Everyday Mathematics

Lattice Algorithm for Multiplication
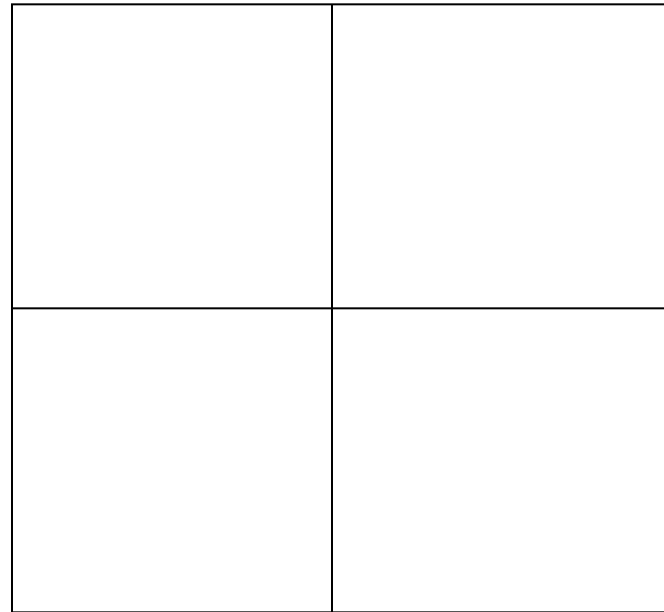
Lattice Multiplication

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.

Everyday Mathematics

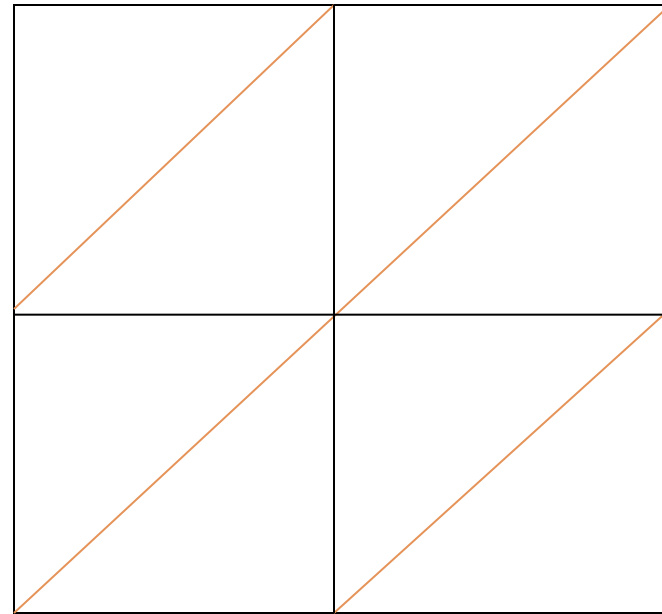# Lattice Multiplication

Solve. 48 x 36

First, draw a 2 x 2 lattice box.

Lattice Multiplication

Solve. 48 x 36

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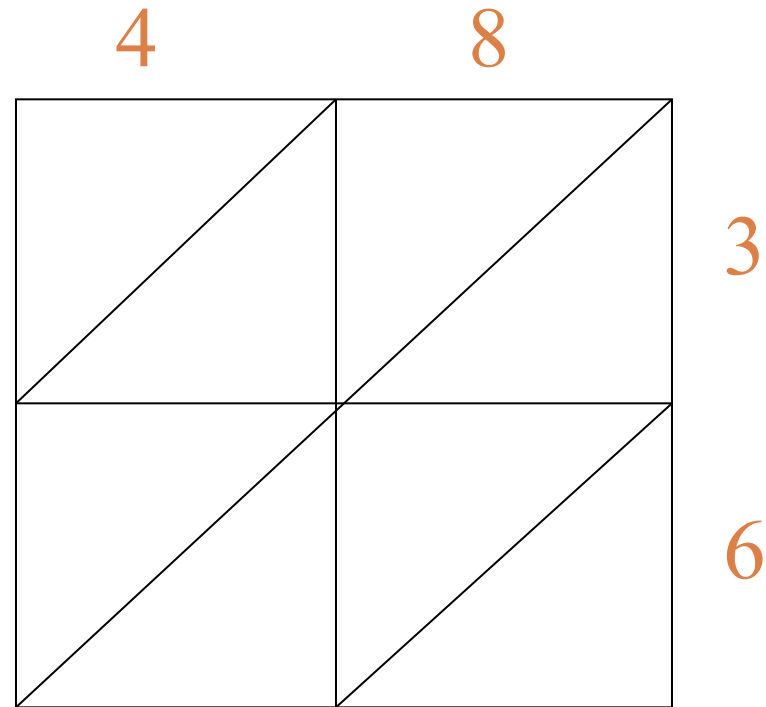
Lattice Multiplication

Solve. 48 x 36

Write one factor (48) across the top.

