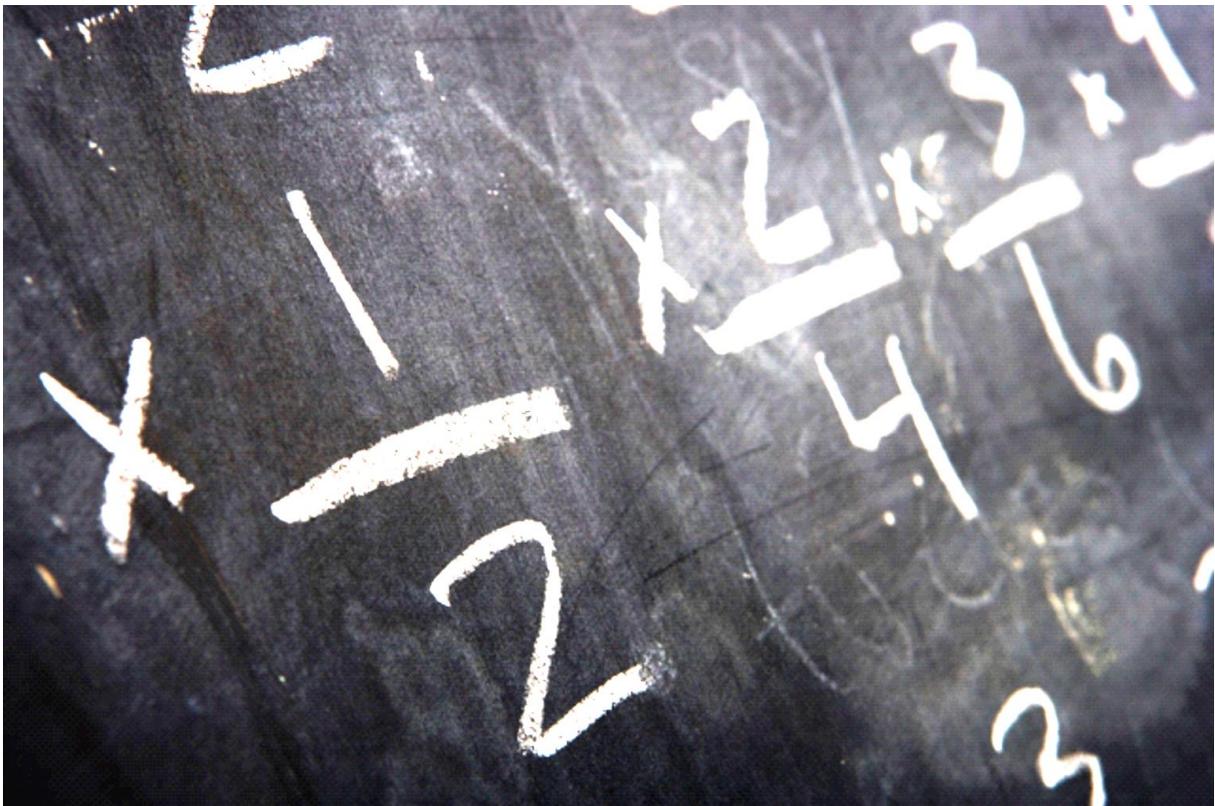


Winslow C of E Combined.

Written Methods in Maths.

<http://www.familymathstoolkit.org.uk/>



Addition.

Children will need to know that plus, find the sum of, increase and find the total will all involve addition.

They will need to be familiar with the word digit. 2 is a single digit number; 24 is a two digit number and 287 is a three digit number.

Partitioning is used to separate numbers into hundreds, tens and units, for example: $125 = 100 + 20 + 5$.

Developing a written method:

Children will progress through these steps at their own pace, moving onto the next step when they are totally confident and consistently produce correct answers.

Stage 1:

Using objects to add groups and using phrases such as "2 more..."

$$0\ 0\ 0\ 0\ +\ 0\ 0\ =\ 6$$

Stage 2:

Add numbers on a numbered number line.

