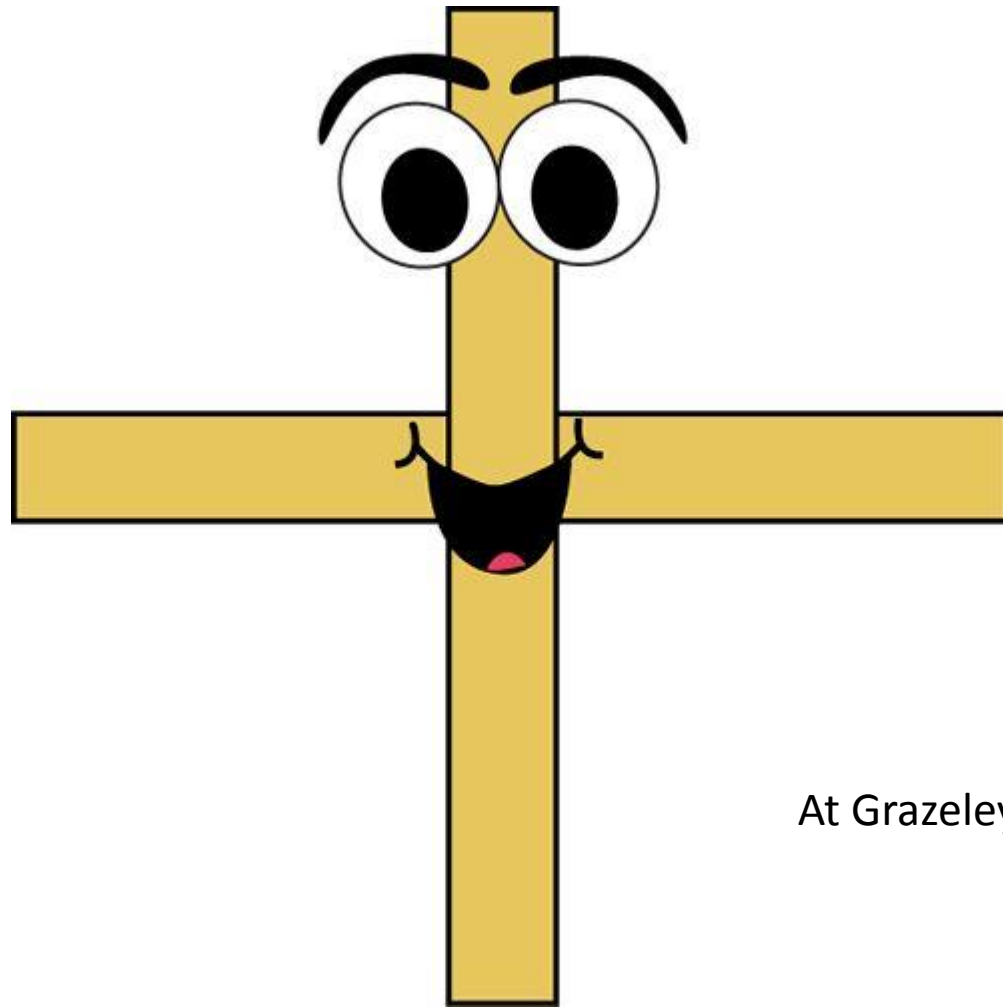


# Arithmetic: Yearly expectations and vocabulary for each operation



Addition

At Grazeley Parochial Primary School

# Year 1 Addition Objectives

- Use the maths symbols + and = in a number sentence.
- Know number bond facts to 20
- Add numbers up to 20
- Solve some missing number problems  
(e.g.  $7 = ? + 2$ )

# Year 2 Addition Objectives

- Use number facts to 20 and other number facts up to 100.
- Add numbers such as  $52 + 5$  using objects or pictures to help.
- Add two-digit numbers using objects to help me.
- Add three numbers such as  $2 + 5 + 9$ .
- know that adding two numbers together can be done in any order
- Check my answers or solve missing number problems by doing an inverse check.