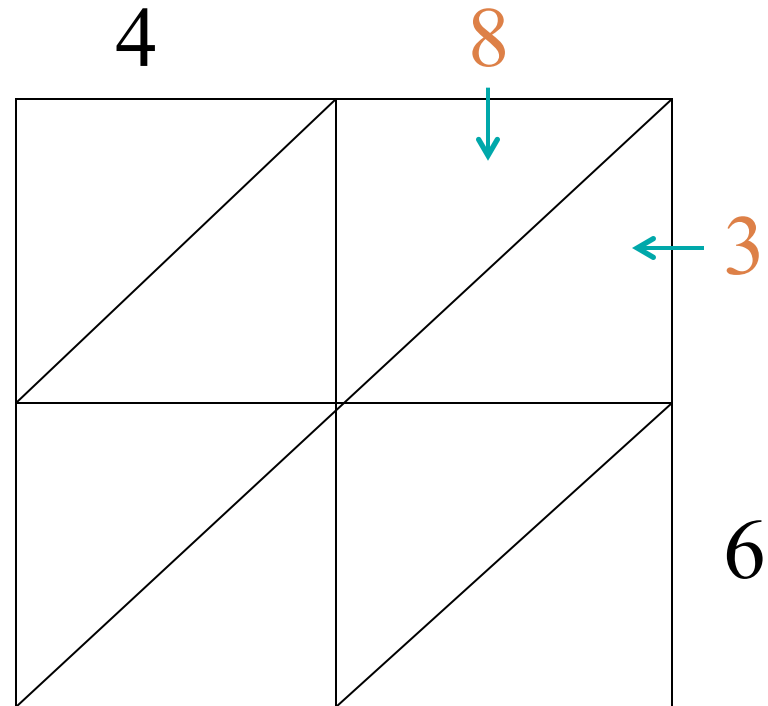Write the other (36) down the right side.

Lattice Multiplication

Problem: 48 x 36

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 8 x 3.

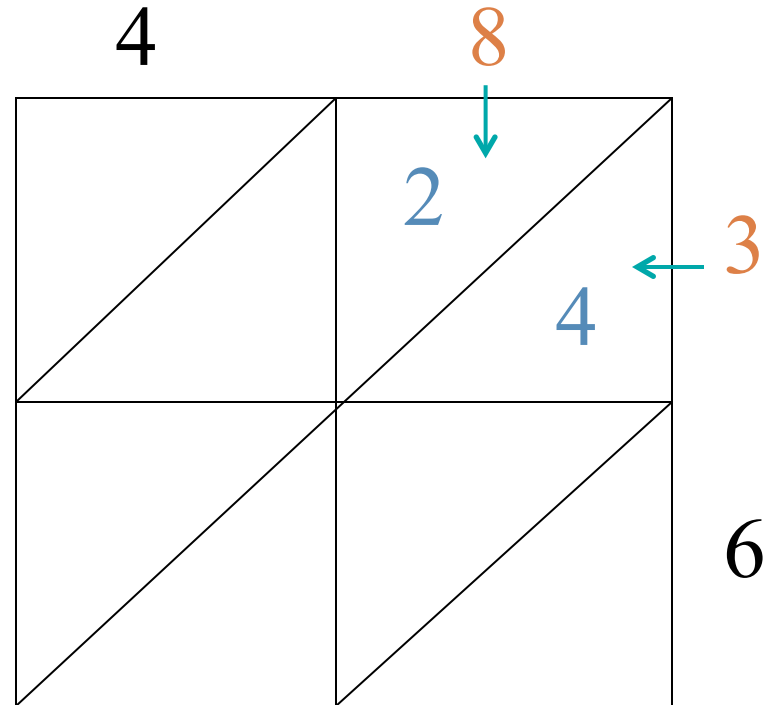Find the box where 8 and 3 intersect.

Lattice Multiplication

Problem: 48 x 36

8 x 3 = 24

Enter 24 so that the tens place is above the diagonal and the ones place is below the diagonal.

