



Year 6

Supporting your child at
home with maths



Mathematics in Year 6

By the end of Year 6, children are expected to be confident with the use of all four standard methods for written calculations, and to have secured their knowledge of the key number facts for the four operations. Their work will focus more on fractions, ratio, proportion and the introduction of algebra.

In May of Year 6, children will take an arithmetic test of thirty minutes, and two broader mathematics tests of forty minutes each. These will be sent away for marking, with the results coming back before the end of the year. Your child's teacher will also make an assessment of whether or not your child has reached the expected standard by the end of the Key Stage.

Number and Place Value

- Work with numbers to up ten million (10,000,000) including negative numbers
- Round any number to any required number of digits or magnitude

Calculations

- Use the standard method of long multiplication for calculations of four-digit numbers by two-digit numbers
- Use the standard method of long division for calculations of four-digit numbers by two-digit numbers
- Identify common factors, common multiples and prime numbers
- Carry out complex calculations according to the mathematical order of operations
- Solve complex problems using all four operations

The mathematical order of operations requires that where calculations are written out in long statements, first calculations in brackets are completed, then any multiplication or division calculations, and finally any addition or subtraction. So, for example, the calculation $4 + 3 \times (6 + 1)$ has a solution of 25, not 43 or 49.

Fractions and Decimals

- Use common factors to simplify fractions, or to add fractions with different denominators
- Place any group of fractions into size order
- Multiply pairs of fractions together
- Divide fractions by whole numbers, for example $\frac{1}{3} \div 2 = \frac{1}{6}$
- Use division to calculate the decimal equivalent of a fraction
- Know and use common equivalences between fractions, decimals and percentages, such as $\frac{1}{2} = 0.5 = 50\%$

Ratio and Proportion

- Find percentages of quantities, such as 15% of £360
- Use ratio to explain relationships and solve problems
- Use simple scale factors for drawings, shapes or diagrams

Ratio is represented using the colon symbol. For example, if £100 is shared in a ratio of 1:3 between two people, then the first person receives £25 (one part), with the other receiving £75 (three parts).

Algebra

- Use simple formulae
- Describe sequences of numbers where the increase between values is the same each time
- Solve missing number problems using algebra
- Find possible solutions to problems with two variables, such as $a + b = 10$

Measurements

- Convert between any metric units and smaller or larger units of the same measure
- Convert between miles and kilometres
- Use a given formula to find the area of a triangle or parallelogram

Shape and Position

- Draw 2-d shapes using given sizes and angles
- Use knowledge of 2-d shapes to find missing angles in triangles, quadrilaterals and other regular shapes
- Name and label the radius, diameter and circumference of a circle
- Find missing angles in problems where lines meet at a point or on a straight line
- Use a standard grid of coordinates including negative values

Graphs and Data

- Construct and understand pie charts and line graphs
- Calculate the mean average of a set of data

Mean average is calculated by adding up all the values and dividing by the number of items. For example, the mean average of 3, 5, 8, 9 and 10 is 7 ($3 + 5 + 8 + 9 + 10 = 35$, then $35 \div 5 = 7$)

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.

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

$$2 = 4/4 + 4/4$$

£1,000,000

One million pounds

Assume you have £1 000 000 to spend or give away.

Plan with your child what to do with it, down to the last penny.

Journeys

Use the chart in the front of a road atlas that tells you the distance between places.

- ◆ Find the nearest place to you.
- ◆ Ask your child to work out how long it would take to travel from this place to some other places in England if you travelled at an average of 60 miles per hour, i.e. 1 mile per minute, e.g.

York to Preston: 90 miles 1 hour 30 minutes

York to Dover: 280 miles 4 hours 40 minutes

Encourage your child to count in 60s to work out the answers mentally. Extend this by asking questions like "What if you travelled at 30 mph? What if we started at London?"



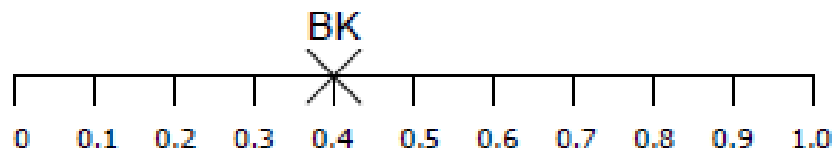
Doubles and trebles

- ◆ 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.

Three in a row

For this game you need a calculator.

Draw a line like this:



- ◆ Take it in turns to choose a fraction, say $\frac{2}{5}$. 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. $20 \times 9 = 180$.
- ◆ 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.



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 $59 \div 7$ 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!

Recipes

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

4 people

125g flour

50g butter

75g sugar

30ml treacle

1 teaspoon ginger

8 people

250g flour

100g butter

150g sugar

60ml treacle

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.

TV addicts

Ask your child to keep a record of how long he / she watches TV each day for a week. Then ask him / her to do the following:-

- ◆ Work out the total watching time for the week.
- ◆ Work out the average watching time for a day (that is, the total time divided by 7).

Instead of watching TV, you could ask them to keep a record of time spent eating meals, or playing outdoors, or anything else they do each day. Then work out the daily average.

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.

Rhymes

Make up rhymes together to help your child to remember the harder times-tables facts, e.g.

$6 \times 7 = 42$ phew! $7 \times 7 = 49$ fine! $6 \times 8 = 48$ great!