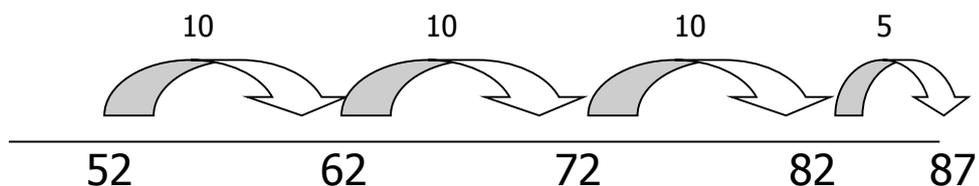
$$6 + 3 = 9$$



Stage 3:

Add numbers on a blank number line, starting with the biggest number (it's easier to add the smaller number to the biggest). Jump on in simple chunks until the smallest number has been added.

$$52 + 35 = 87$$



Stage 4:

Column addition, adding the ones first. Write the numbers being added one under the other (ensuring the ones are in the same column; the tens are in the same column and the hundreds are too. Add the ones together and write the total under the sum. Now add the tens together and write this total under the ones total. Finally, add up the two totals to get your answer.

$$\begin{array}{r} 63 \\ + 29 \\ \hline 12 \\ \hline 80 \\ \hline 92 \end{array}$$

Stage 5:

Compact method. Arrange the sum the same way as in stage 5. Add the ones first and write the ones value of the total under the ones column, carrying any tens under the tens column. Now add the tens and any tens carried from the ones total and write the answer under the tens column (carrying any hundreds under the hundreds column).

This method should be taught in parallel with decimals.

$$63 + 29 = 92$$

$$\begin{array}{r} 63 \\ +29 \\ \hline 92 \\ 1 \end{array}$$

$$34.7 + 23.4 = 58.1$$

$$\begin{array}{r} 34.7 \\ +23.4 \\ \hline 58.1 \\ 1 \end{array}$$

Subtraction.

Children will need to know that minus, take away, decrease and find the difference will all involve subtraction.

They will need to be familiar with the word digit. 2 is a single digit number; 24 is a two digit number and 287 is a three digit number.

Partitioning is used to separate numbers into hundreds, tens and units, for example: $125 = 100 + 20 + 5$.

Children will also need to know, by counting on at first, which number is the next multiple of 10 or 100:

43 → 50 67 → 70 130 → 200 270 → 300

Children will need to calculate some examples mentally (in their heads) before they develop a written method using pencil and paper.

Developing a written method:

Children will progress through these steps at their own pace, moving onto the next step when they are totally confident and consistently produce correct answers.

Stage 1:

Taking objects away, using terms such as: '1 less...'

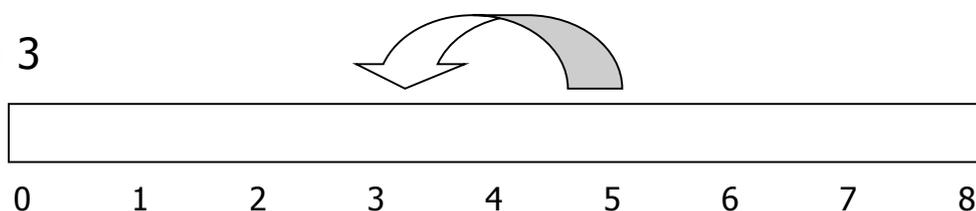
What is 1 less than 6?



Stage 2:

Taking away using a number line/counting stick.

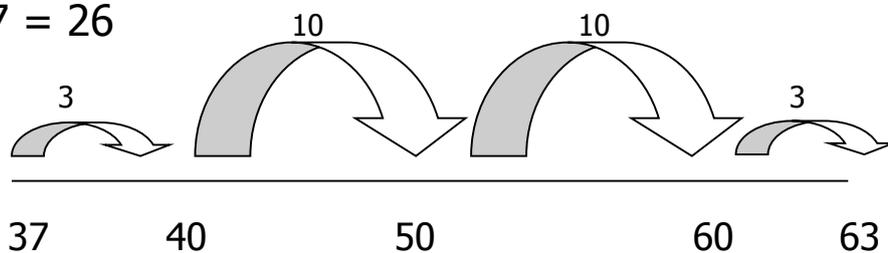
$$5 - 2 = 3$$



Stage 3:

Finding the difference on a number line. Start with the smallest number and count on in jumps until the larger number is reached. Total the size of the jumps to find the difference.

$$63 - 37 = 26$$



Stage 4:

Decomposition (borrowing). Arrange the sum as column subtraction. If the number you are subtracting from is not big enough, borrow from the column before.