4   8

2

4

3

6

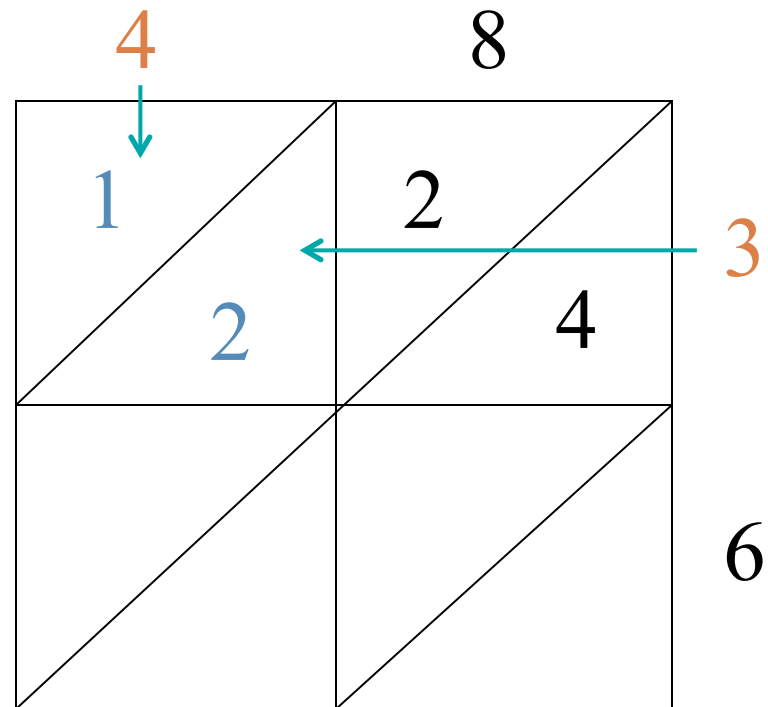# Lattice Multiplication

Problem: 48 x 36

Now consider 4 x 3

Find the box where
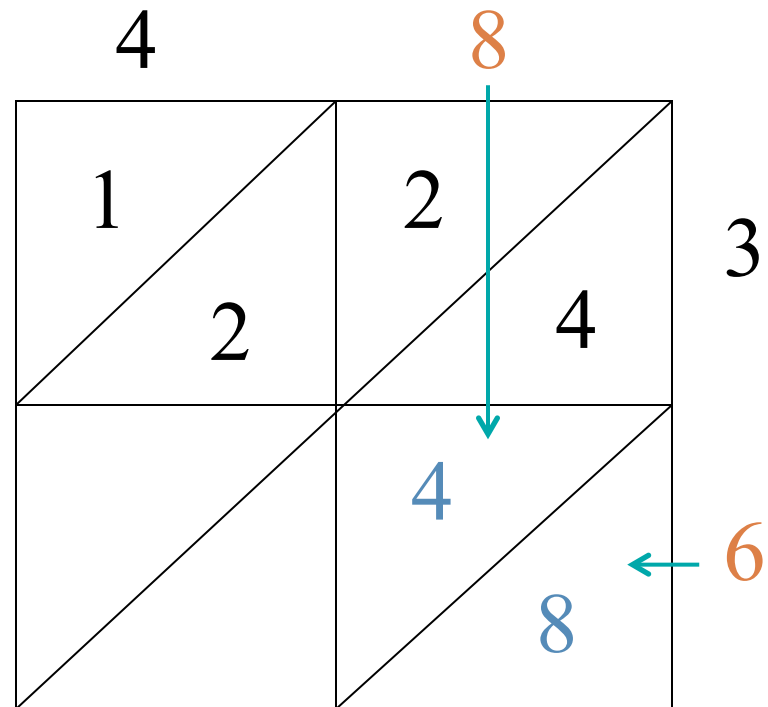4 and 3 intersect.

4 x 3 = 12

Record 12 in the lattice.

Everyday Mathematics

Lattice Multiplication

Problem: 48 x 36

Now consider 8 x 6

Find the box where 8 and 6 intersect.

8 x 6 = 48

Record 48 in the lattice.

Everyday Mathematics

Lattice Multiplication

Problem: 48 x 36

Now consider 4 x 6

Find the box where 4 and 6 intersect.