# Key Vocabulary

## Year 1

- add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, hundred square, number line

## Year 2

- add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, units, partition, addition, column, tens boundary

# Year 3 Addition Objectives

- Add numbers mentally, including three-digit number and ones.
- Add numbers mentally, including three-digit number and tens.
- Add numbers mentally, including three-digit number and hundreds.
- Add numbers with up to three digits, using formal written methods of columnar addition.
- Estimate the answer to a calculation and use inverse operations to check answers.
- Solve problems, including missing number problems, using number facts, place value, and more complex addition.

# Year 4 Addition Objectives

- Add numbers with up to 4 digits using the formal written methods of columnar addition where appropriate.
- Estimate and use inverse operations to check answers to a calculation.
- Solve addition two-step problems in contexts, deciding which operations and methods to use and why.

# Key Vocabulary

## Year 3

- add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, units, partition, plus, addition, column, tens boundary, hundreds boundary, increase, vertical, 'carry', expanded, compact

## Year 4

- add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, units, partition, plus, addition, column, tens boundary, hundreds boundary, increase, vertical, 'carry', expanded, compact, thousands, hundreds, digits, inverse

# Year 5 Addition Objectives

- Add whole numbers with more than 4 digits, including using formal written methods (columnar addition).
- Add numbers mentally with increasingly large numbers.
- Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.
- Solve addition multi-step problems in contexts, deciding which operations and methods to use and why.



# Year 6 Addition Objectives

- Same as year 5 but with decimals and more complex numbers.

# Key Vocabulary

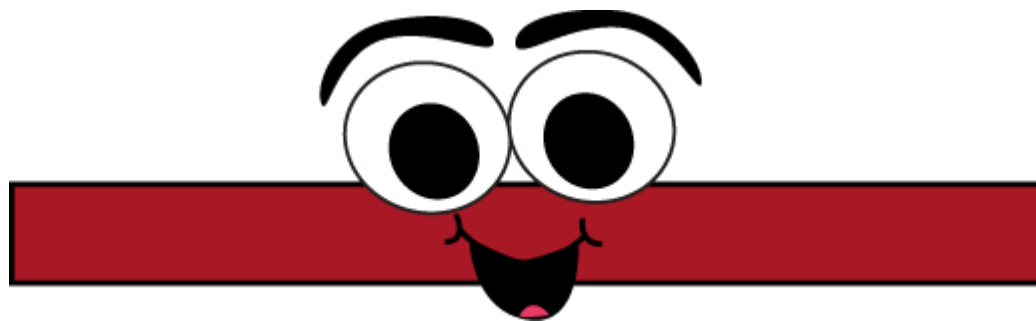
## Year 5

- add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, units, partition, plus, addition, column, tens boundary, hundreds boundary, increase, 'carry', expanded, compact, vertical, thousands, hundreds, digits, inverse & decimal places, decimal point, tenths, hundredths, thousandths

## Year 6

- add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, units, partition, plus, addition, column, tens boundary, hundreds boundary, increase, expanded, compact, vertical, thousands, hundreds, digits, inverse, decimal places, decimal point, tenths, hundredths, thousandths

# Subtraction



# Year 1 Subtraction Objectives

- Use the maths symbols - and = in a number sentence.
- Know my number bond facts to 20 - such as  $5 = 6 - 1$ .
- Subtract numbers up to 20 - such as  $12 - 8$ .
- Solve some number problems such as  $7 = ? - 9$ .

# Year 2 Subtraction Objectives

- Answer and subtraction maths problems using objects or pictures to help me work it out.
- Solve and subtraction problems and work out how I answer it on paper or show you how I did it in my head by explaining step by step.
- Answer problems with subtraction using my number facts to 20 and other number facts up to 100.
- Subtract numbers such as  $34 - 8$  using objects or pictures to help.
- Subtract two-digit numbers using objects to help me e.g.  $42 - 22$ .
- Subtract three numbers such as  $9 - 5 - 2$ .
- know that subtracting numbers can only be done in one order.
- I can check my answers or solve missing number problems by doing an inverse check.

