

Maths Targets for pupils in Year 6



A booklet for parents

Help your child with mathematics

**For additional information on the agreed calculation methods,
please see the school website.**

About the targets

These targets illustrate what **most** children will have been taught by the **end** of Year 6. However, some children may need consolidation of earlier objectives, therefore greater focus will be given to these. Some children will have exceeded these targets, and will be working to more challenging objectives.

THE TARGETS

Number - number and place value

- 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 0
- solve number and practical problems that involve all of the above

Number - addition, subtraction, multiplication and division

- 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 4 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)

- 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, $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$]
- divide proper fractions by whole numbers [for example, $\frac{1}{3} \div 2 = \frac{1}{6}$]
- associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $\frac{3}{8}$]

- identify the value of each digit in numbers given to 3 decimal places and multiply and divide numbers by 10, 100 and 1,000 giving answers up to 3 decimal places
- multiply one-digit numbers with up to 2 decimal places by whole numbers
- use written division methods in cases where the answer has up to 2 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

Ratio and proportion

- solve problems involving the relative sizes of 2 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

- use simple formulae
- generate and describe linear number sequences e.g. $3x = 15$. $x = ?$
- express missing number problems algebraically
- find pairs of numbers that satisfy an equation with 2 unknowns
- enumerate possibilities of combinations of 2 variables

Measurement

- solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 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 3 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 (cm^3) and cubic metres (m^3), and extending to other units [for example, mm^3 and km^3]

Geometry - properties of shapes

- 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

- describe positions on the full coordinate grid (all 4 quadrants)
- draw and translate simple shapes on the coordinate plane, and reflect them in the axes

Statistics

- interpret and construct pie charts and line graphs and use these to solve problems
- calculate and interpret the mean as an average

Parents play a vital role in children’s mathematical development. Many key mathematical skills can be supported at home through everyday activities such as:

- Telling the time
- Weighing for cooking
- Measuring for craft and DIY
- Using money and playing board games.

Many of these skills are the “real-life” maths that we use every day, and are more effectively learned in the setting in which we use them.

Fun activities to do at home

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.

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



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!
- ◆ Add the 2 numbers together
- ◆ Subtract the smallest number from the biggest

Remainders

Draw a 6x6 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

8 people

125g flour

250g flour

50g butter

100g butter

75g sugar

150g sugar

30ml treacle

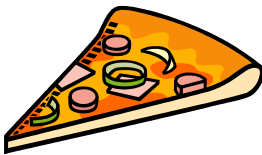
60ml treacle

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?

Food Offers

Ask which would be cheaper, 2 pizzas for £20 or 50% off the total order?

Is it cheaper to buy 1 large or 2 small?

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.

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.

Using timetables

What time does the next train arrive?

How long does the journey take?

What time does the last train of the day leave?