4 x 6 = 24

Record 24 in the lattice.
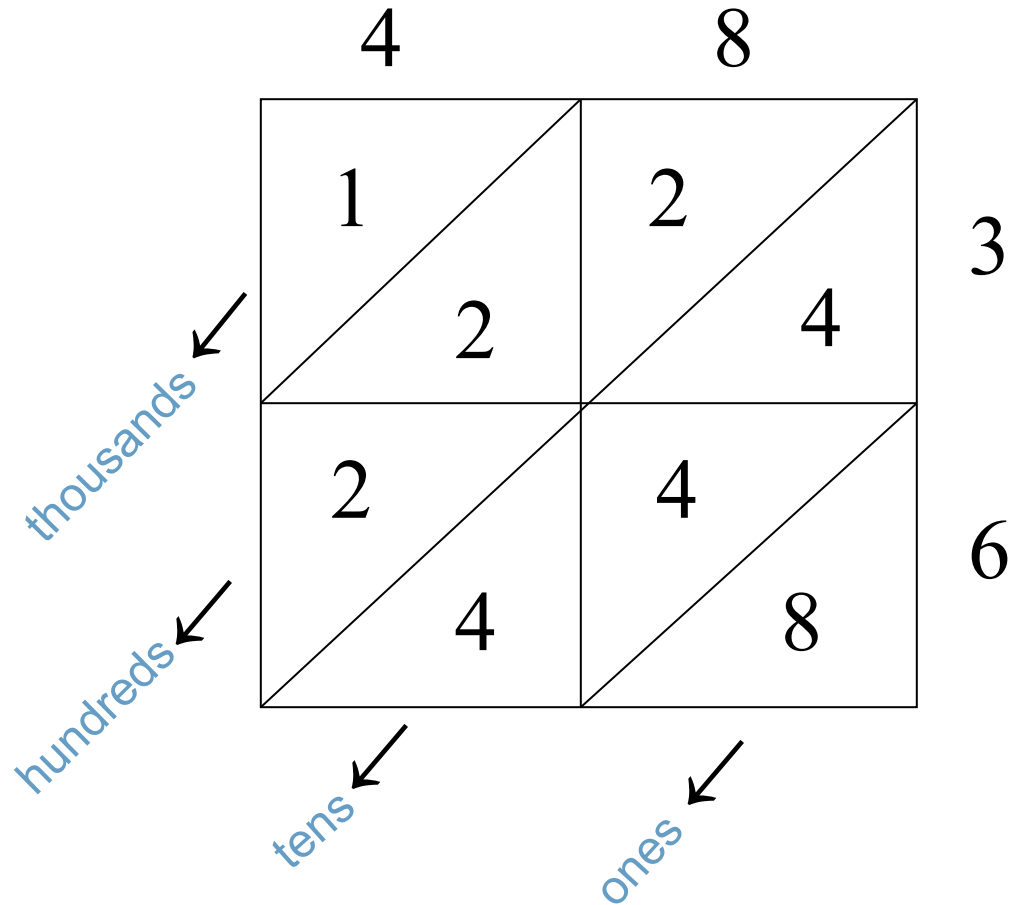

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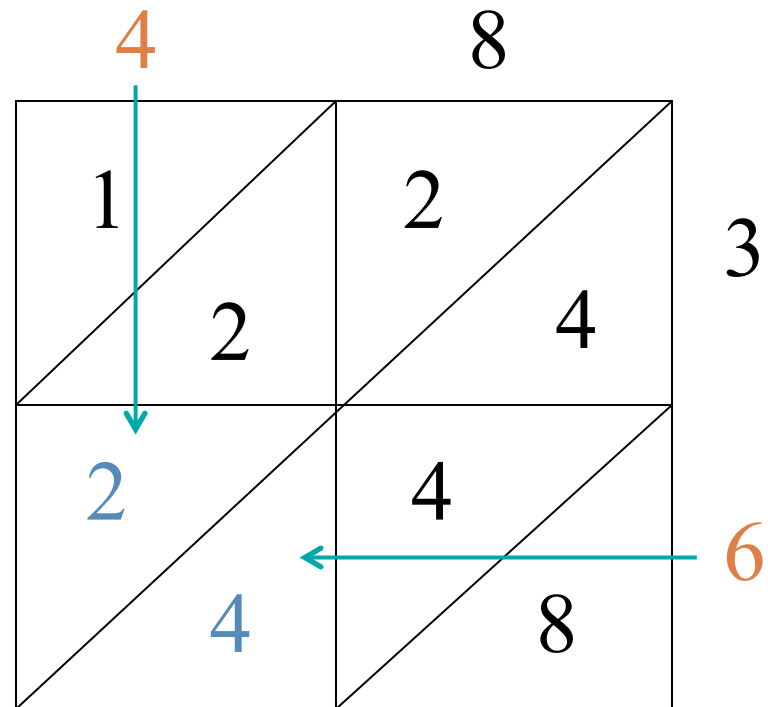
Lattice Multiplication

Problem: 48 x 36

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

The next step is to add along the diagonals.

4   8

1   2
   2   4
3

2   4
   4   8
6

thousands

hundreds

tens

ones

Everyday Mathematics

Lattice Multiplication

Problem: 48 x 36

Start with the ones place.

