

# St. Michael's CE Junior School



## Maths Year 5



# Year 4 National Curriculum Objectives

## Objectives

- Identify lines of symmetry in 2-D shapes presented in different orientations
- Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.
- Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate
- Multiplication and division facts for multiplication tables up to  $12 \times 12$
- Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers
- Recognise and use factor pairs and commutativity in mental calculations
- Multiply two-digit and three-digit numbers by a one-digit number using formal written layout
- 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.
- Count up and down in hundredths
- Recognise and write decimal equivalents of any number of tenths or hundredths
- Recognise and write decimal equivalents to  $\frac{1}{4}$ ;  $\frac{1}{2}$ ;  $\frac{3}{4}$
- Identifying the value of the digits in the answer as ones, tenths and hundredths
- Compare numbers with the same number of decimal places up to two decimal places
- Solve simple measure and money problems involving fractions and decimals to two decimal places.
- Estimate, compare and calculate different measures, including money in pounds and pence
- Statistics: interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs
- Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes
- Identify acute and obtuse angles and compare and order angles up to two right angles by size
- Plot specified points and draw sides to complete a given polygon
- Describe positions on a 2-D grid as coordinates in the first quadrant
- Describe movements between positions as translations of a given unit to the left/right and up/ down

# Year 5 National Curriculum Objectives

## Addition and Subtraction

### Objectives

- Add and subtract whole numbers with more than 4 digits, including using formal written methods. (Columnar addition and subtraction)
- Add and 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 addition and subtraction multi-step problems in context, deciding which operations and methods to use and why.

\* Pupils practise using the formal written methods of columnar addition and subtraction with increasingly large numbers to aid fluency.

\* They practise mental calculations with increasingly large numbers to aid fluency (for example,  $12\,462 - 2300 = 10\,162$ ).

## Multiplication and Division

### Objectives

- Identify multiples & factors, including finding all factor pairs of a number, and common factors of two numbers
- Know & use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.
- Establish whether a number up to 100 is prime and recall prime numbers up to 19
- 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 & 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
- Multiply & divide whole numbers and those involving decimals by 10, 100 and 1000
- Recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)
- Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares & cubes
- Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign
- Solve problems including multiplication and division, including scaling by simple fractions and problems involving simple rates.

\* Pupils practise and extend their use of the formal written methods of short multiplication and short division. They apply all the multiplication tables and related division facts frequently, commit them to memory and use them confidently to make larger calculations.

\* They use and understand the terms factor, multiple and prime, square and cube numbers.

\* Pupils interpret non-integer answers to division by expressing results in different ways according to the context, including with remainders, as fractions, as decimals or by rounding (for example,  $98 \div 4 = 24 \text{ r } 2 = 24 = 24.5 \approx 25$ ).

\* Pupils use multiplication and division as inverses to support the introduction of ratio in year 6, for example, by multiplying and dividing by powers of 10 in scale drawings or by multiplying and dividing by powers of a 1000 in converting between units such as kilometres and metres.

\* Distributivity can be expressed as  $a(b + c) = ab + ac$ .

\* They understand the terms factor, multiple and prime, square and cube numbers and use them to construct equivalence statements (for example,  $4 \times 35 = 2 \times 2 \times 35$ ;  $3 \times 270 = 3 \times 3 \times 9 \times 10 = 9^2 \times 10$ ).

\* Pupils use and explain the equals sign to indicate equivalence, including in missing number problems (for example,  $13 + 24 = 12 + 25$ ;  $33 = 5 \times ?$ ).

