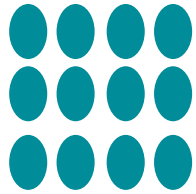


## Using Arrays to Multiply and Divide

The next step in multiplication and division is the use of arrays. These provide a visual model how a number of factors make up a greater whole number. For example this array shows the following:



$3 \times 4 = 12$

Three lots of four make twelve

$4 \times 3 = 12$

Four lots of three make twelve

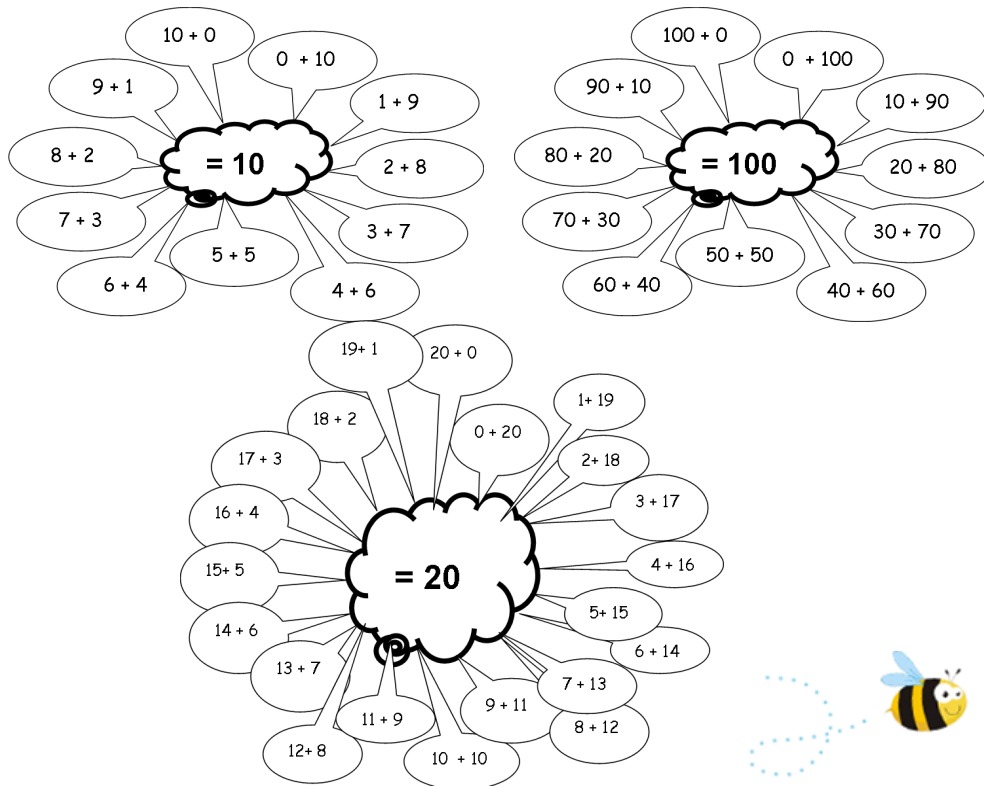
$12 \div 3 = 4$

Twelve shared by three is four each

$12 \div 4 = 3$

Twelve shared by four is three each

Help your child to learn these number bonds.



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# Berryfields Parent Guide Number and Calculation In Early Years & Key Stage 1

## Key Skills and Concepts

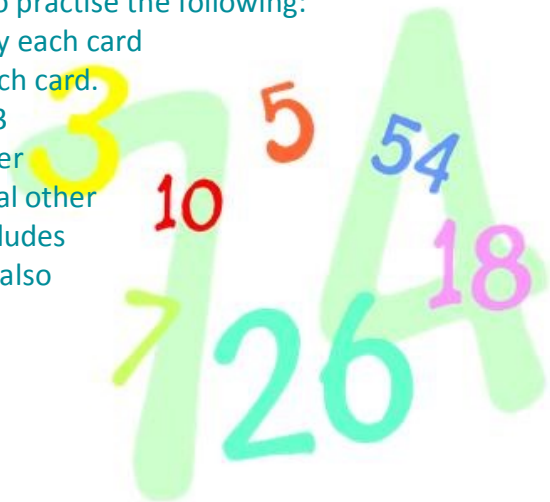
Counting and recognising numbers are the foundations of good mathematical knowledge and understanding. Children first need to develop a recognition of numerals and of the associated quantities they represent. At the same time, they should practise reciting numbers in order from 0 upwards: first counting forwards and backwards in ones up to 20 and then counting in twos and by other intervals up to 100 and beyond. Expectations for the end of Reception and Year 2 are as follows:

