

Developing Critical Thinkers and Young Problem Solvers at Acresfield

Year 6

Our Approach to Maths

This booklet is designed to give parents an overview of expectations in Year 6 linked to the maths curriculum.

It outlines the following:

- ✓ Curriculum expectations in number for children in Year 6
 - ✓ Approaches to learning used by staff at Acresfield
 - ✓ Ways you can support your child at home

-In Year 6, children become fluent in the order and place value of numbers up to 10 000 000 and can confidently round any number up to 1 000 000, to the nearest 10, 100, 1000, 10 000, 100 000 and 1 000 000

-They will continue to read roman numerals to 1000

- They will build on formal written methods for addition and subtraction that were consolidated in year 5 working with increasingly big numbers and decimals

- They will use the formal written methods of long multiplication and long division multiplying and dividing a 4 digit number whole number by a 2 digit whole number building on all that they did in year 5

-perform mental calculations including with mixed operations working with increasingly large numbers

-use and understand the terms: common factors, common multiples and prime numbers

- They will confidently simplify, compare and order fractions.

- Children will confidently add, subtract, multiply and divide fractions and associate a fraction with division to calculate decimal fraction equivalents.



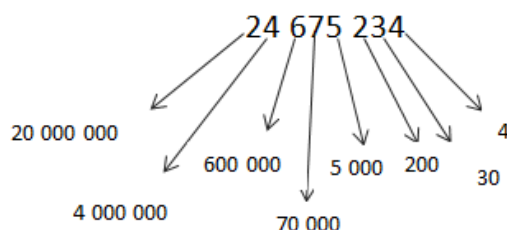
At Acresfield, we continue to develop the children's confidence with their mental strategies and also with their formal written methods. The children in year 6 build on the work that they did in year 5 and perform mental calculations with mixed operations at speed. They will become increasingly confident with using their formal written methods for addition and subtraction and will progress further on to the formal written methods for Long multiplication and division. Children in year 6 are able to calculate mentally with increasingly large numbers and identify the most efficient way to reach an answer. Children will continue to convert between fractions, decimals and percentages and use this knowledge to solve a range of problems.

General Number and Place Value

[What the national curriculum expects children to be able to do in Year 6]

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

How might this look?



- ✓ round any whole number to a required degree of accuracy
- ✓ use negative numbers in context, and calculate intervals across zero
- ✓ Solve number problems and practical problems that involve all of the above
- ✓ Read Roman numerals to 1000 [M] and recognise years written in Roman numerals

Addition and Subtraction

- ✓ Add and subtract increasingly large whole numbers with more than 4 digits, including decimals using the formal written methods [column addition and subtraction]

How might this look?

789 + 642 becomes

$$\begin{array}{r} 789 \\ + 642 \\ \hline 1431 \\ \hline 11 \end{array}$$

Answer: 1431

932 - 457 becomes

$$\begin{array}{r} 11 \\ 932 \\ - 457 \\ \hline 475 \end{array}$$

Answer: 475

$$\begin{array}{r} 23.361 \\ 9.080 \\ 59.770 \\ + 1.300 \\ \hline 93.511 \\ \hline 212 \end{array}$$

- ✓ Perform mental calculations, including with mixed operations and large numbers
- ✓ use their knowledge of the order of operations to carry out calculations involving the four operations

How might this look?



$$120 - 15 \times 5 =$$

$$20 - 4 \times 2 =$$

- ✓ Use rounding to estimate answers to calculations and determine, in the context of a problem, levels of accuracy
- ✓ Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

How might this look?

Two numbers have a difference of 1.583. One of the numbers is 4.728. What is the other? Is this the only answer?

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

What does this look like?

Long multiplication

24×16 becomes

$$\begin{array}{r} 2 4 \\ \times 1 6 \\ \hline 2 4 0 \\ 1 4 4 \\ \hline 3 8 4 \end{array}$$

Answer: 384

124×26 becomes

$$\begin{array}{r} 1 2 4 \\ \times 2 6 \\ \hline 2 4 8 0 \\ 7 4 4 \\ \hline 3 2 2 4 \\ \hline 1 1 1 1 \end{array}$$

Answer: 3224

124×26 becomes

$$\begin{array}{r} 1 2 4 \\ \times 2 6 \\ \hline 7 4 4 \\ 2 4 8 0 \\ \hline 3 2 2 4 \\ \hline 1 1 1 1 \end{array}$$

Answer: 3224

- ✓ 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

What does this look like?

