

YR6 MULTIPLICATION AND DIVISION KNOWLEDGE ORGANISER

Key Concepts

- Multiply up to a 4-digit by 2-digit number
- Short division
- Long division

Key Vocabulary

- multiply
- times
- groups of
- lots of
- product
- divide
- share
- equal



multiply times groups
of lots of product
repeated addition



divide division share
shared by equal



Multiplying

		4	2	1	6
x				3	4
<hr/>					
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When setting out long multiplication, it is important to position the digits carefully in the correct columns.

First, we multiply each digit of the 4-digit number by the **ones number** - the 4.

		4	2	1	6
x				3	4
<hr/>					
	1	6	8	2	4
<hr/>					

$4 \times 6 = 24$. The 4 is written in the ones column. The 2 is really a tens so it needs to go in the tens column. We write it smaller so it can be added to the next answer.

Next, we calculate 4×1 . The answer of 4 is added to the 2 that we have carried over and a 6 is written in the tens column.

We then calculate $4 \times 2 = 8$ and write the answer in the hundreds column.

Finally, $4 \times 4 = 16$. The 6 is written in the thousands column and the 1 is carried over to the ten thousands column.

We have completed the first step.

		4	2	1	6
x				3	4
<hr/>					
	1	6	8	2	4
<hr/>					
					0

Now we need to multiply all the digits of the 4-digit number by the **tens number** - the 3. To show that the 3 is really a 30, we put a zero in the ones column first.

The multiplication is then continued in the same way as before. We multiply the ones digit first, followed by the tens, hundreds and finally the thousands. If we get an answer of more than 9, it is carried over to the next column, as seen when $3 \times 6 = 18$ and the 1 is carried over to be added into the next column.

		4	2	1	6
x				3	4
<hr/>					
	1	6	8	2	4
<hr/>					
1	2	6	4	8	0

		4	2	1	6
x				3	4
<hr/>					
	1	6	8	2	4
<hr/>					
1	2	6	4	8	0
<hr/>					
1	4	3	3	4	4

The final step is to add together the two answers - $16,864 + 126,480$. We do this using the column addition method.



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Short division

Bigger numbers can be tricky to divide as we don't learn our times tables for numbers that large.

Instead, we can set out the division as shown:

	6	8	7	1	2

We then divide the large number, one digit at a time, starting with the 8 (which represents 8000).

$8 \div 6 = 1$ with 2 left over. The 1 is written above the 8 on the line. The 2 is carried over to the next column. We now have 27 hundreds.

over. The 1 is written

		1			
	6	8	27	1	2

		1	4		
	6	8	27	31	2

$27 \div 6 = 4$ with 3 left over. The 4 is written above the 7 on the line. The 3 is carried over to the next column. We now have 31 tens.

$31 \div 6 = 5$ with 1 left over. The 5 is written above the 1 on the line. The 1 is carried over to the next column. We now have 12 ones.

		1	4	5	2
	6	8	27	31	12

$12 \div 6 = 2$ exactly. 2 is written above the 2 on the line. **Our final answer is 1,452**

Long division

Long division is useful if you need to divide by a 2-digit number. It is set out similar to short division.

$8670 \div 15$.

$8 \div 15$ does not give a whole number answer so we look at the next digit.

			5			
	1	5	8	6	7	0
		-	7	5		
			1	1		

$86 \div 15 = 5$ with 11 left over. Put a 5 above the 6 on the line.

$15 \times 5 = 75$. Take that 75 away from the 86 to get your remainder of 11.

Next, carry the 7 down to make 117.

$117 \div 15 = 7$ with 12 left over. Put a 7 above the 7 on the line. $15 \times 7 = 105$. Take that away from 117 to get your remainder of 12.

			5	7		
	1	5	8	6	7	0
		-	7	5		
			1	1	7	
		-	1	0	5	
				1	2	

Finally, carry the 0 down to make 120.

$120 \div 15 = 8$. Put an 8 above the 0 on the line.

Now you have your final answer:

$8670 \div 15 = 578$

			5	7	8	
	1	5	8	6	7	0
		-	7	5		
			1	1	7	
		-	1	0	5	
				1	2	0

