

St. Michael's CE Junior School



Maths Booklet

Year 6



Year 6 National Curriculum Objectives

Calculation

Objectives

- 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 four 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.

* Pupils practise addition, subtraction, multiplication and division for larger numbers, using the formal written methods of columnar addition and subtraction, short and long multiplication, and short and long division.

*They undertake mental calculations with increasingly large numbers and more complex calculations.

*Pupils continue to use all the multiplication tables to calculate mathematical statements in order to maintain their fluency.

*Pupils round answers to a specified degree of accuracy, for example, to the nearest 10, 20, 50 etc., but not to a specified number of significant figures.

*Pupils explore the order of operations using brackets; for example, $2 + 1 \times 3 = 5$ and $(2 + 1) \times 3 = 9$.

These are some of things that your child will be expected to do in Maths by the end of Year 6

Year 6 ADDITION

Using place value

Counting in 0.1s, 0.01s, 0.001s e.g. knowing what 0.001 more than 6.725 is

100s	10s	1s	0.1s	0.01s	0.001s
		6	7	2	5
		,	0	0	1
		6	7	2	6

Partitioning $9.54 + 3.25$

Counting on

Add two decimals by adding the ones then the tenths/hundredths or thousandths e.g. $6.314 + 3.006$ as $6.314 + 3 = 9.314$ then add $0.006 = 9.32$

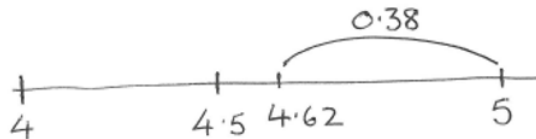
Add near multiples of 1 e.g. $6.345 + 0.999$ or $5.673 + 0.9$

Count on from large numbers, e.g. $16\ 375 + 12\ 003$

Using number facts

Number bonds to 1 and the next multiple of 1, e.g. $0.63 + 0.37$ or $2.355 + 0.645$

Add to next ten, e.g. $4.62 + 0.38$



Year 6 SUBTRACTION

Count back to take away

Use place value to subtract decimals, e.g. $7.782 - 0.08$ or $16.263 - 0.2$ etc.

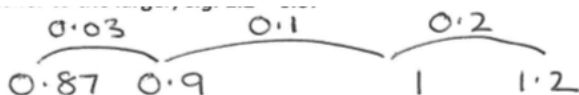
Take away multiples of powers of 10 e.g. $132\ 956 - 400$ or $686\ 109 - 40\ 000$ or $7.823 - 0.5$

Subtract near multiples of e.g. $360\ 078 - 99\ 998$ or $12.831 - 0.99$

Count on to find the difference

Count up to subtract numbers from multiples of 10, 100, 1000 or 10 000

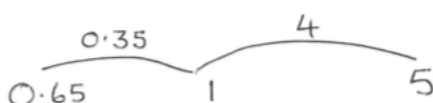
Find a difference between two decimal numbers by counting up from the smaller to the larger e.g. $1.2 - 0.87$



Use number facts

Derived 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 6 MULTIPLICATION

Doubling and halving

Double decimal numbers with up to 2 places, e.g. 36.73 doubled is double 36 (72) plus double 0.73 (1.46)

Use double and halving as efficient strategies for mental multiplication

Grouping

Use facts in mental multiplication, e.g. 421×6 as 421×3 (1263) doubled (2526) or 3.42×5 as half of 3.42×10

Multiply decimal numbers using near multiples by rounding, e.g. 4.3×1.9 as 4.3×20 ($86 - 4.3$)

Known facts and place value

Use times table facts up to 12×12 in mental multiplication of large numbers or numbers with up to 2 dp, e.g. $6 \times 4 = 24$ and $0.06 \times 4 = 0.24$

Year 6 DIVISION

Doubling and halving

Halve decimal numbers with up to 2dp e.g. half of 36.86

Use doubling and halving strategies in mental division, e.g. $216 \div 4$ is half of 216 (108) and half of 108 (54)

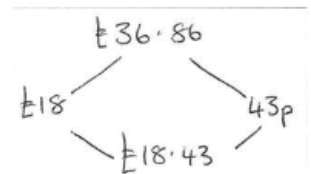
Grouping

Use the 10th, 20th, 30th... or 100th, 200th, 300th... multiple of the divisor (when the most appropriate strategy) to divide 2 and 3 digit numbers by single digit numbers, e.g. Use the 10th, 20th, 30th... multiple of the divisor 9 as $40 \times 9 = 360$ and $2 \times 9 = 18$ (42)

Use tests of divisibility

Known facts and place value

Use division facts from the times tables up to 12×12 to divide decimal numbers by single digit numbers, e.g. $1.17 \div 3$ is $1/100$ of $117 \div 3$ (0.39)



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