

24.04.20

I can solve an Nrich problem.

If you had to work out  $23 \times 21$  how would you do it?

What if you needed to work out  $246 \times 34$ ?

Let's have a look at today's problem Method in Multiplying Madness

To solve this problem you will need to watch the videos found at this link.

<https://nrich.maths.org/5612>

There are eight videos showing four different methods for working out the two multiplications.

Can you make sense of them?

Try to recreate the methods and make sense of the different steps.

Have a look at the next slide to see the methods again or you can re-watch the videos.

Once you think you have made sense of them, make up a few calculations of your own and work them out using all four methods until you feel confident that you can use each method effectively.

Here are the four methods for working out 23 multiplied by 21.

Can you make sense of them?

Grid Multiplication

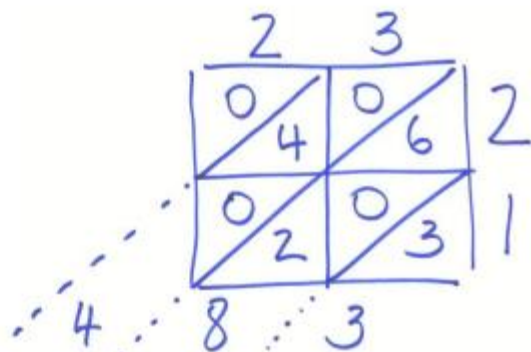
	20	3
20	400	60
1	20	3

$$\begin{array}{r}
 400 \\
 60 \\
 20 \\
 \underline{3} \\
 483
 \end{array}$$

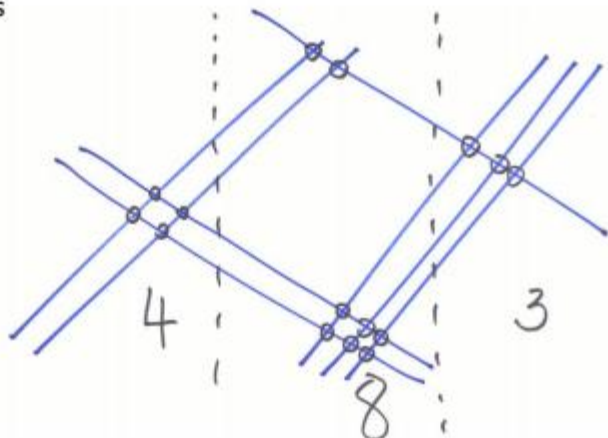
Column Multiplication

$$\begin{array}{r}
 23 \\
 \times 21 \\
 \hline
 23 \\
 + 460 \\
 \hline
 483
 \end{array}$$

Gelosia Multiplication



Multiplying with Lines



Here are the four methods for working out 246 multiplied by 34.

Can you make sense of them?

Grid Multiplication

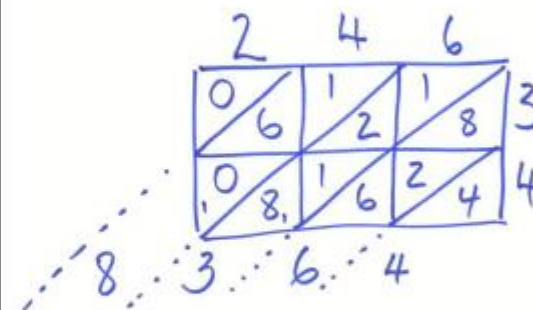
	200	40	6
30	6000	1200	180
4	800	160	24

$$\begin{array}{r}
 6000 \\
 1200 \\
 180 \\
 800 \\
 160 \\
 \underline{24} \\
 8364
 \end{array}$$

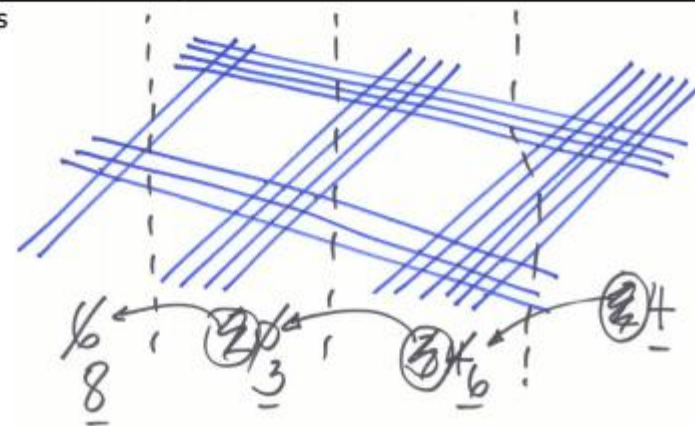
Column Multiplication

$$\begin{array}{r}
 246 \\
 \times 34 \\
 \hline
 984 \\
 + 7380 \\
 \hline
 8364
 \end{array}$$

Gelosia Multiplication



Multiplying with Lines



# Questions to think about:

Can you explain why each method works?

Why does each method work?

What do the methods have in common?

What are the advantages and disadvantages to each method?

Once you have watched the videos, make up some multiplication calculations of your own and have a go at answering them using all four methods. Check that you get the same answer each time!

Watch this video and see if you can think about the misconceptions in Ma and Pa's methods

<https://www.teachertube.com/videos/119892>