Multiplication & Division

Years 3 & 4

A booklet for parents

Help your child with mathematics

Multiplication & Division
Year 3- Current Objectives

Pupils should be taught to:

Derive and recall multiplication facts for the 2, 3, 4, 5, 6 and 10 times-tables and the corresponding division facts; recognise multiples of 2, 5 or 10 up to 1000

Multiply one–digit and two–digit numbers by 10 or 100, and describe the effect.

Use practical and informal written methods to multiply and divide two-digit numbers (e.g. 13×3, 50÷4); round remainders up or down, depending on the context.

Use knowledge of number operations and corresponding inverses, including doubling and halving, to estimate and check calculations .

Understand that division is the inverse of multiplication and vice versa; use this to derive and record related multiplication and division number sentences.

Solve one–step and two–step problems involving numbers, money or measures, including time, choosing and carrying out appropriate calculations.

Represent the information in a puzzle or problem using numbers, images or diagrams; use these to find a solution and present it in context, where appropriate using £.p notation or units of measure.

Multiplication & Division
Year 3 -Objectives from February 2014

Pupils should be taught to:

Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.

Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to efficient written methods.

Solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems in which n objects are connected to m objects.

Multiplication Strategies - Year 3

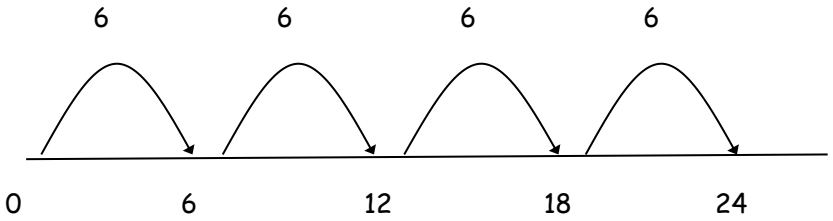
Y3

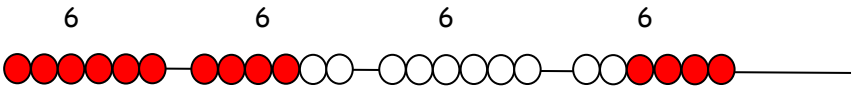
At the beginning of the Yr3 children will continue to use.

Repeated addition

4 times 6 is 6 + 6 + 6 + 6 = 24 or 4 lots of 6 or 6 x 4

Children should use number lines or bead bars to support their understanding.

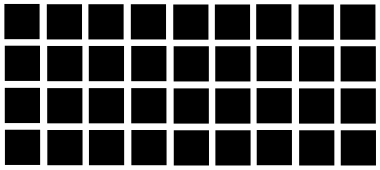




Arrays

Children should be able to model a multiplication calculation using an array. This knowledge will support with the development of the grid method.

9 x 4 = 36



9 x 4 = 36

Children will also develop an understanding of :

Scaling

e.g. Find a ribbon that is 4 times as long as the blue ribbon

5 cm 20 cm

Using symbols to stand for unknown numbers to complete equations using inverse operations.

□ x 5 = 20 3 x r = 18 □ x O = 32

Children are shown that a multiplication sum can be written either way and that it will not affect the answer, e.g. 4x6 is the same as 6x4.