# Key Vocabulary

## Year 1

- equal to, take, take away, less, minus, subtract, leaves, difference between, how many more, how many fewer / less than, most, least, count back , how many left, how much less

## Year 2

- equal to, take, take away, less, minus, subtract, leaves, difference between, how many more, how many fewer / less than, most, least, count back , how many left, how much less, difference, count on, strategy, partition, tens, units

# Year 3 Subtraction Objectives

- Subtract numbers mentally, including three-digit number and ones.
- Subtract numbers mentally, including three-digit number and tens.
- Subtract numbers mentally, including three-digit number and hundreds.
- Subtract numbers with up to three digits, using formal written methods of columnar subtraction.
- Estimate the answer to a calculation and use inverse operations to check answers.
- Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.

# Year 4 Subtraction Objectives

- Subtract numbers with up to 4 digits using the formal written methods of columnar subtraction where appropriate.
- Estimate and use inverse operations to check answers to a calculation.
- [KEY] Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.



# Key Vocabulary

## Year 3

- equal to, take, take away, less, minus, subtract, leaves, distance between, how many more, how many fewer / less than, most, least, count back , how many left, how much less is, difference, count on, strategy, partition, tens, units exchange, decrease, hundreds, value, digit

## Year 4

- equal to, take, take away, less, minus, subtract, leaves, distance between, how many more, how many fewer / less than, most, least, count back, how many left, how much less is, difference, count on, strategy, partition, tens, units exchange, decrease, hundreds, value, digit, inverse

# Year 5 Subtraction Objectives

- Subtract whole numbers with more than 4 digits, including using formal written methods (columnar subtraction).
- Subtract numbers mentally with increasingly large numbers.
- Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.
- Solve subtraction multi-step problems in contexts, deciding which operations and methods to use and why.

# Year 6 Subtraction Objectives

- Same as Year 5 but with decimals and more complex numbers

# Key Vocabulary

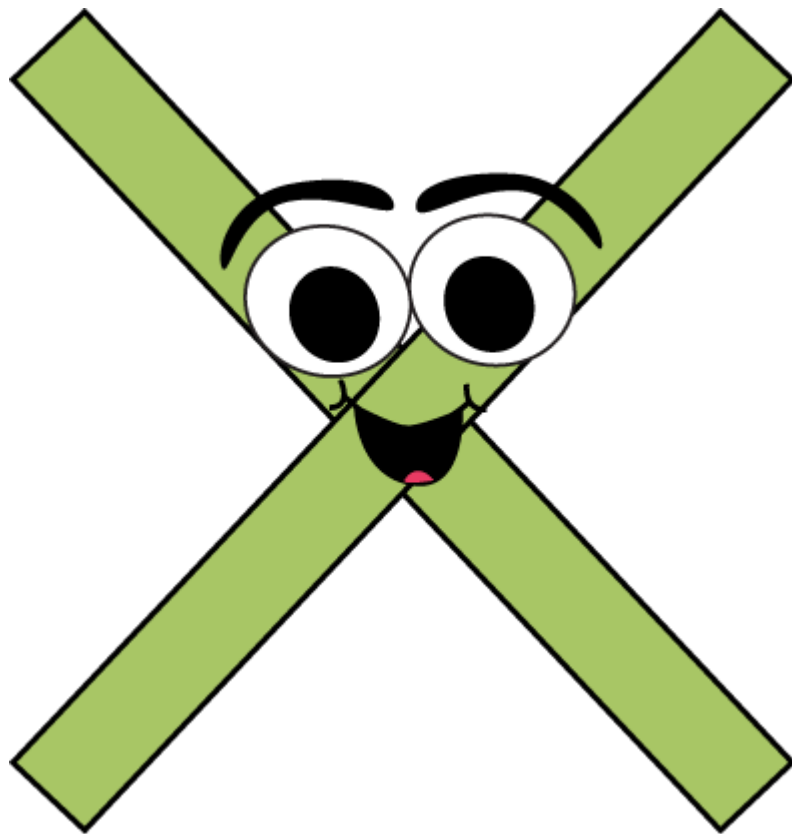
## Year 5

- equal to, take, take away, less, minus, subtract, leaves, distance between, how many more, how many fewer / less than, most, least, count back , how many left, how much less is, difference, count on, strategy, partition, tens, units, exchange, decrease, hundreds, value, digit, inverse, tenths, hundredths, decimal point, decimal