There is a total of 8 ones.
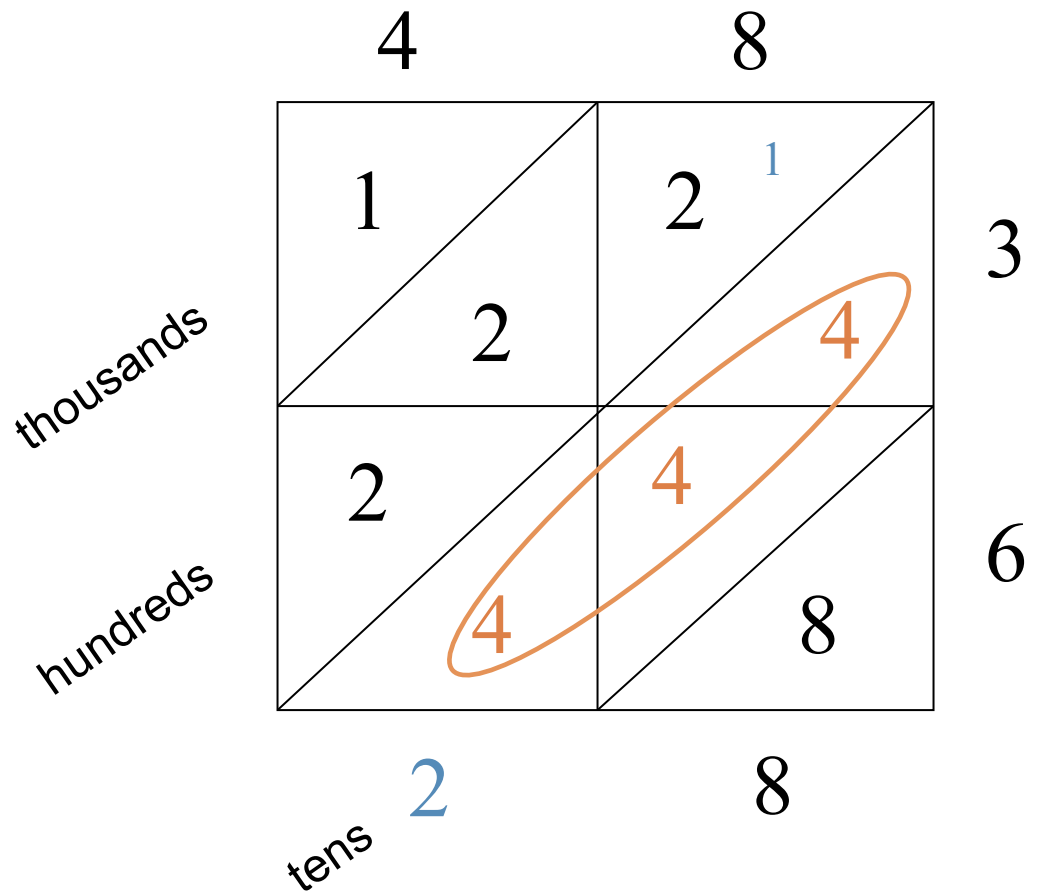
Record 8 ones.

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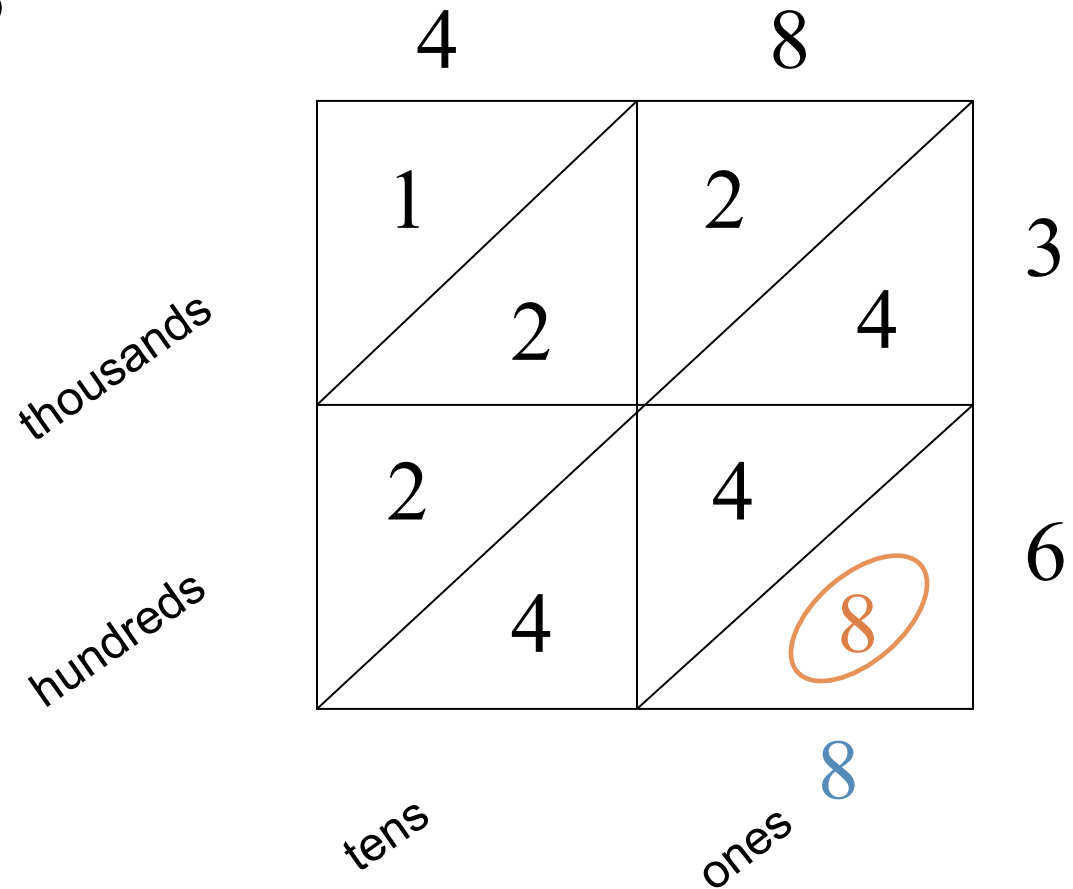
Lattice Multiplication