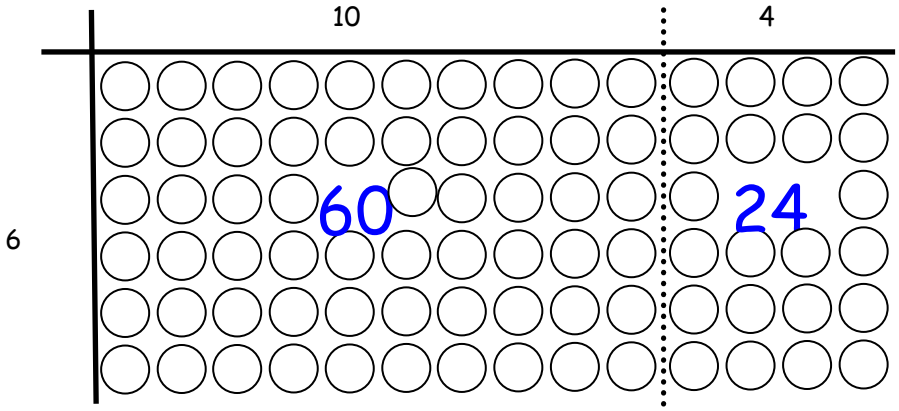
Partitioning

38 x 5 = (30 x 5) + (8 x 5)
= 150 + 40
= 190

Multiplication Strategies - Year 4

Y4

Following on from Yr3, children will continue to use arrays where appropriate leading into the grid method of multiplication. It will help children to visualise the size of the number when learning short multiplication (TUxU).



(6 x 10) + (6 x 4)

60 + 24

84

Grid method

TU x U
(Short multiplication – multiplication by a single digit)

23 x 8

Children will approximate first
23 x 8 is approximately 25 x 8 = 200

(It is very important that children are able to find an estimate, by rounding the tens digit up or down, before they carry out the multiplication. This will give them an benchmark number to check their calculation against.)

x	20	3
8	160	24

160
+ 24
184

Multiplying by 10 and 100

Children are taught to multiply numbers to 1000 by 10 and then 100 (whole-number answers), understanding the effect; relate to scaling up or down

340 = 34x10
3400 = 34x100

2670 = 267x10
26700 = 267x100

It is important to add that children are not taught to just add a 0 when multiplying by 10, or two 0s when multiplying by 100, as this is sometimes not the case. E.g when multiplying a decimal number by 10 or 100. They need to think about how many places to the left the digit moves and how many place holders they need to add.

Multiplication & Division
Year 4 - Current Objectives

Pupils should be taught to:

Derive and recall multiplication facts up to 10 × 10, the corresponding division facts and multiples of numbers to 10 up to the tenth multiple.

Multiply and divide numbers to 1000 by 10 and then 100 (whole-number answers), understanding the effect; relate to scaling up or down

Develop and use written methods to record, support and explain multiplication and division of two-digit numbers by a one-digit number, including division with remainders (e.g. 15 × 9, 98 ÷ 6)

Use a calculator to carry out one-step and two-step calculations involving all four operations; recognise negative numbers in the display, correct mistaken entries and interpret the display correctly in the context of money

Use knowledge of rounding, number operations and inverses to estimate and check calculations

Multiplication & Division
Year 4-Objectives from February 2014

Pupils should be taught to:

Recall multiplication and division facts for multiplication tables up to 12 × 12

Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers

Recognise and use factor pairs and commutativity in mental calculations

Multiply two-digit and three-digit numbers by a one-digit number using formal written layout

solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.

Division Strategies - Year 3

From Year 3 on, children should learn to estimate before calculating any division problems that are not known facts.

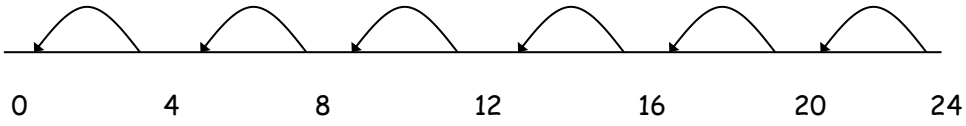
Ensure that the emphasis in Y3 is on grouping rather than sharing.

Children will continue to use:

Repeated subtraction using a number line

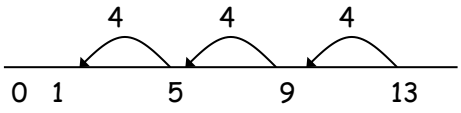
Children will use an empty number line to support their calculation.

24 ÷ 4 = 6



Children should also move onto calculations involving remainders.