## Year 6

- equal to, take, take away, less, minus, subtract, leaves, distance between, how many more, how many fewer / less than, most, least, count back , how many left, how much less is, difference, count on, strategy, partition, tens, units exchange, decrease, hundreds, value, digit, inverse, tenths, hundredths, decimal point, decimal

# Multiplication



# Year 1 Multiplication Objectives

- I know my 2 and 5 and 10 times tables by heart and can tell whether a number is odd or even.
- I use multiplication ( $\times$ ) and equals (=) signs when writing out my times tables.
- I know that the multiplication of two numbers can be done in any order
- I can solve multiplication problems using times table facts and objects or pictures to help me.

# Year 2 Multiplication Objectives

- I know my 3, 4 and 8 times tables.
- I can answer multiplication questions such as  $16 \times 5$ .
- I can solve more complex problems and missing number questions involving multiplication.

# Key Vocabulary

## Year 1

- groups of, lots of, times, array, altogether, multiply, count

## Year 2

- groups of, lots of, times, array, altogether, multiply, count, multiplied by, repeated addition, column, row, commutative, sets of, equal groups, times as big as, once, twice, three times...



# Year 3 Multiplication Objectives

- Recall and use multiplication facts for the 3, 4 and 8 multiplication tables.
- Write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods.
- Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which  $n$  objects are connected to  $m$  objects.

# Year 4 Multiplication Objectives

- Recall multiplication and division facts for multiplication tables up to  $12 \times 12$ .
- Use place value, known and derived facts to multiply mentally, including: multiplying by 0 and 1.
- Use place value, known and derived facts to multiply mentally, including: multiplying together three numbers.
- Multiply two-digit and three-digit numbers by a one-digit number using formal written layout.

# Key Vocabulary

## Year 3

- groups of, lots of, times, array, altogether, multiply, count, multiplied by, repeated addition, column, row, commutative, sets of, equal groups, times, times as big as, once, twice, three times..., partition, grid method, multiple, product, tens, units, value

## Year 4

- groups of, lots of, times, array, altogether, multiply, count, multiplied by, repeated addition, array, column, row, commutative, groups of, sets of, lots of, equal groups, times, multiply, times as big as, once, twice, three times... partition, grid method, total, multiple, product, sets of, inverse

# Year 5 Multiplication Objectives

- Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers.
- Multiply numbers mentally drawing upon known facts.
- Multiply whole numbers and those involving decimals by 10, 100 and 1000.
- Solve problems involving multiplication including using their knowledge of factors and multiples, squares and cubes.
- Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.