Long division

$432 \div 15$ becomes

$$\begin{array}{r} 2 8 r 12 \\ 1 5 \overline{) 4 3 2} \\ \underline{3 0 } \\ 1 3 2 \\ \underline{1 2 0} \\ 1 2 \end{array}$$

Answer: 28 remainder 12

$432 \div 15$ becomes

$$\begin{array}{r} 2 8 \\ 1 5 \overline{) 4 3 2} \\ \underline{3 0 } \\ 1 3 2 \\ \underline{1 2 0} \\ 1 2 \end{array} \begin{array}{l} 15 \times 20 \\ 15 \times 8 \end{array}$$

$$\frac{12}{15} = \frac{4}{5}$$

Answer: $28 \frac{4}{5}$

- ✓ identify common factors, common multiples and prime numbers

What does this look like?

A factor is a number that you can multiply by another number to make a number. The factors of 20 are: (1 and 20) (4 and 5) (2 and 10) Common factors are factors that are shared with another number. For example 2 is a common factor as it is a factor of 20, 6 and 12.

A multiple is a number that is in a times table so 12 is a multiple of 6. A multiple of 8 could be 64. Common multiples are where they appear in more than one times table for example 8 is a common multiple as it appears in the 2 and the 4 times table.

A prime number is a number that can only be divided by one and itself e.g 13, 17, 19

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

What does this look like?

the original fractions: $\frac{1}{3} + \frac{1}{2}$
 with a common denominator: $\frac{2}{6} + \frac{3}{6}$
 result: $\frac{5}{6}$

$2\frac{4}{6} + 1\frac{5}{6}$
 $3\frac{9}{6}$
 $3 + 1\frac{3}{6} = 4\frac{3}{6}$

Thought bubble: $\frac{9}{6} = 1\frac{3}{6}$

- ✓ 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, $\frac{1}{3} \div 2 = \frac{1}{6}$]

What does this look like?

$$\frac{9}{17} \div 3$$

$$\frac{9}{17} \div 3 = \frac{9}{17} \div \frac{3}{1} = \frac{9}{17} \times \frac{1}{3} = \frac{9 \times 1}{17 \times 3}$$

$$= \frac{9}{51} = \frac{9 \div 3}{51 \div 3} = \frac{3}{17}$$

- ✓ 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 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.

What does this look like?

432 ÷ 15 becomes

$$\begin{array}{r}
 28.8 \\
 15 \overline{) 432.0} \\
 \underline{30} \\
 132 \\
 \underline{120} \\
 120 \\
 \underline{120} \\
 0
 \end{array}$$

Answer: 28.8

- ✓ 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 two quantities where missing values can be found by using integer multiplication and division facts

What does this look like?

- ▶ Here is a recipe for pasta sauce.

Pasta sauce

300 g tomatoes

120 g onions

75 g mushrooms

Sam makes the pasta sauce using 900 g of tomatoes. What weight of onions should he use? What weight of mushrooms?

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

What does this look like?

- ▶ A class contains 12 boys and 18 girls. What percentage of the class are girls? What percentage are boys?
 - ▶ 25% of the apples in a basket are red. The rest are green. There are 21 red apples. How many green apples are there?
- ✓ solve problems involving similar shapes where the scale factor is known or can be found

What does this look like?

Two rulers cost 80 pence. How much do three rulers cost?

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

What does this look like?

What is two thirds of 66?

What is three quarters of 500?

How Parents Can Help at Home

- ✓ Build maths into everyday life
- ✓ Support the methods used in school
- ✓ Use objects to help your child to see the number
 - ✓ Shape and measures work

In Year 6, the breadth and range of expectations of where children should be in their maths learning, mean that they must begin the year with a firm foundation and feel secure in their basic maths skills.

The children will generally have a piece of homework each week. These activities set are designed to reinforce learning in the classroom.

During the year, parents can offer support to their child by ensuring those basic number skills are in place by reinforcing the work being done in school, at home. For example quick recall of multiplication tables up to 12×12 ; confidence with written methods for the four number operations; an understanding of fractions, decimals, percentages and their relationship and an understanding of place value with larger numbers up to 10,000 000.

The children will also be building on their **measures** work from the previous year. They will need to solve problems involving calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate. Children will also convert between miles and kilometres.

They will need to use formulae to **calculate area and volume** of different shapes. They will also calculate the area of parallelograms and triangles.

In **time**, children will convert between all different units of time and use this knowledge to solve a range of problems. As part of the curriculum, the children will also be looking at **properties of shape**, measuring and calculating missing angles. They will explore **position and direction** focusing on translation of shapes on a coordinate plane and will read and interpret **statistics** shown on pie charts and line graphs. Children will also calculate the mean as an average.

