

'Learning by Heart'

Developing children's knowledge of mathematical facts so that they know them 'by heart' is a valuable tool to support calculation strategies, and also helps to build confidence. Regular practice is needed to secure knowledge and help children instantly recall facts.

We encourage children to think 'Can I do this in my head?' Having a range of number facts at their fingertips really empowers the children and enables them to approach tasks with confidence.

Spring Term 1 : Derive more complex multiplication and division facts building on tables facts – e.g., decimals and multiples of 10 etc

Help children to link their times tables facts to larger numbers e.g.

If I know $5 \times 3 = 15$
 then $50 \times 3 = 150$
 and $5 \times 30 = 150$
 and $50 \times 30 = 1500$ All of these facts link to $\times 10$ knowledge.

Extend this to knowledge of decimals e.g.

If I know $5 \times 3 = 15$
 then $0.5 \times 3 = 1.5$
 and $5 \times 0.3 = 1.5$ All of these facts link to $\div 10$ knowledge

If I know $8 \times 7 = 56$
 then $0.8 \times 7 = 5.6$
 and $8 \times 0.7 = 5.6$
 and $0.8 \times 0.7 = 0.56$ All of these facts link to $\div 10$ knowledge

Practical ideas to help your child

It is really important that children are as confident with multiplication and division by 10 and 100, as this enables them to work with decimals.

Help your child to understand and remember the rules for \times and \div by 10, 100 and 1000.

Rules:

When you multiply move the digits to the left, the number of zeros indicates how many places to move the digits e.g. $\times 10$ move 1 place left, $\times 100$ move 2 places left, $\times 1000$ move 3 places left.

When you divide, move the digits to the right, the number of zeros indicates how many places to move the digits e.g. $\div 10$ move 1 place right, $\div 100$ move 2 places right, $\div 1000$ move 3 places right.

Spring Term 2 : To multiply and divide whole and decimal numbers by 10, 100 and 1000

When you multiply by 10, 100 or 1000, the place value of the digits change. The number is getting greater so the digits move to the left.

Multiply by 10

When you multiply by 10 all the digits move one place to the left.

$$21 \times 10 = 210$$

H	T	O
2	1	0

The tens digit moves to the hundreds. The ones digit increases in value to become a ten.

Why is there now a zero in the ones column?

You need to include a zero to represent the fact that now the other digits have increased in value. There are now no ones.

If you didn't include the zero in the ones, the number would still look like twenty-one, not two hundred and ten.

Multiply by 100

When you multiply by 100 move all the digits two places to the left.

$$21 \times 100 = 2100$$

Th	H	T	O
2	1	0	0

Multiply by 1000

What do you think will happen when you multiply by 1000?

The digits move three places to the left.

$$21 \times 1000 = 21,000$$

TTh	Th	H	T	O
2	1	0	0	0

The same principle applies to decimal numbers:

Multiplying and Dividing by 10, 100 and 1000

10 000	1000	100	10	1	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$
					•		
						•	

Multiplying

$\times 10$
 $\times 100$
 $\times 1000$



Dividing

$\div 10$
 $\div 100$
 $\div 1000$



If the place value of the digits increases and move to the left when multiplying, then it makes sense that the place value of the digits decreases and move to the right when dividing by a power of 10, since it is the inverse operation.

Dividing by 10

When you divide by 10 move the digits one place to the right.

$$210 \div 10 = 21$$

H	T	O
2	1	0
	2	1

Since the digits have moved to the right, the zero also moves place value - it does not just disappear! The zero also moves to the right into the tenth's column after the decimal point. So you could write 21.0. But since there's nothing to show after the decimal point, we just don't write it.

Dividing by 100

When you divide by 100, move the digits two places to the right.

$$2100 \div 100 = 21$$

Th	H	T	O
2	1	0	0
		2	1

Dividing by 1000

If you divide by 1000 move the digits three places to the right.

$$21,000 \div 1000 = 21$$

TTh	Th	H	T	O
2	1	0	0	0
			2	1

Vocabulary: Multiply place value move digits greater

Divide smaller zero place holder increase decrease

Thousands tens ones tenths hundredths thousandths decimal point

Great program to use:



<https://mathsframe.co.uk/en/resources/resource/60/itp-moving-digits>

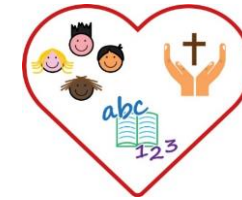
10	Th	H	T	O	$\frac{1}{10}$	$\frac{1}{100}$
4	1	2	7	3		
	4	1	2	7	3	

4127.3 × 10 = 41 273

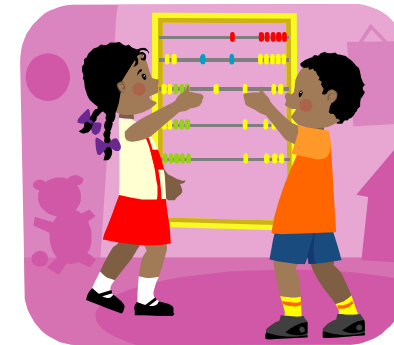
10	Th	H	T	O	$\frac{1}{10}$	$\frac{1}{100}$
5	2	3	6	0		
	5	2	3	6	0	

52360 ÷ 100 = 523.6

St Matthew's C.E. School and Nursery



Help your child to learn maths facts Year 6



Parent's and carer's guide to support children
with the 'Learning by Heart' programme
Spring 2021