# Year 6 Multiplication Objectives

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

# Key Vocabulary

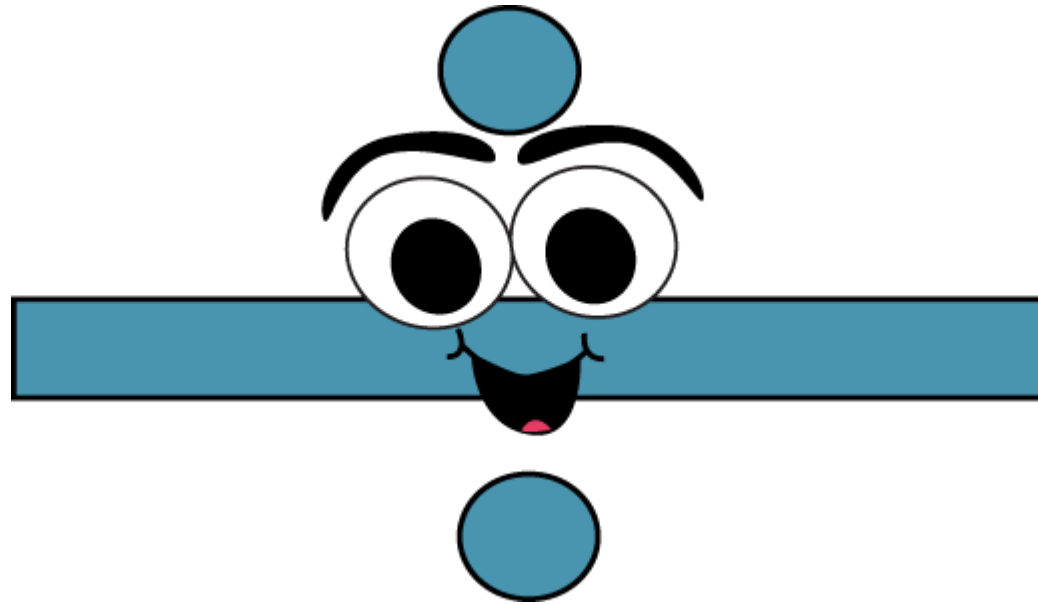
## Year 5

- groups of, lots of, times, array, altogether, multiply, count, multiplied by, repeated addition, column, row, commutative, sets of, equal groups, times as big as, once, twice, three times..., partition, grid method, total, multiple, product, inverse, square, factor, integer, decimal, short/long multiplication, 'carry'

## Year 6

- groups of, lots of, times, array, altogether, multiply, count, multiplied by, repeated addition, array, column, row, commutative, sets of, equal groups, times as big as, once, twice, three times... partition, grid method, total, multiple, product, inverse, square, factor, integer, decimal, short/ long multiplication, 'carry', tenths, hundredths, decimal

# Division



# Year 1 Division Objectives

- I know my 2 and 5 and 10 times tables by heart and can tell whether a number is odd or even.
- I use multiplication division ( $\div$ ) and equals (=) signs when writing out my times tables.
- I know that the division of numbers can only be done in one order.
- I can solve division problems using times table facts and objects or pictures to help me.



# Year 2 Division Objectives

- I know my 3, 4 and 8 times tables.
- I can answer division questions such as 45 divided by 9.
- I can solve more complex problems and missing number questions involving division.

# Key Vocabulary

## Year 1

- share, share equally, one each, two each..., group, groups of, lots of, array

## Year 2

- share, share equally, one each, two each..., group, equal groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over

# Year 3 Division Objectives

- Recall and use division facts for the 3, 4 and 8 multiplication tables.
- Write and calculate mathematical statements for division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods.
- Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which  $n$  objects are connected to  $m$  objects.

# Year 4 Division Objectives

- Recall and division facts for multiplication tables up to  $12 \times 12$ .
- Use place value, known and derived facts to multiply and divide mentally, including: Dividing by 1.
- Divide two-digit and three-digit numbers by a one-digit number using formal written layout.
- Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as  $n$  objects are connected to  $m$  objects.

# Key Vocabulary

## Year 3

- share, share equally, one each, two each..., group, equal groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over, inverse, short division, 'carry', remainder, multiple

## Year 4

- share, share equally, one each, two each..., group, equal groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over, inverse, short division, "carry", remainder, multiple, divisible by, factor

# Year 5 Division Objectives

- Divide numbers mentally drawing upon known facts.
- Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context.
- Divide whole numbers and those involving decimals by 10, 100 and 1000.
- Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes.
- Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.

# Year 6 Division Objectives

- 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.
- Use their knowledge of the order of operations to carry out calculations involving the four operations.
- Solve problems involving addition, subtraction, multiplication and division.

# Key Vocabulary

## Year 5

- share, share equally, one each, two each..., group, equal groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over, inverse, short division, "carry", remainder, multiple, divisible by, factor, inverse, quotient, prime number, prime factors, composite number (non-prime)

## Year 6

- share, share equally, one each, two each..., group, equal groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over, inverse, short division, "carry", remainder, multiple, divisible by, factor, inverse, quotient, prime number, prime factors, composite number (non-prime) and common factor