This method should be taught in parallel with decimals (i.e. money).

$$375 - 238$$

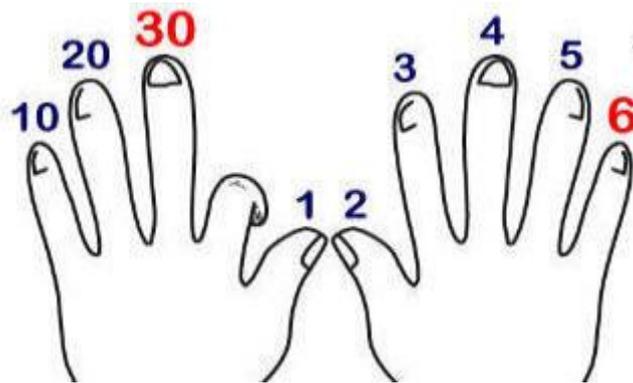
$$\begin{array}{r} 6 \\ 3 \cancel{7} 15 \\ \underline{238} \\ 137 \end{array}$$

Multiplication Tables.

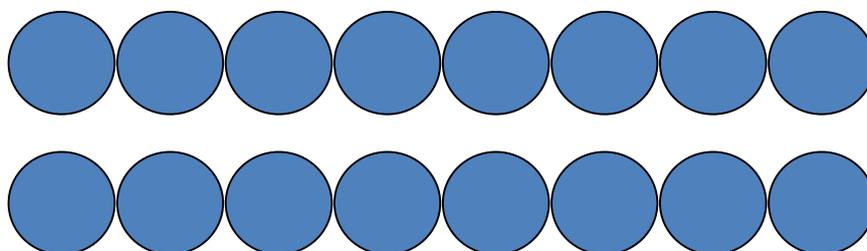
Learning multiplication tables by heart can be a problem for some children, but rapid recall of these facts is necessary for developing maths skills. It is therefore very important that children spend time at home learning their tables (10 minutes per day, every day of the week – little and often).

Below is listed a few methods that you might find useful.

1. Learning tables to a rhythm or rap aids memorisation.
2. Use known facts, such as: the 4x tables are double the 2x tables; 8x tables are double the 4x tables.
3. The 9x tables can be worked out using the finger method. Number the fingers from 1 – 10. If the question is 4×9 , hide the 4th finger. The number of fingers before that hidden finger represent the tens in the answer; the number of fingers after that hidden finger represent the units in the answer. $4 \times 9 = 36$.



4. Remember that 6×4 is the same as 4×6 .
5. Produce an array ie, 2×8 :



Multiplication.

Children will need to know that times, sets of, groups of and product will all involve multiplication.

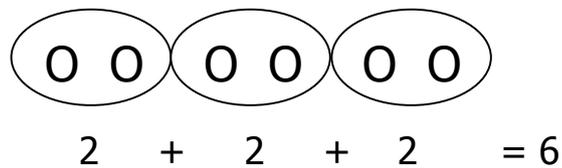
They will need to be familiar with the word digit. 2 is a single digit number; 24 is a two digit number and 287 is a three digit number.

Partitioning is used to separate numbers into hundreds, tens and units, for example:
 $125 = 100 + 20 + 5$.

Children will need to calculate some examples mentally (in their heads) before they develop a written method using pencil and paper.

Stage 1:

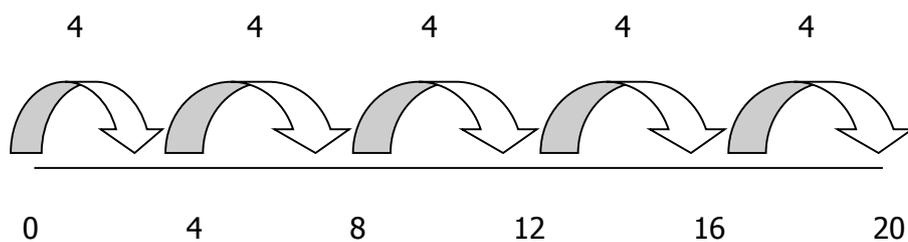
Adding groups repeatedly.



