Using the Ancient Chinese Method of Multiplication

twinkl

Chinese Mathematics

The growing trade empire of China was very big business and led to the development of a simple but efficient ancient Chinese numbering system, dating back to at least the 2nd millennium BCE.

An Early Number System

Small bamboo rods were positioned to represent numbers 0 to 9.

1 2 3 4 5 6 7 8 9

These rods were then put into columns to represent thousands, hundreds, tens and ones.

948 would have looked like this:

9 4 8

Multiplying Single Digits

The use of rods can be represented with the drawing of lines.
If we were to use this method for 3 × 2 it would look like this:

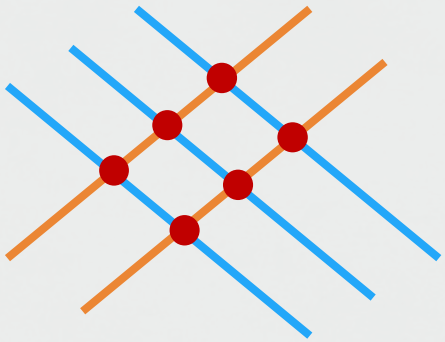
Three parallel lines would be drawn at a 45° angle and slanted to the right. These lines represent the 3 in the calculation.

Next, 2 parallel lines would be drawn across the top and in an opposite direction, to the first three lines drawn.

Multiplying Single Digits

Put a dot on all the places where lines intersect (cross).

Count up the dots. The total number of dots will be the answer to 3 × 2.



$3 \times 2 = 6$

Multiplying Double Digits with Single Digits

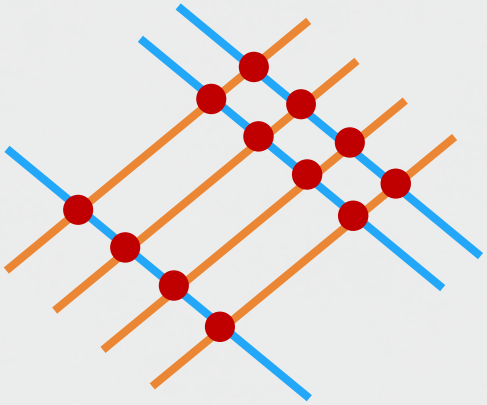
Think about 12 × 4:

Step 1
Look at the first number. It is made up of 1 ten and 2 ones.
Draw a line with a 45° angle and slanting to the right.
This line represents the 1 ten.

Step 2
Draw two parallel lines alongside the first line, but with a gap between.
These lines represent the 2 ones.

Multiplying Double Digits with Single Digits

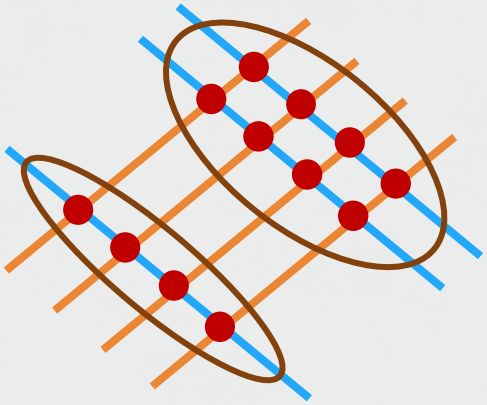
Step 3
Look at the second number in the calculation. Now draw 4 parallel lines going in the opposite direction, crossing over the lines you have already drawn.



Step 4
Draw dots at the points where all the lines intersect.

Multiplying Double Digits with Single Digits

Step 5
Put a circle around the dots which are on the intersections where the ones lines cross.



Step 6
Put a circle around the dots which represent the tens.

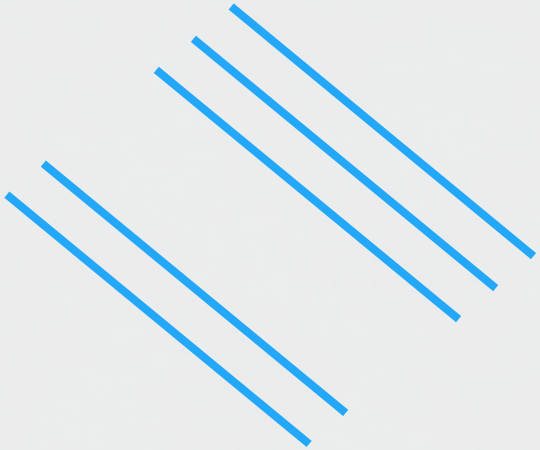
Step 7
Count up the dots which represent the ones.
Count up the dots which represent the tens.
These numbers are the answer.

