

Information for Parents



Multiplication

Calculations at Tonacliffe - Multiplication Progression

This leaflet will show you the main steps your child will go through while learning how to do multiplication calculations at Tonacliffe Primary School.

When children are confident and secure at a step, they will move on to the next one.

Multiplication facts

Knowing multiplication facts (tables) is a vital part of children's mathematical knowledge.

By the end of Year 2 children should know:

- 2 times table
- 5 times table
- 10 times table

By the end of Year 3 children should know:

- 2 times table
- 3 times table
- 4 times table
- 5 times table
- 6 times table
- 10 times table

By the end of Year 4 children should be able to recall all multiplication facts up to 12×12 .

Step 1

Children will experience equal groups of objects and will count in 2s and 10s and begin to count in 5s. They will work on practical problem solving activities involving equal sets or groups.



Step 2

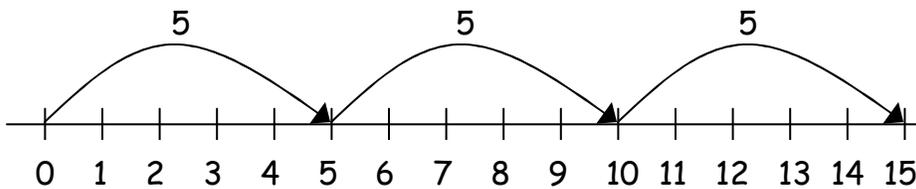
Children will develop their understanding of multiplication and use jottings to support calculation:

☺ Repeated addition

3 times 5 is $5 + 5 + 5 = 15$ or 3 lots of 5 or 5×3

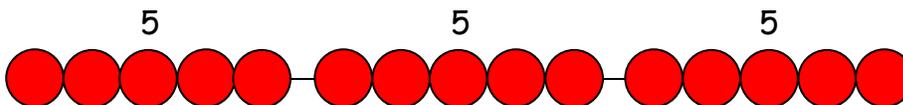
Repeated addition can be shown easily on a number line:

$$5 \times 3 = 5 + 5 + 5$$



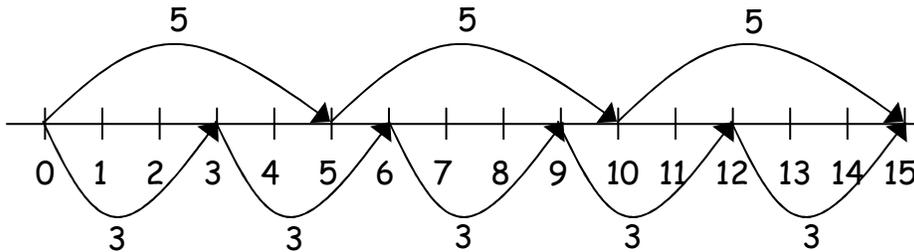
and on a bead bar:

$$5 \times 3 = 5 + 5 + 5$$



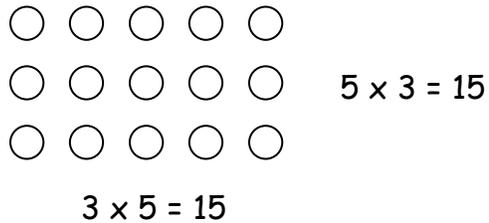
☺ **Commutativity**

Children should know that 5×3 has the same answer as 3×5 . This can also be shown on the number line.



☺ **Arrays**

Children should be able to model a multiplication calculation using an array.



Step 3

☺ **Partitioning**

$$\begin{aligned} 38 \times 5 &= (30 \times 5) + (8 \times 5) \\ &= 150 + 40 \\ &= 190 \end{aligned}$$

Step 4 - Grid method

TU × U

(Short multiplication - multiplication by a single digit)

$$23 \times 8$$

Children will approximate first

23×8 is approximately $25 \times 8 = 200$

$$\begin{array}{r} \times \quad 20 \quad 3 \\ 8 \quad \boxed{160} \quad \boxed{24} \end{array}$$

$$\begin{array}{r} 160 \\ + \quad 24 \\ \hline 184 \end{array}$$

Step 5 - Grid method

HTU × U

(Short multiplication - multiplication by a single digit)

$$346 \times 9$$

Children will approximate first

346×9 is approximately $350 \times 10 = 3500$

$$\begin{array}{r} \times \quad 300 \quad 40 \quad 6 \\ 9 \quad \boxed{2700} \quad \boxed{360} \quad \boxed{54} \end{array}$$

$$\begin{array}{r} 2700 \\ 360 \\ + \quad 54 \\ \hline 3114 \\ \hline 1 \quad 1 \end{array}$$

Step 6

TU × TU

(Long multiplication - multiplication by more than a single digit)

$$72 \times 38$$

Children will approximate first

72×38 is approximately $70 \times 40 = 2800$

×	70	2	
30	2100	60	2100
8	560	16	560
			60
			16
			<hr style="width: 50%; margin-left: 0;"/>
			2736
			<hr style="width: 50%; margin-left: 0;"/>
			1

Step 7

Using similar methods, they will be able to multiply decimals with one decimal place by a single digit number, approximating first. They should know that the decimal points line up under each other.

e.g. 4.9×3

Children will approximate first

4.9×3 is approximately $5 \times 3 = 15$

×	4	0.9	
3	12	2.7	
			12
			+ 2.7
			<hr style="width: 50%; margin-left: 0;"/>
			14.7
			<hr style="width: 50%; margin-left: 0;"/>

Step 8

ThHTU × U

(Short multiplication - multiplication by a single digit)

$$4346 \times 8$$

Children will approximate first

$$4346 \times 8 \text{ is approximately } 4346 \times 10 = 43460$$

x	4000	300	40	6	
8	32000	2400	320	48	

$$\begin{array}{r} 32000 \\ 2400 \\ 320 \\ + 48 \\ \hline 34768 \end{array}$$

Step 9

HTU × TU

(Long multiplication - multiplication by more than a single digit)

$$372 \times 24$$

Children will approximate first

$$372 \times 24 \text{ is approximately } 400 \times 25 = 10000$$

x	300	70	2	
20	6000	1400	40	
4	1200	280	8	

$$\begin{array}{r} 6000 \\ 1400 \\ 1200 \\ 280 \\ 40 \\ + 8 \\ \hline 8928 \\ 1 \end{array}$$

Step 10

Using similar methods, they will be able to multiply decimals with up to two decimal places by a single digit number and then two digit numbers, approximating first. They should know that the decimal points line up under each other.

For example: 4.92×3

Children will approximate first
 4.92×3 is approximately $5 \times 3 = 15$

x	4	0.9	0.02	
3	12	2.7	0.06	

12			
2.7			
+ 0.06			
<u>14.76</u>			

Step 11

Using similar methods, they will be able to multiply two decimals. 43.1×2.8

x	40	3	0.1	
2	80	6	0.2	
0.8	32	2.4	0.08	

80			
32			
6			
2.4			
0.2			
+ 0.08			
<u>120.68</u>			