Cherry Tree Primary

Mathematics

Times Tables

Geometry
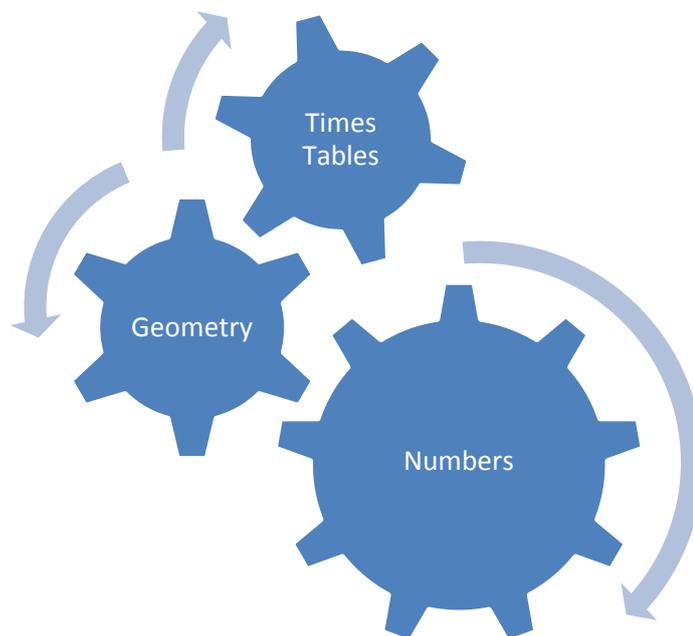
Numbers

Year Six
2015/16

Year 6 National Curriculum Statutory Requirements

Numbers

Number: Place Value

Pupils should be taught to:

- Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit

- Round any whole number to a required degree of accuracy

- Use negative numbers in context, and calculate intervals across zero

- Solve number and practical problems that involve all of the above

Number: Addition, Subtraction, Multiplication and Division

Pupils should be taught to:

- Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication

- Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context

- Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context

- Perform mental calculations, including with mixed operations and large numbers

- Identify common factors, common multiples and prime numbers

- Use their knowledge of the order of operations to carry out calculations involving the four operations

- Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

- Solve problems involving addition, subtraction, multiplication and division

- Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy

Number: Fractions (including decimals and percentages)

Pupils should be taught to:

- Use common factors to simplify fractions; use common multiples to express fractions in the same denomination

- Compare and order fractions, including fractions > 1

- Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions

- Multiply simple pairs of proper fractions, writing the answer in its simplest form
[for example, ¼ x ½ = 1/8]

- Divide proper fractions by whole numbers (for example, 1/3 ÷ 2 = 1/6)

- Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, 3/8]

- Identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places.

- Multiply one-digit numbers with up to two decimal places by whole numbers

- Use written division methods in cases where the answer has up to two decimal places

- Solve problems which require answers to be rounded to specified degrees of accuracy

- Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts

Measurement

Pupils should be taught to:

- Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate

- Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places

- Convert between miles and kilometres

- Recognise that shapes with the same areas can have different perimeters and vice versa

- Recognise when it is possible to use formulae for area and volume of shapes

- Calculate the area of parallelograms and triangles

- Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm3) and cubic metres (m3), and extending to other units [for example, mm3 and km3]

Geometry

Geometry: Properties of Shapes

Pupils should be taught to:

- Draw 2-D shapes using given dimensions and angles

- Recognise, describe and build simple 3-D shapes, including making nets

- Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons

- Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius

- Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles

Geometry: Position and Direction

Pupils should be taught to:

- Describe positions on the full coordinate grid (all four quadrants)

- Draw and translate simple shapes on the coordinate plane, and reflect them in the axes

Statistics (Data Handling)

Pupils should be taught to:

- Interpret and construct pie charts and line graphs and use these to solve problems

- Calculate and interpret the mean as an average

Ratio and Proportion

Pupils should be taught to:

- Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts

- Solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison

- Solve problems involving similar shapes where the scale factor is known or can be found

- Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples

Algebra

Pupils should be taught to:

- Use simple formulae

- Generate and describe linear number sequences

- Express missing number problems algebraically

- Find pairs of numbers that satisfy an equation with two unknowns

- Enumerate possibilities of combinations of two variables

Times Tables

It is now a National Curriculum requirement that times tables up to 12 x 12 are learnt and taught by the time a child reaches the end of year 4. . Much of the knowledge in Year 6 relies on number facts being easily recalled. For example, to find common factors or to make simple conversions, knowledge of multiplication tables is essential. In year 5 and 6 we ask that children practise all the times tables and their related division facts. There are a variety of websites and apps to support the consolidation of times tables. Here are just a few of them:

Websites
http://resources.woodlands-junior.kent.sch.uk/maths/timestable/
http://www.topmarks.co.uk/maths-games/5-7-years/times-tables
http://www.maths-games.org/times-tables-games.html

Apps
Squeeble Times Tables 2
Tap Times Tables
Times Tables Personal Assistant

Fun activities to do at home

Recipes

Find a recipe for 4 people and rewrite it for 8 people, e.g.