Have you got it?
$12 \times 4 = 48$

Multiplying Double Digits With Double Digits

Think about 23 × 13:

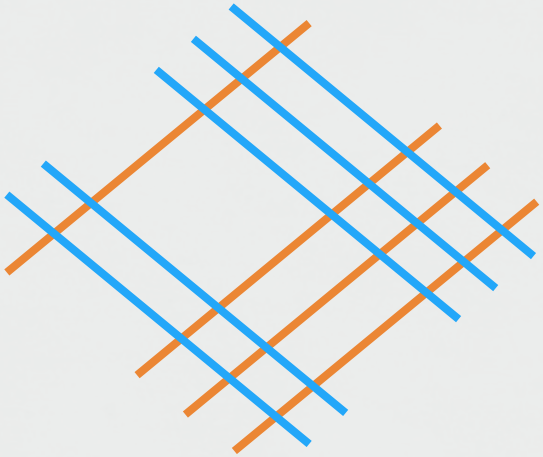
Step 1
As before, look at the first number in the calculation: 23. It is made up on 2 tens and 3 ones.
Draw 2 parallel lines with a 45° angle and slanting to the right.



Step 2
Draw 3 parallel lines a short space away from the first two lines. These will represent the ones in the number.

Multiplying Double Digits With Double Digits

Step 3
Next, look at the second number in the calculation. The number 13 is made up of 1 ten and 3 ones.
This time, draw one line towards the top of the diagram, again with a 45° angle and slanting in the opposite direction.

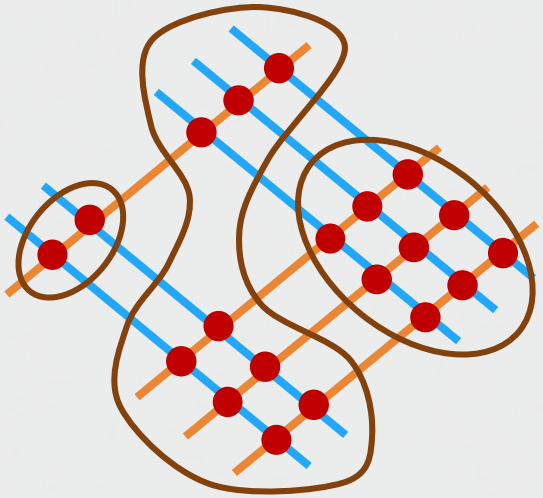


Step 4
Draw 3 parallel lines alongside the one just drawn, but with a space between. These lines represent the 3 ones.

Multiplying Double Digits With Double Digits

Step 5
Put a dot at each point where the lines intersect.

Step 6
Put a circle around the dots at the bottom right, which represent the ones.

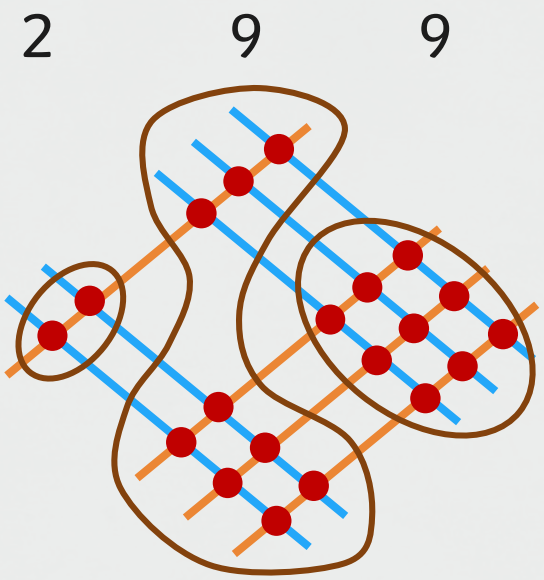


Step 7
Draw around the two sets of dots in the middle of the diagram.
These represent the tens.

Step 8
Put a circle around the dots at the top left. These represent the hundreds.

Multiplying Double Digits With Double Digits

Step 9
Count up and total the number of dots representing the ones.
Count up and total the number of dots representing the tens.
Count up and total the number of dots representing the hundreds.