Problem: 48 x 36

Now add the tens.

4 + 4 + 4 = 12

You will need to regroup.

Record 2 tens and carry 1 hundred (10 tens).

Everyday Mathematics

Lattice Multiplication

Problem: 48 x 36

Now add the hundreds.

$1 + 2 + 2 + 2 = 7$

Record 7 hundreds.

4   8

1   2¹

2   4

2   4

4   8

3

6

thousands

hundreds   7

2   8

Everyday Mathematics
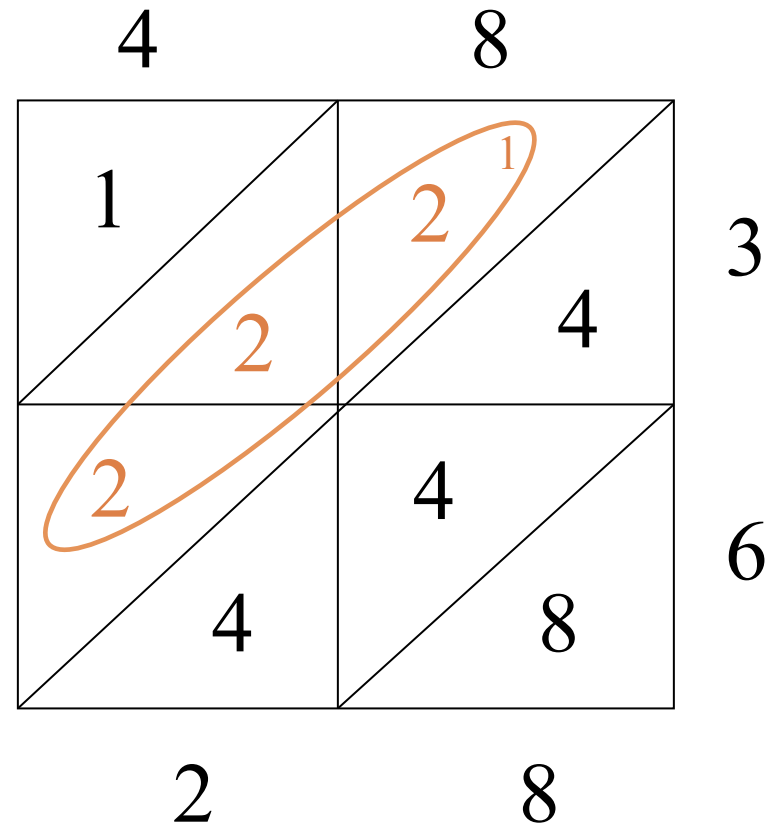
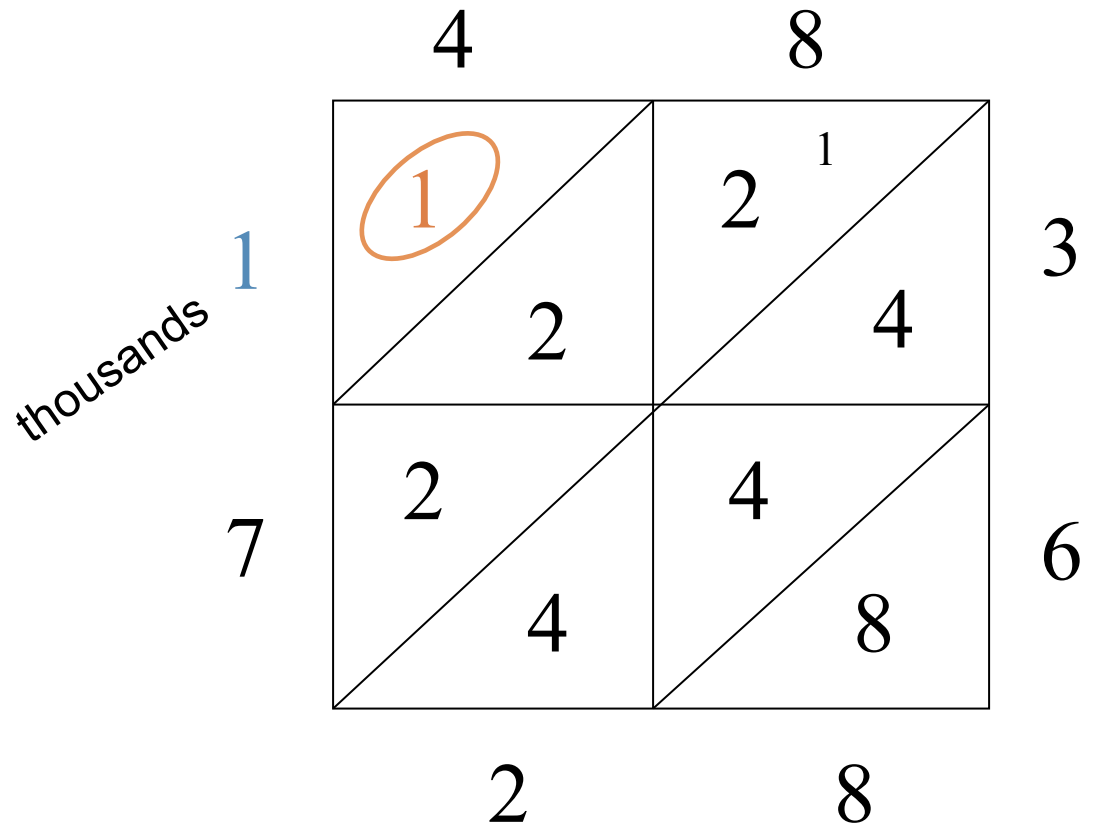# Lattice Multiplication

