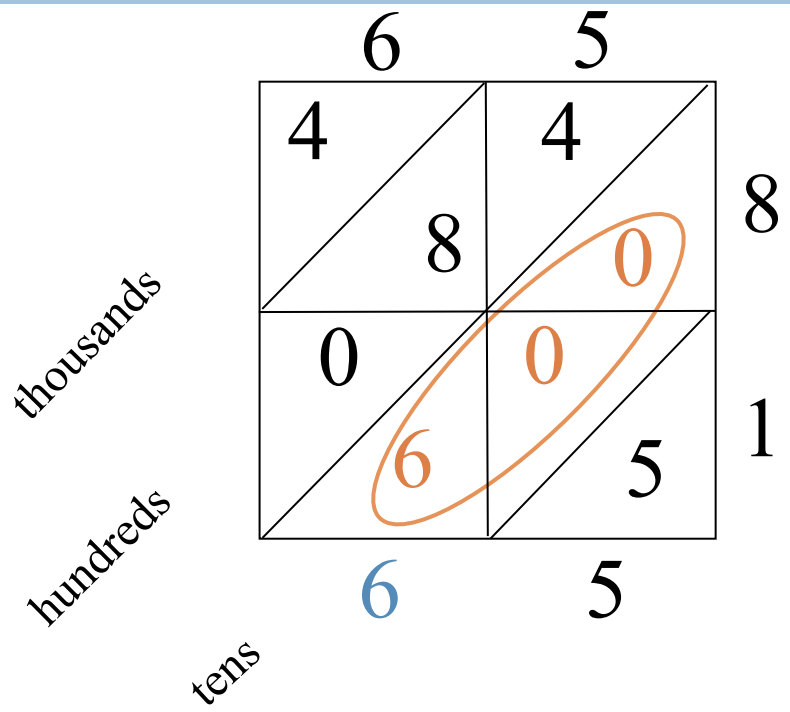
Lattice Multiplication

Problem: 65 × 81

Now add the tens.

6 + 0 + 0 = 6

Record 6 tens.



Lattice Multiplication

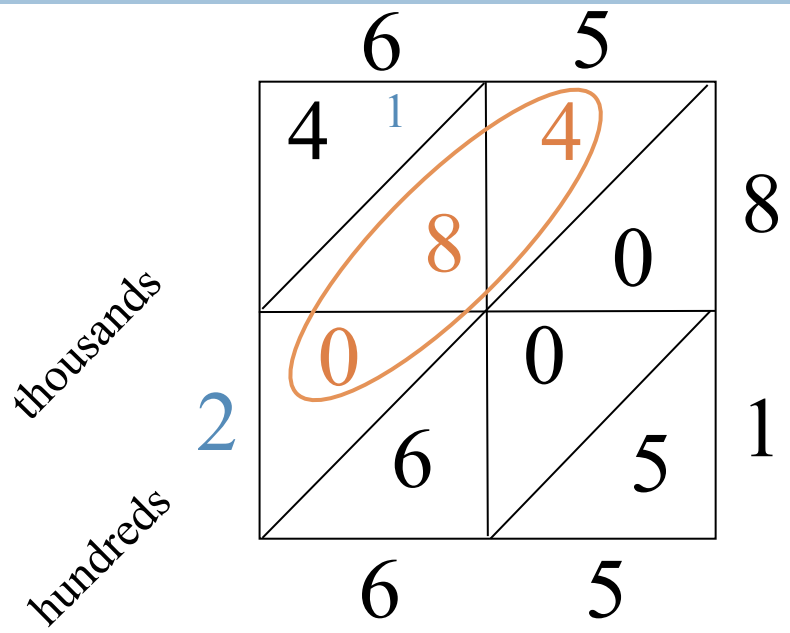
Problem: 65 × 81

Now add the hundreds.

0 + 8 + 4 = 12

You will need to regroup.

Record 2 hundreds
and "carry" 1 thousand
(10 hundreds).