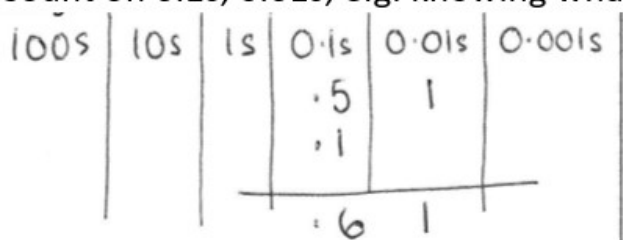
For further information please see our calculation policy on the school website

## These are some of the mental strategies your child will be expected to learn in Maths by the end of Year 5

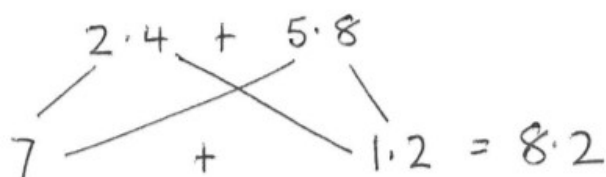
### Year 5 ADDITION

#### Using place value

Count on 0.1s, 0.01s, e.g. knowing what 0.1 more than 0.51 is



Partitioning e.g.  $2.4 + 5.8$



#### Counting on

Add two decimal numbers by adding the ones then the tenths/hundredths, e.g.  $5.72 + 3.05$  as  $5.72$  add  $3$  ( $8.72$ ) then add  $0.05$  ( $8.77$ )

Add near multiples of 1, e.g.  $6.34 + 0.99$  or  $5.63 + 0.9$

Count on from large numbers, e.g.  $6834 + 3005$  as  $9834 + 5$

#### Using number facts

Number bonds to 1 and the next whole number, e.g.  $0.4 + 0.6$  or  $5.7 + 0.3$

Add to the next ten from a decimal number, e.g.  $7.8 + 2.2 = 10$

### Year 5 SUBTRACTION

#### Count back to take away

Use place value to subtract decimals, e.g.  $4.58 - 0.08$  or  $6.26 - 0.2$  etc.

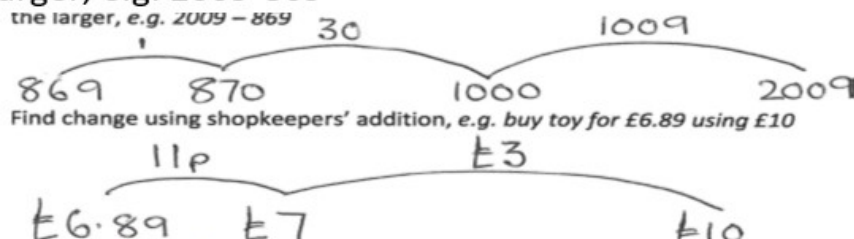
Take away multiples of powers of 10 e.g.  $15\ 672 - 300$  or  $2.71 - 0.5$  or  $4.68 - 0.02$

Count back

Subtract near multiples of 1, 10, 100 and 1000 e.g.  $86\ 456 - 9999$  or  $3.58 - 1.9$

#### Count on to find the difference

Find the difference between two numbers by counting up from the smaller to the larger, e.g.  $2009 - 869$



#### Use number facts

Derived related facts from number bonds to 10 and 100, e.g.  $2 - 0.45$  using  $45 + 55 = 100$  or  $3.00 - 0.86$  using  $86 + 14 = 100$

Number bonds to £1, £10 or £100, e.g.  $£4.00 - £3.86 = 14p$  or  $£100 = 366$  using  $66 + 34 = 100$

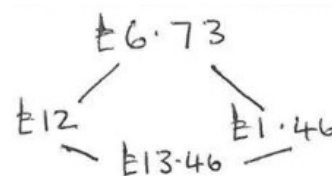
## Year 5 MULTIPLICATION

### Doubling and halving

Double amount of money e.g. £6.73

Use doubling and halving strategy to multiply by 2, 4, 8, 5 and 20

e.g.  $58 \times 5 = 1/2$  of 58 (29)  $\times 10$  (290) or  $57 \times 5 = \text{half of } 57 \times 10$



### Grouping

Multiply 2 and 3 digit by single digits (when the most efficient strategy) e.g.  $402 \times 6$  as  $400 \times 6$  (2400) and  $2 \times 6$  (12)

Multiply decimal numbers by single digit numbers, e.g.  $4.5 \times 3$  as  $(4 \times 3) + (4 \times 0.5)$