Problem: 48 x 36

And finish with the thousands.

There is a total of 1 thousands.
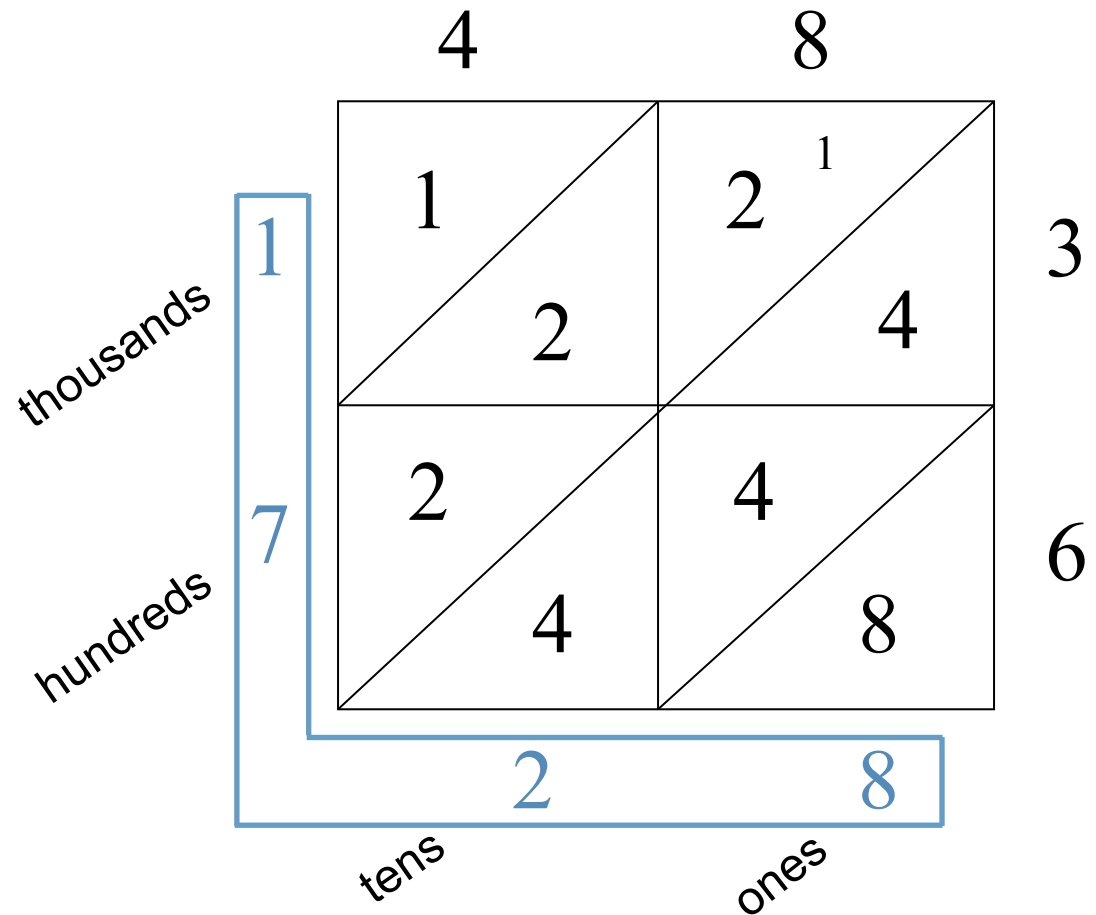
Record 1 thousands.