13 ÷ 4 = 3 r 1



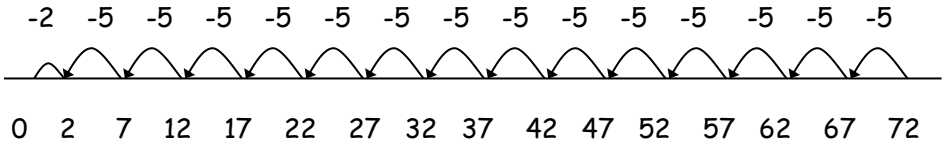
Using symbols to stand for unknown numbers to complete equations using inverse operations

26 ÷ 2 = £ 24 ÷ r = 12 £ ÷ 10 = 8

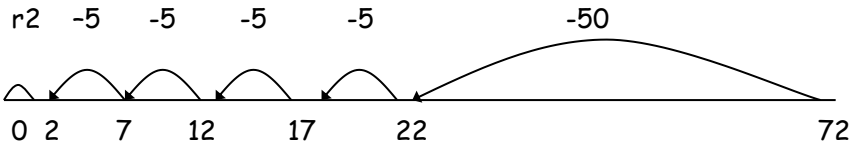
Division Strategies - Year 4

Children will develop their use of repeated subtraction to be able to subtract multiples of the divisor. Initially, these should be multiples of 10s, 5s, 2s and 1s – numbers with which the children are more familiar.

72 ÷ 5



Moving onto:



An alternative approach is to partition the number into two more manageable 'chunks'
Eg 72 ÷ 5

```
   72
 /    \
50    22
```

Then, 50 ÷ 5 = 10
22 ÷ 5 = 4 r 2
14 r 2

Then onto the vertical method:

Short division TU ÷ U (intro to 'chunking')

72 ÷ 3

```
3     72
    - 30      10x
      42
    - 30      10x
      12
    -  6       2x
       6
    -  6       2x
       0

Answer :   24
```

Leading to subtraction of other multiples.

96 ÷ 6

```
      16
6     96
    - 60      10x
      36
    - 36       6x
       0

Answer :   16
```

Children need to be able to decide what to do after division and round up or down accordingly. They should make sensible decisions about rounding up or down after division. For example 62 ÷ 8 is 7 remainder 6, but whether the answer should be rounded up to 8 or rounded down to 7 depends on the context.

e.g. I have 62p. Sweets are 8p each. How many can I buy?
Answer: 7 (the remaining 6p is not enough to buy another sweet)

Apples are packed into boxes of 8. There are 62 apples. How many boxes are needed?
Answer: 8 (the remaining 6 apples still need to be placed into a box)

Any remainders should be shown as integers, i.e. 14 remainder 2 or 14 r 2.

Useful Websites:

For children:

www.mymaths.co.uk

http://nrich.maths.org

www.bbc.co.uk/bitesize/ks2/maths/

www.coolmath-games.com/

Www.mathsisfun.com

http://resources.woodlands-junior.kent.sch.uk/maths/

For parents:

http://www.bbc.co.uk/skillswise/maths

Notes

Q1. Write the missing number.

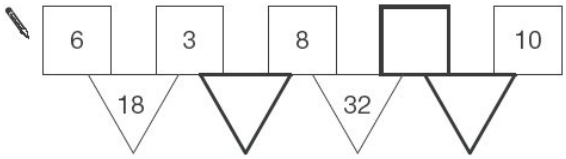
$\square \div 11 = 17$

Q2. Calculate **364 ÷ 7**

Q3. In this diagram the rule is

'to make the number in a triangle, multiply the numbers in the two squares above it'.

Write in the three missing numbers.



Q4. Write the two missing digits in this multiplication.

$\square 9 \times \square 9 = 2001$

Q5. Three single-digit numbers multiply to make 504

Write the missing numbers.

$\square \times \square \times \square = 5$