Multiply using near multiples by rounding, e.g.  $32 \times 29$  as  $(32 \times 30) - 32$

### Known facts and place value

Multiply decimals by 10, 100, 1000

Use times table facts up to  $12 \times 12$  to multiply multiples of the multiplier, e.g.  $4 \times 6 = 24$  so  $40 \times 6 = 240$  and  $400 \times 6 = 2400$

Know square numbers and cube numbers

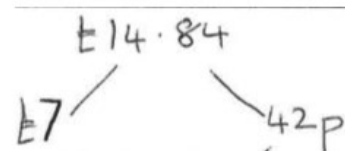
## Year 5 DIVISION

### Doubling and halving

Halve amounts of money, e.g. half of £14.84

Use doubling and halving strategy to multiply by 2, 4, 8, 5 and 20,

e.g.  $115 \div 5$  as double 115 (230)  $\div 10$



### Grouping

Divide numbers by 10, 100, 1000 to obtain decimal answers with up to 3dp, e.g.  $340 \div 100$

Use the 10th, 20th, 30th... multiple of the divisor (when the most appropriate strategy) to divide 2 and 3 digit numbers by single digit numbers, e.g.  $186 \div 6$  as  $30 \times 6$  (180) and  $1 \times 6$  (6)

Find unit and non unit fractions of large amounts, e.g.  $3/5$  of 265 is  $3 \times (265 \div 5)$

### Known facts and place value

Use division facts from the times tables up to  $12 \times 12$  to divide multiples of powers of ten of the divisor, e.g.  $3600 \div 9$  using  $36 \div 9$

Know square and cube numbers

## Some ideas for helping your child at home

Here is a quick bank of quick-fire recall games that can be played at home to support children's mental fluency.

### **Regular practice of key facts can make all the difference.**

**Rock, paper...product (multiply)** - This game is a little like rock, paper, scissors. Two or three can play and each person starts with both hands behind their back. Take it in turns to chant "one, two, show." On the word "show," everyone shows their hands, holding up between 1 and 10 fingers. The first person to say the product wins a point.

**Fizz buzz** - Choose a multiplication table to focus on. Count up from one, taking it in turns, then say fizz when you come across a multiple of your chosen number (e.g. for 5x table – 1,2,3,4,fizz,6,7,8,9 fizz...) Then add another multiple, e.g. 3x for which you say buzz. (1, 2, buzz, 4,fizz, buzz, 7, 8, buzz,fizz...)

**What's my number/shape?** - This is a great game for practising maths vocabulary. Choose a number or shape and make a list of 5 clues for a partner who has to guess the number or shape.

**Number of the day** - Choose a number then ask some questions about it. What is 100 more than your number? What is the value of the hundreds? How many to the next multiple of 10? What's the number rounded to the nearest 100?

**Bingo** - List 6 numbers from a chosen times table(s). The parent calls out multiplication questions and the child checks to see if they have the answer. This can be easily updated for addition/subtraction/division as well.

**Memory** - Using a pack of playing cards, choose two cards at random. Multiply them together. Try picking 3 cards to multiply. Or select 8 cards and quickly add them up. Start at 100, pick a card and subtract it then pick another and subtract that too.

**How much is your name worth?** - Give each letter of the alphabet a value e.g. A=1p, B=2p, all the way to Z =26p. Then work out the value of your name so MIKE would be 13p+9p+11p+5p=38p. **Who has the most expensive name? How much more? Which celebrity has the most expensive name? What is the longest name you could buy for £1? Is there a name worth exactly £1?**

**All about measures** - Match different units of measures e.g. grams to kilograms and millimetres to centimetres. Measure the items around the house. Discuss and compare the measurements on food labels.

**What different units of measures can you find?**

**Telling the time** - What is the time on the clock? How many minutes until the next hour? Can you tell the time on digital and analogue? Match 12hr and 24hr clocks. Read and discuss timetables. Create your own time problems e.g. I had breakfast at 7:25am and a snack 3 hours and 15 minutes later. **What time did I have my snack?**

**Using Times Table Rockstars** - This online game can be used to promote fluency with times tables. Children have a login and can earn a different rock status.