Everyday Mathematics

Lattice Multiplication

Problem: 48 x 36

The digits in the answer are 1, 7, 2, and 8.

Each digit in the answer has a specific place value.

```
           4            8
        ┌────────┬────────┐
        │ 1    ╱ │ 2   ¹╱ │
      1 │    ╱   │   ╱    │ 3
        │  ╱  2  │ ╱   4  │
        ├────────┼────────┤
        │ 2    ╱ │ 4    ╱ │
      7 │    ╱   │   ╱    │ 6
        │  ╱  4  │ ╱   8  │
        └────────┴────────┘
            2            8
          tens         ones
```

thousands   hundreds   tens   ones

Everyday Mathematics

Lattice Multiplication

Problem: 48 x 36

Record the final answer.

1,728

The product of 48 x 36 is 1,728.

Everyday Mathematics
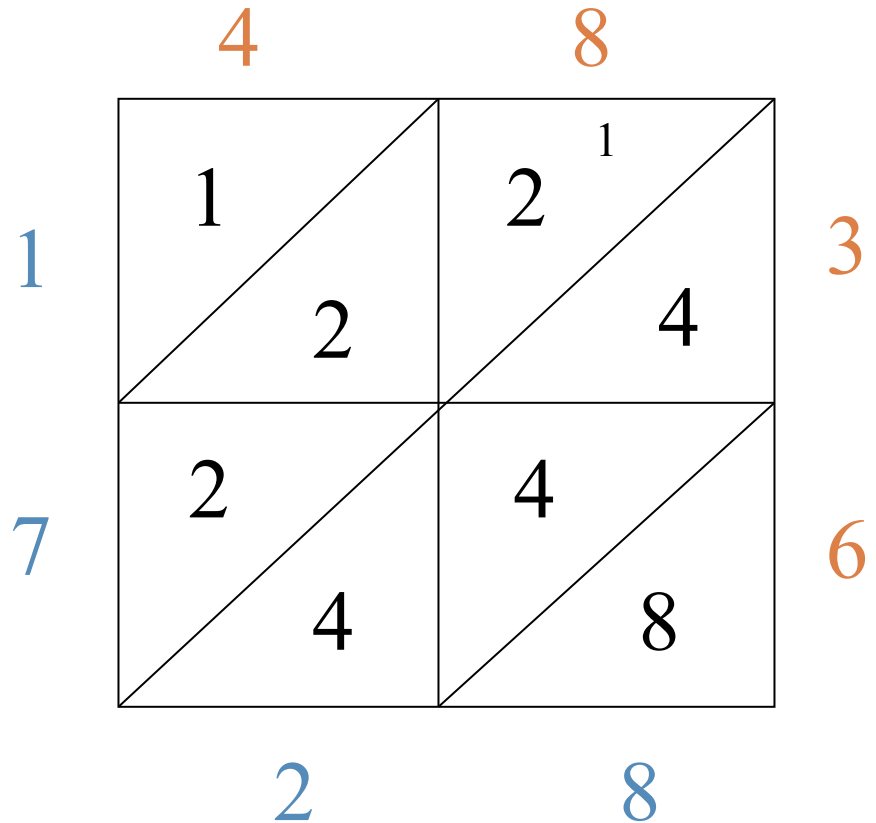
Lattice Multiplication

48 x 36 = 1,728

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

These skills include:

o Identifying the place value of digits

o Adding strings of numbers to find the product

Everyday Mathematics