4 people   8 people

125g flour   250g flour
50g butter   100g butter
75g sugar   150g sugar
30ml treacle   60ml treacle
1 teaspoon ginger   2 teaspoons ginger

Can you rewrite it for 3 people? Or 5 people?

Favourite food

- Ask your child the cost of a favourite item of food.
  Ask them to work out what 7 of them would cost, or 8, or 9.
  How much change would there be from £50?
- Repeat with his / her least favourite food.
  What is the difference in cost between the two?

Sale of the century
- When you go shopping, or see a shop with a sale on, ask
  your child to work out what some items would cost with:
    - 50% off
    - 25% off
    - 10% off
    - 5% off
- Ask your child to explain how s/he worked it out.

Fours
- Use exactly four 4s each time.
- You can add, subtract, multiply or divide them.
- Can you make each number from 1 to 100?
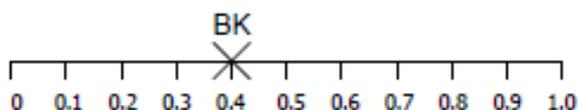- Here are some ways of making the first two numbers.

$$1 = (4 + 4)/(4 + 4)$$
$$2 = 4/4 + 4/4$$

Three in a row

For this game you need a calculator.
Draw a line like this:

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| | | | | | | | | | |
0   0.1   0.2   0.3   0.4   0.5   0.6   0.7   0.8   0.9   1.0

- Take it in turns to choose a fraction, say 2/5. Use the calculator to convert it to a decimal (i.e. $2 \div 5 = 0.4$) and mark your initials at this point on the line.
- The aim of the game is to get 3 crosses in a row without any of the other player's marks in between.
- Some fractions are harder to place than others, e.g. ninths.

Animals
- Take turns to think of an animal.

- Use an alphabet code, A = 1, B = 2, C = 3... up to Z = 26.
- Find the numbers for the first and last letters of your animal, e.g. for a TIGER,   T = 20, and I = 9,
- Multiply the two numbers together, e.g. 20 x 9 = 180.
- The person with the biggest answer scores a point.
- The winner is the first to get 5 points.

When you play again you could think of names, food, countries etc.
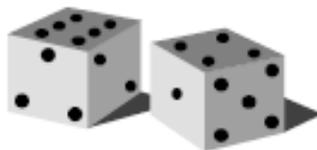
Doubles and trebles
- Roll two dice.
- Multiply the two numbers to get your score.
- Roll one of the dice again. If it is an even number, double your score. If it is an odd number, treble your score.
- Keep a running total of your score.
- The first to get over 301 wins.

Card game

Use a pack of playing cards.
Take out the jacks, queens and kings.

- Take turns.
- Take a card and roll a dice.
- Multiply the two numbers.
- Write down the answer. Keep a running total.
- The first to go over 301 wins!

Remainders

Draw a 6 x 6 grid like this and fill in numbers under 100.

82	33	60	11	73	22
65	12	74	28	93	51
37	94	57	13	66	38
19	67	76	41	75	85
86	29	68	58	20	46
50	69	30	78	59	10

- Choose the 7, 8 or 9 times table.
- Take turns.
- Roll a dice.
- Choose a number on the board, e.g. 59. Divide it by the tables number, e.g. 7. If the remainder for 59 ÷ 7 is the same as the dice number, you can cover the board number with a counter or coin.
- The first to get three of their counters in a straight line wins!

Four in a line

Draw a 6 x 7 grid.
Fill it with numbers under 100.

26	54	47	21	19	5	38
9	25	67	56	31	49	13
39	41	6	1	75	28	90
14	50	81	23	43	4	37
45	29	72	34	7	58	17
36	2	55	11	22	40	42

- Take turns.
- Roll three dice, or roll one dice three times.
- Use all three numbers to make a number on the grid.
- You can add, subtract, multiply or divide the numbers, e.g. if you roll 3, 4 and 5, you could make $3 \times 4 - 5 = 7$, $54 \div 3 = 18$, $(4 + 5) \times 3 = 27$, and so on.
- Cover the number you make with a coin or counter.
- The first to get four of their counters in a straight line wins.