Stage 2:

Using a number line to make repeated equal jumps.

$$5 \times 4 = 20$$



Stage 3:

Partition numbers in jottings.

$$24 \times 3$$

$$20 \times 3 = 60$$

$$4 \times 3 = 12$$

$$60 + 12 = 72$$

Stage 4:

Grid method – partitioning (used with larger numbers and decimals).

$$37 \times 2.6 = 96.2$$

X	30	7	Add up
2	60	14	74
0.6	18.0	4.2	22.2

$$74 + 22.2 = 96.2$$

Taught in parallel with the Column Method:

$$37.6 \times 4 = 150.4$$

$$\begin{array}{r}
 37.6 \\
 \times 4 \\
 \hline
 150.4 \\
 132
 \end{array}$$

Division.

Children will need to know that divide, share and find the quotient will all involve division.

The children will need to be familiar with the phrase multiple of; ie. 10, 20 and 30 are all multiples of 10 because they can all be divided exactly by 10.

Children will need to calculate some examples mentally (in their heads) before they develop a written method using pencil and paper.

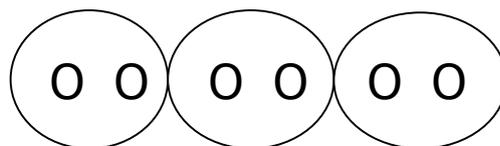
Developing a written method:

Children will progress through these steps at their own pace, moving onto the next step when they are totally confident and consistently produce correct answers.

Stage 1:

Finding groups of...

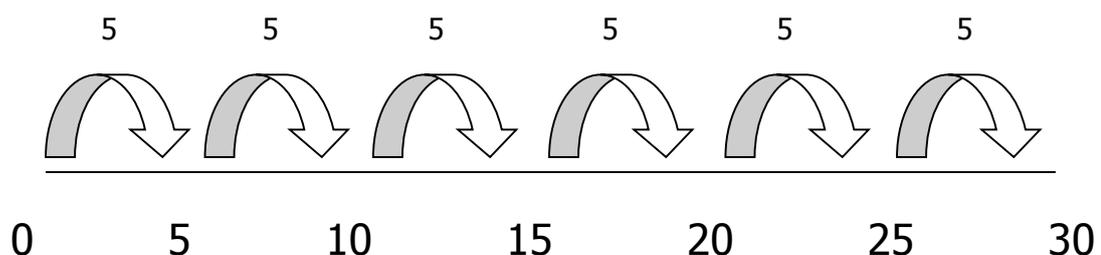
$$6 \div 2$$



Stage 2:

Dividing by 2, 5 and 10 and counting the jumps on a number line.

$$30 \div 5 =$$



Stage 3:

Bus stop method (for use when dividing by single digit numbers). In this example, find how many 6s go into the 2. The answer is zero, so carry the unused 2 over to the 9. How many 6s in 29? The answer is 4, with 5 as a remainder. Carry that remainder over to the first zero (29.00 is the same as 29) and repeat.

$$29 \div 6$$

$$\begin{array}{r} 04.8333 \\ 6 \overline{) 29.0000} \\ \underline{29} \\ 0000 \end{array}$$

Stage 4:

Chunking (for use when dividing by TU/HTU). Take multiples of the number you are dividing by away from your original number until you are left with 0 or a remainder.

$$187 \div 14 = 13 \text{ lots of } 14 \text{ with } 5 \text{ remaining (or } 13 \frac{5}{14} \text{)}$$

$$\begin{array}{r} 187 \\ -140 \quad (\mathbf{10} \times 14) \\ \hline 47 \\ -28 \quad (\mathbf{2} \times 14) \\ \hline 19 \\ -14 \quad (\mathbf{1} \times 14) \\ \hline r 5 \end{array}$$