- Nursery and Reception—*count, recognise and order numbers up to 20; adding and subtracting single digit numbers by counting on and back and beginning to double, halve and share.*
- Years 1 and 2—*count in ones, twos, threes, fives and tens; order, add and subtract numbers up to 100; recognise place value of 2 digit numbers; know addition facts up to 20; and multiply and divide using 2, 5 and 10 times table.*

## Using Number Cards

Using number cards, help your child to practise the following:

- Naming the number represented by each card
- Matching quantities of things to each card.  
Eg three buttons and the number 3
- Placing the cards in the correct order
- Finding pairs of numbers which total other numbers (number bonds). This includes pairs equalling 10, 20 and 100, but also try less regular numbers too!



## Using Number Lines for Addition and Subtraction

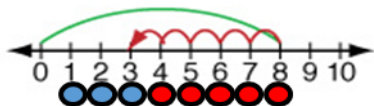
Addition and subtraction are first developed by counting on and back with real objects and asking questions like: 'If I add one more, how many will I have?' and 'If I take one away, how many will I have?'

This work on recognising numbers and counting on and back is then applied to simple calculation using a number line. Here a number line is used alongside real objects to calculate that  $3 + 1 = 4$



Children should learn that they can start with either number (3 + 1 OR 1 + 3) and that going from the larger and adding the smaller is more efficient.

Children develop subtraction in the same way, but this time beginning with the larger number and counting back.  $8 - 5 = 3$



This is then developed for both addition and subtraction by using a number line on its own and then with partially numbered, number lines and eventually empty number lines.

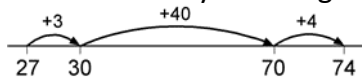
These mental methods will lead up to learning column addition and subtraction and will often involve partitioning. Partitioning is another key skill. This is when children need to be able to separate numbers into their constituent parts using place value (units, tens, hundreds etc) or in other ways to make the calculation manageable. For example:

$$8 + 7 = 15$$

$$48 + 36 = 84$$

$$15 - 7 = 8$$

A further step with subtraction is to find the difference by counting on. For example:  $74 - 27 = 47$



Use your number line to help you child add and subtract. Can he/she partition the number (using number bonds) to jump forward or back by more than one?

## Using the 100 Square for Addition and Subtraction

Similarly a 100 square can be used to partition calculations using 2 digit numbers into tens and units, as children are trained to remember that movement down a column goes up in tens and movement upwards goes back in tens.

This helps to reinforce the concept of inverse operations. For example:

$$14 + 22 = 36$$

OR

$$36 - 22 = 14$$

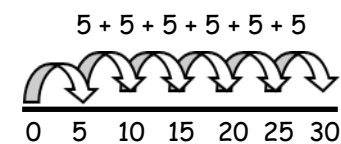
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Use the 100 square to add and subtract by number greater than 10. What would be 20 more or less? 30..? 40..? What about +/-27 or +/-43?

## Using Number Lines for Multiplication and Division

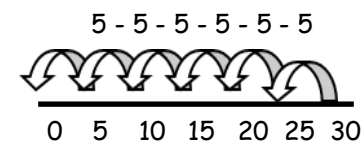
Multiplication and division begin in much the same way, with pupils repeatedly adding or subtraction along a number line. For example:

$$6 \times 5 = 30$$



The inverse of this would demonstrate that

$$30 \div 5 = 6$$



Use a number line to help your child to count how many groups of a number make another number.