Division

Year 4

Mental Strategies

Children should experience regular counting on and back from different numbers in multiples of 6, 7, 9, 25 and 1000.

Children should learn the multiplication facts to 12 x 12.

Vocabulary

see years 1-3

divide, divided by, divisible by, divided into

share between, groups of

factor, factor pair, multiple

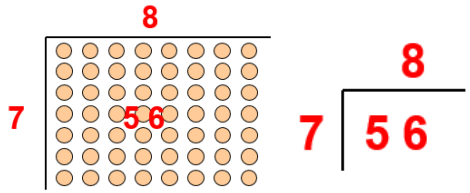
times as (big, long, wide …etc)

equals, remainder, quotient, divisor

inverse

Towards a formal written method

Alongside pictorial representations and the use of models and images, children should progress onto short division using a bus stop method.



$$\begin{array}{r} 8 \\ 7\overline{)\,5\,6} \end{array}$$

Place value counters can be used to support children apply their knowledge of grouping. Reference should be made to the value of each digit in the dividend.

Each digit as a multiple of the divisor

'How many groups of 3 are there in the hundreds column?'

'How many groups of 3 are there in the tens column?'

'How many groups of 3 are there in the units/ones column?'

Year 5

Mental Strategies

Children should count regularly using a range of multiples, and powers of 10, 100 and 1000, building fluency.

Children should practice and apply the multiplication facts to 12 x 12.

Vocabulary

see year 4

common factors

prime number, prime factors

composite numbers

short division

square number

cube number

inverse

power of

Generalisations

The = sign means equality. Take it in turn to change one side of this equation, using multiplication and division, e.g.

Start: **24 = 24**

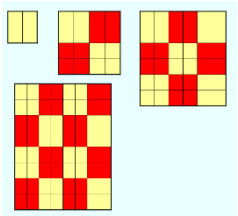
Player 1: **4 x 6 = 24**

Player 2: **4 x 6 = 12 x 2**

Player 1: **48 ÷ 2 = 12 x 2**

Sometimes, always, never true questions about multiples and divisibility. E.g.:

- If the last two digits of a number are divisible by 4, the number will be divisible by 4.
- If the digital root of a number is 9, the number will be divisible by 9.
- When you square an even number the result will be divisible by 4 (one example of 'proof' shown left)



Year 6

Mental Strategies

Children should count regularly, building on previous work in previous years.

Children should practice and apply the multiplication facts to 12 x 12.

Vocabulary

see years 4 and 5

Generalisations

Order of operations: brackets first, then multiplication and division (left to right) before addition and subtraction (left to right). Children could learn an acrostic such as PEMDAS, or could be encouraged to design their own ways of remembering.

Sometimes, always, never true questions about multiples and divisibility. E.g.: If a number is divisible by 3 and 4, it will also be divisible by 12. (also see year 4 and 5, and the hyperlink from the Y5 column)

Using what you know about rules of divisibility, do you think 7919 is a prime number? Explain your answer.

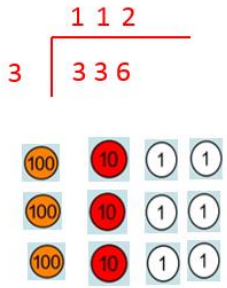
Some Key Questions for Year 4 to 6

What do you notice?

What's the same? What's different?

Can you convince me?

How do you know?

 When children have conceptual understanding and fluency using the bus stop method without remainders, they can then progress onto 'carrying' their remainder across to the next digit. **<u>Generalisations</u>** True or false? Dividing by 10 is the same as dividing by 2 and then dividing by 5. Can you find any more rules like this? Is it sometimes, always or never true that □ ÷ Δ = Δ ÷ □? Inverses and deriving facts. 'Know one, get lots free!' e.g.: 2 x 3 = 6, so 3 x 2 = 6, 6 ÷ 2 = 3, 60 ÷ 20 = 3, 600 ÷ 3 = 200 etc. Sometimes, always, never true questions about multiples and divisibility. <u>(When looking at the examples on this page, remember that they **may not** be 'always true'!)</u> E.g.: • Multiples of 5 end in 0 or 5. • The digital root of a multiple of 3 will be 3, 6 or 9. • The sum of 4 even numbers is divisible by 4.		