**Online Games** - There are a variety of online games and apps that children can play to help with their Maths facts. Links to these can be found on our school website.

# Times Tables

Children are expected to recall and use multiplication and division facts for all of their multiplication tables

1 x	2 x	3 x	4 x	5 x	6 x
1 x 1 = 1	2 x 1 = 2	3 x 1 = 3	4 x 1 = 4	5 x 1 = 5	6 x 1 = 6
1 x 2 = 2	2 x 2 = 4	3 x 2 = 6	4 x 2 = 8	5 x 2 = 10	6 x 2 = 12
1 x 3 = 3	2 x 3 = 6	3 x 3 = 9	4 x 3 = 12	5 x 3 = 15	6 x 3 = 18
1 x 4 = 4	2 x 4 = 8	3 x 4 = 12	4 x 4 = 16	5 x 4 = 20	6 x 4 = 24
1 x 5 = 5	2 x 5 = 10	3 x 5 = 15	4 x 5 = 20	5 x 5 = 25	6 x 5 = 30
1 x 6 = 6	2 x 6 = 12	3 x 6 = 18	4 x 6 = 24	5 x 6 = 30	6 x 6 = 36
1 x 7 = 7	2 x 7 = 14	3 x 7 = 21	4 x 7 = 28	5 x 7 = 35	6 x 7 = 42
1 x 8 = 8	2 x 8 = 16	3 x 8 = 24	4 x 8 = 32	5 x 8 = 40	6 x 8 = 48
1 x 9 = 9	2 x 9 = 18	3 x 9 = 27	4 x 9 = 36	5 x 9 = 45	6 x 9 = 54
1 x 10 = 10	2 x 10 = 20	3 x 10 = 30	4 x 10 = 40	5 x 10 = 50	6 x 10 = 60
1 x 11 = 11	2 x 11 = 22	3 x 11 = 33	4 x 11 = 44	5 x 11 = 55	6 x 11 = 66
1 x 12 = 12	2 x 12 = 24	3 x 12 = 36	4 x 12 = 48	5 x 12 = 60	6 x 12 = 72
7 x	8 x	9 x	10 x	11 x	12 x
7 x 1 = 7	8 x 1 = 8	9 x 1 = 9	10 x 1 = 10	11 x 1 = 11	12 x 1 = 12
7 x 2 = 14	8 x 2 = 16	9 x 2 = 18	10 x 2 = 20	11 x 2 = 22	12 x 2 = 24
7 x 3 = 21	8 x 3 = 24	9 x 3 = 27	10 x 3 = 30	11 x 3 = 33	12 x 3 = 36
7 x 4 = 28	8 x 4 = 32	9 x 4 = 36	10 x 4 = 40	11 x 4 = 44	12 x 4 = 48
7 x 5 = 35	8 x 5 = 40	9 x 5 = 45	10 x 5 = 50	11 x 5 = 55	12 x 5 = 60
7 x 6 = 42	8 x 6 = 48	9 x 6 = 54	10 x 6 = 60	11 x 6 = 66	12 x 6 = 72
7 x 7 = 49	8 x 7 = 56	9 x 7 = 63	10 x 7 = 70	11 x 7 = 77	12 x 7 = 84
7 x 8 = 56	8 x 8 = 64	9 x 8 = 72	10 x 8 = 80	11 x 8 = 88	12 x 8 = 96
7 x 9 = 63	8 x 9 = 72	9 x 9 = 81	10 x 9 = 90	11 x 9 = 99	12 x 9 = 108
7 x 10 = 70	8 x 10 = 80	9 x 10 = 90	10 x 10 = 100	11 x 10 = 110	12 x 10 = 120
7 x 11 = 77	8 x 11 = 88	9 x 11 = 99	10 x 11 = 110	11 x 11 = 121	12 x 11 = 132
7 x 12 = 84	8 x 12 = 96	9 x 12 = 108	10 x 12 = 120	11 x 12 = 132	12 x 12 = 144