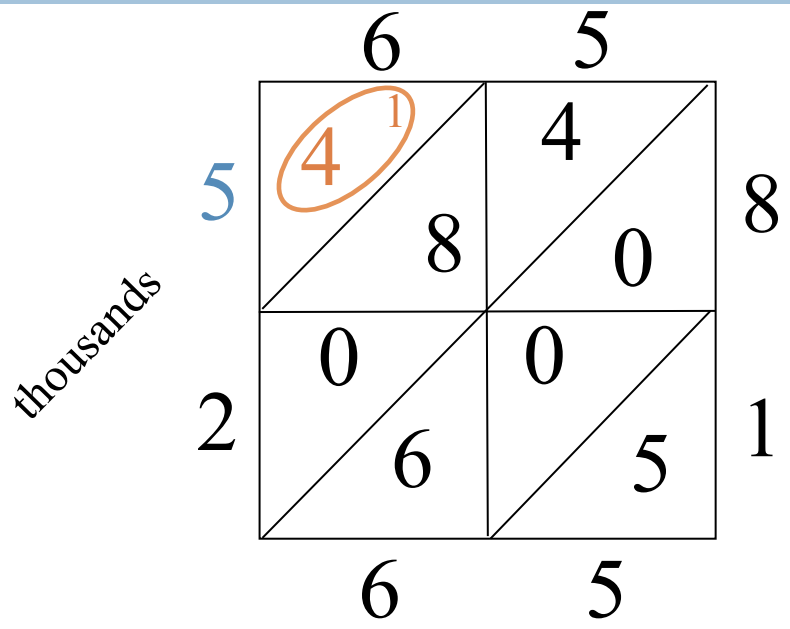
Lattice Multiplication

Problem: 65 × 81

Now finish with the thousands.

4 + 1 = 5

Record 5 thousands.

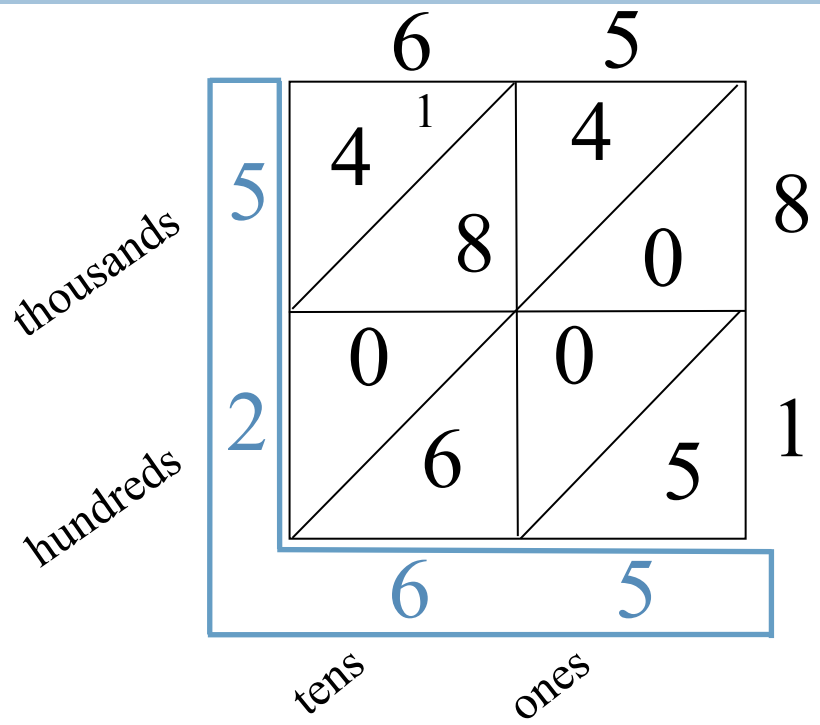


Lattice Multiplication

Problem: 65 × 81

The digits in the answer are 5, 2, 6, and 5.

Each digit in the answer has a specific place value.



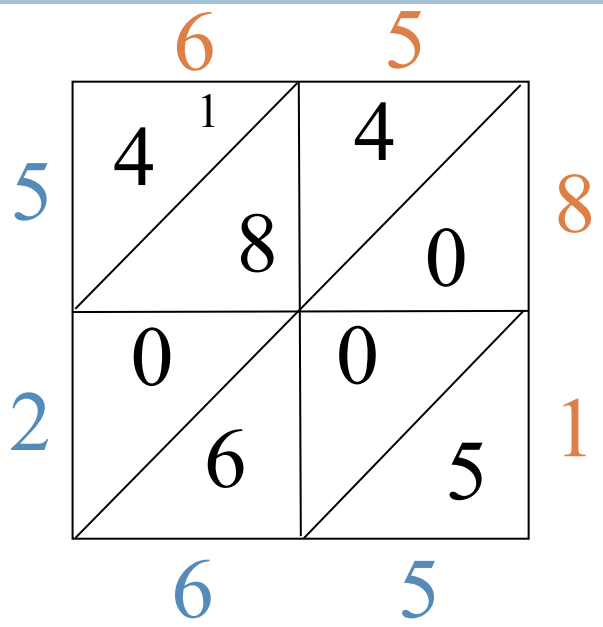
Lattice Multiplication

Problem: 65 × 81

Record the final answer.

5,265

The product of 65 × 81 is 5,265.



Lattice Multiplication

$65 \times 81 = 5{,}265$

Note that when children use lattice multiplication to solve a multiplication problem, they have an opportunity to practice a variety of skills related to developing number sense.

These skills include:

- *Identifying the place value of digits and*
- *Adding strings of numbers to find the product.*