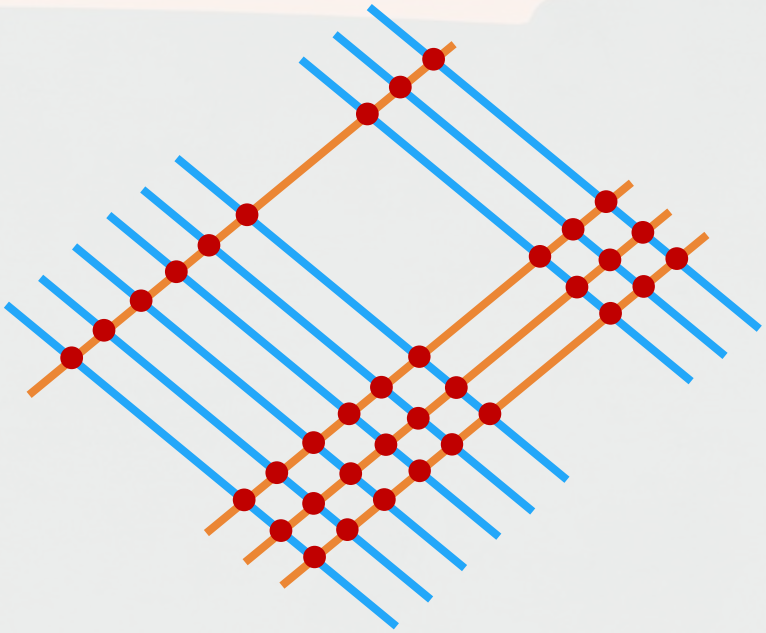


Have you got it?
23 × 13 = 299

Multiplying Double Digits with Double Digits and Regrouping

What happens if the dots mean there needs to be regrouping?
Set out the grid to show 63 × 13.

63 = 6 tens and 3 ones
13 = 1 ten and 3 ones



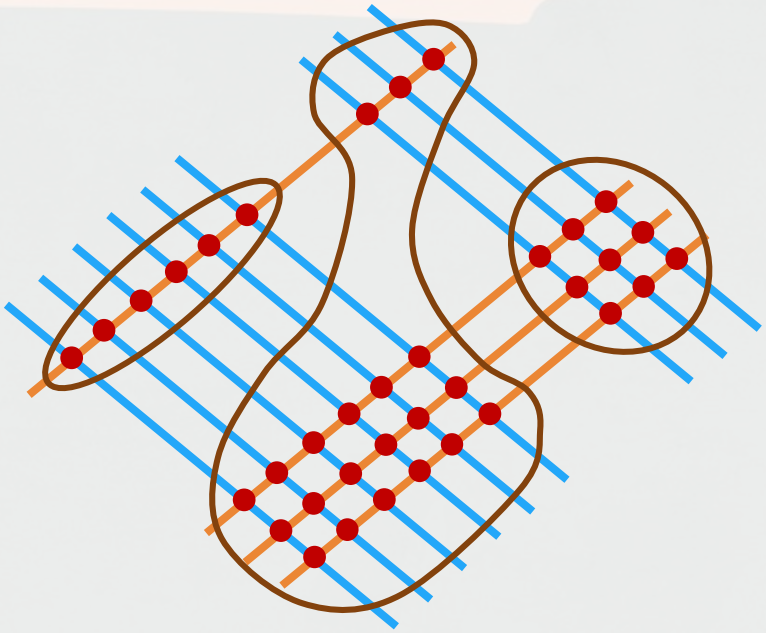
Put a dot where each line intersects.

Multiplying Double Digits with Double Digits and Regrouping

Draw a circle around the dots representing the ones.

Then draw around the two sets of dots in the middle.

Finally, draw a circle around the dots which represent the hundreds.



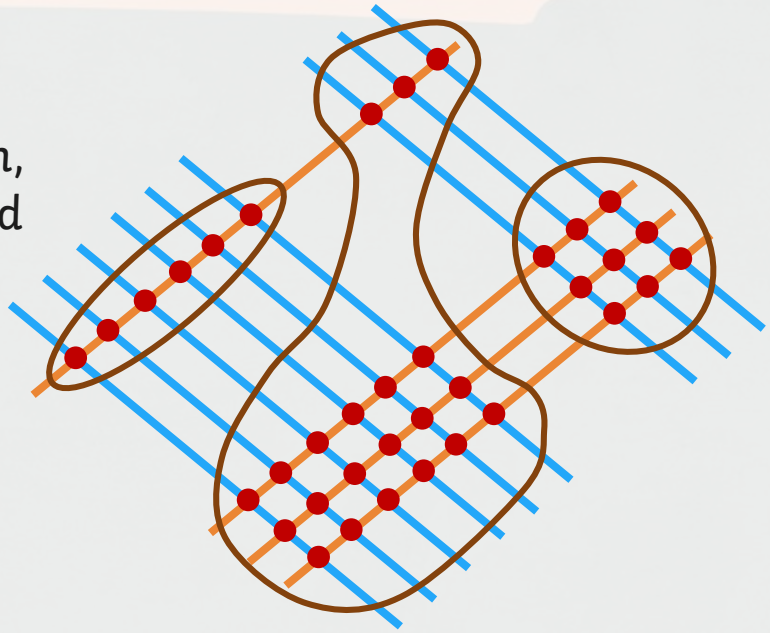
Multiplying Double Digits with Double Digits and Regrouping

Count up each set of dots.
There will be 9 ones, 21 tens and 6 hundreds.

As with column multiplication, the 2 in 21 would be regrouped with the hundreds.

Therefore, there are 8 hundreds, 1 ten and 9 ones.

Have you got it?
63 × 13 = 819



8 21 9

Have a Go!

Use this strategy to solve the following calculations.

26 × 15	31 × 14	64 × 22	17 × 18
43 x 19	55 x 42	71 x 12	19 x 19