

Division grid

This ITP allows you to model long division in a grid of thousands, hundreds, tens and units or hundreds, tens and units. You create a dividend and divisor by clicking on the hidden pointers above and below the digits in the calculation at the bottom of the screen.

In the example below the dividend is 8522 and the divisor is 19.

The dividend is partitioned into thousands, hundreds, tens and units in the grid and the divisor appears on the left-hand side below the multiplication sign.

The screenshot shows a division grid with the following structure:

x	0000	000	00	0
19	8000	500	20	2
	0000			
	8000			

Annotations and actions:

- 8522 partitioned into th, h, t, u**: Points to the digits 8, 5, 2, 2 in the dividend row.
- 0000 - there are no thousands of 19 that are less than 8000**: Points to the 0000 row in the grid.
- carry 8000 (to make 85 hundreds)**: Points to the 8000 row in the grid.
- click on the hidden pointers to set the divisor**: Points to the 19 in the divisor column.
- click on the hidden pointers to set each digit**: Points to the hidden pointers above the digits 8, 5, 2, 2.

Below the grid, the calculation $8522 \div 19 =$ is shown with a hand icon pointing to the hidden pointers above the digits.



Click to toggle between displaying thousands, hundreds, tens and units and hundreds, tens and units



Click on the hidden pointers to increase or decrease the number of decimal places shown in the remainder (up to 4).



Click to show or hide the grid lines

Step 1 How many thousands of 19 are less than 8000?

Click on the hidden pointer above the left-hand digit above the 8000 to display what is shown here.

This demonstrates that one thousand nineteens is 19000 (in pale blue) but this is 11000 more than 8000 so there are no thousands of 19 which are less than 8000.

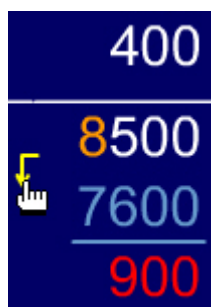
Click on the hidden pointer below the 1000 as shown to display what is shown in the first screen-shot above.

The screenshot shows a division grid with the following structure:

x	1000
19	8000
	19000
	+11000

Annotations and actions:

- 1000**: The value in the thousands column.
- 8000**: The value in the hundreds column.
- 19000**: The result of 19 multiplied by 1000.
- +11000**: The difference between 19000 and 8000.

**Step 2 How many hundreds of 19 are less than 8500?**

To 'carry' the 8000 to the hundreds column, click on the hidden arrow which is next to the 8000. You can carry it back as shown here, to remind pupils where it came from.

Click on the hidden pointer above the left-hand digit above the 8500 to display what is shown here.

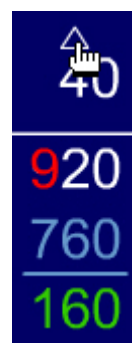
This demonstrates that four hundred nineteens is 7600 which is 900 less than 8500 (so not enough for another hundred nineteens).

Step 3 How many tens of 19 are less than 920?

Click on the hidden arrow next to the 900 to 'carry' it to the tens column.

Click on the hidden pointer above the left-hand digit above the 920 to display what is shown here.

This demonstrates that forty nineteens is 760 which is 160 less than 920 (so not enough for another ten nineteens).

**Step 4 How many 19s are less than 162?**

Click on the hidden arrow next to the 160 to 'carry' it to the units column.

Click on the hidden pointer above the left-hand digit above the 162 to display what is shown here.

This demonstrates that eight nineteens is 152 which is 10 less than 162 (so not enough for another nineteen).

Click on the hidden arrow to 'carry' the remainder.

The remainder is shown on the right.

Click on it to display as a fraction or a decimal.

x	0000	400	40	8	
19	0	7600	760	152	r 10