Willerby Carr Lane Primary School

Supporting your child in mathematics

Expectations and Calculation Methods in Year 5

ADDITION

- Use knowledge of place value and addition and subtraction of two-digit numbers to derive sums and differences and doubles and halves of decimals (e.g. 6.5 + 2.7, half of 5.6, double 0.34).
- Use efficient written methods to add and subtract whole numbers and decimals with up to two places.

Children will carry below the line as soon as they have a secure understanding of the value of each digit.

```
  625              783
 +48            +   42
  673             825
   1                1
```

They will also begin to add decimals up to 2 decimal places, knowing that the decimal points need to be lined up.

```
  63.37
+ 25.93
  89.30
    1 1
```

SUBTRACTION

- Use knowledge of place value and subtraction of two-digit numbers to derive differences and halves of decimals (e.g half of 5.6).
- Extend mental methods for whole-number calculations to subtract one near multiple of 1000 from another (e.g. 6070 – 4097).
- Use efficient written methods to subtract whole numbers and decimals with up to two places.

When children are confident with the expanded method they will use the compact method:

Expanded method   Compact method

Where the numbers are involved in the calculation are close together or near to multiples of 10, 100 etc counting on using a number line could still be used.
1209 – 388 = 821
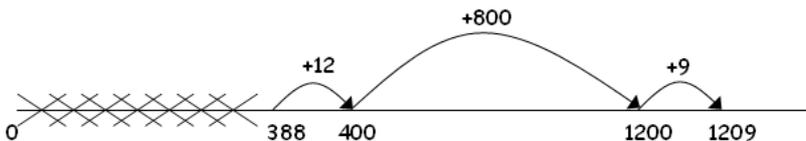
MULTIPLICATION

Multiplication Objectives for Year 5

- Recall quickly multiplication facts up to 10 x 10 and use them to multiply pairs of multiples of 10 and 100; derive quickly corresponding division facts

- Extend mental methods for whole-number calculations, for example to multiply a two-digit by a one-digit number (e.g. 12 x 9), to multiply by 25 (e.g. 16 x 25)

In year 5 children move on to a more compact written method the carry digits recorded below the line.
They must estimate first.

Estimate: 40x7= 280

```
 3 8
x 7
266
 5
```

The step here involves adding 210 and 50 mentally with only the 5 in the 50 recorded.
This highlights the need for children to be able to add a multiple of 10 to a two-digit or three-digit number mentally before they reach this stage.

This compact method is then extended to

```
 346
 x 9          (estimate 350 x 10 = 3500)
3114
4 5
```

This is then extended to U.t x U

```
  4.9
X   3         (estimate 5 x 3 = 15)
 14.7
  2
```

Long Multiplication

Children then learn to multiply a 2 digit number by another 2 digit
number. (TU X TU) They start with the grid method again
This leads to partitioning again:

```
     56
  ×  27
  1000     50 ×20 = 1000
   120      6 ×20 =  120
   350     50 ×7 =  350
    42      6 ×7 =   42
  1512
     1
```

They may then go on to reduce the recording even further:

```
     56
  ×  27
  1120     56 ×20
   392     56 × 7
  1512
     1
```

DIVISION

- Division objectives for Year 5
- Use understanding of place value to multiply and divide whole numbers and decimals by 10, 100 or 1000.

- Recall quickly multiplication facts up to 10 x 10 and use them to multiply pairs of multiples of 10 and 100; derive quickly corresponding division facts

- Refine and use efficient methods to divide HTU ÷ U.

- Find fractions using division (e.g. 1/100 of 5 kg), and percentages of numbers and quantities (e.g. 10%, 5% and 15% of £80)

The expanded method for division is often called 'chunking' and really just involves taking away chunks of the same size until you run out. It uses the fact that division is repeated subtraction of the same size group.

72 pears are sold in packets of 6. How many packets will that make?

```
    72 (pears)
   -60 (this is 10 lots of 6)
    12  (left over)
   -12  (this is 2 lots of 6)
     0  (left over)
```
So **10+2** lots of 6 or 12 packets can be made.

As the children become more skilled at this method, they learn to reduce the steps.

```
6)196
- 180   6 x 30
   16
-  12   6 x 2
    4     32
Answer:   32 R 4
```

30 is the highest multiple of 10 that can be used in this calculation (40 x 6 would be too many) therefore this is the chunk that is subtracted first.
Children will approximate that the answer lies between 30 and 40.

Problem Solving

When solving problems children are expected to choose ONE of these methods:

- Children have to ask:
- Can I do this in my head?
- Should I use jottings and a number line?
- Should I use a formal written method?

Tackling Problems

- Read the question at least twice and underline the important parts.
- Decide whether it is a 1-step or 2-step problem.
- Decide on the operation needed to solve the problem.
- Show working out if necessary
- Tackle the problem systematically
- Check the answer – does it look reasonable?
- Write an answer in a sentence to answer the original question.