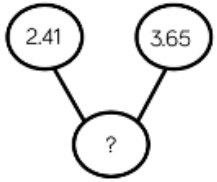
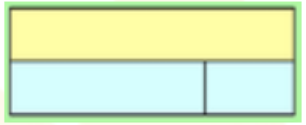
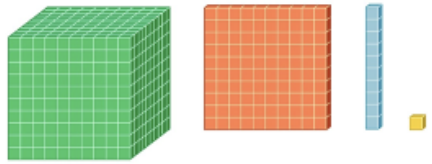
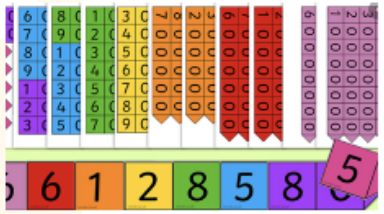
Maths in Group 7 at International School Haarlem

At International School Haarlem we aim to provide children with consistent and secure mathematical language, representations, and methods as they move up through the groups. These progress alongside their mathematical understanding and in combination with a range of concrete resources.

This document shows the National Curriculum goals alongside the mathematical language (new vocabulary in blue), representations, and methods the children are expected to have covered by *the end* of Group 7. In addition, it shows the concrete materials the children will use to support their learning and comprehension.

Place Value

National Curriculum Goals	Key Vocabulary	Representations	Concrete Resources
• 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 zero • solve number and practical problems that involve all of the above	*Zero* *Tenths* *Hundredths* *Thousandths* *Ones* *Tens* *Hundreds* *Thousands* *Tens of thousands* *Hundreds of thousands* *Millions* *Partition* *Negative number / minus number* *Positive number* *Whole number / integer* *Place value* *Value* *Place holder* *Compare* *Equal to / the same as (=)* *Smaller / fewer / less / is less than (<)* *Smallest / fewest / least* *More / bigger/ larger / greater / is greater than (>)* *Most / biggest / largest /greatest* *Order* *Ascending* *Descending* *Estimate / approximate* *Round to the nearest 10 / 100 / 1000 / 10 000 / 100 000* *100 less / 1000 less / 10 000 less* *100 more / 1000 more / 10 000 more* *Skip counting / counting by / counting in / times tables / multiples of / factors / products / intervals*	**Part-whole model**  **Bar model**  **Place value chart** 	**Counters**  **Place value counters**  **Dice**  **Base ten**  **Number lines (unlabelled)**  **Place value cards**  **Place value chart** 

Addition & Subtraction

National Curriculum Goals

Group 7

- 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

Key Vocabulary

Group 7

Add / Total / Plus / Together / Altogether / Addition / Sum / More / In all / Combined

Take away / Minus / Less / Subtract / Fewer / Difference / Left over / Remain / Counting on to find the difference

Is / Equal / Is equal to / Is the same as
Estimate / approximate

 # more / counting on / how many more?
 # less / counting back / how many less?

Number sentence / Number problem / Equation

Digit
Numeral
Integer

Fact family
Number bond
Number facts

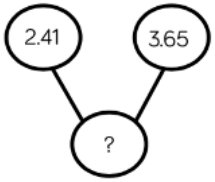
Missing number
Inverse
Commutative
Non-commutative

Exchange

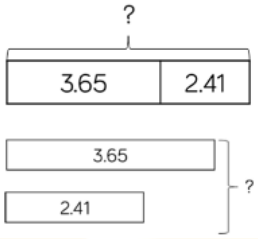
Calculation Methods / Representations

Group 7

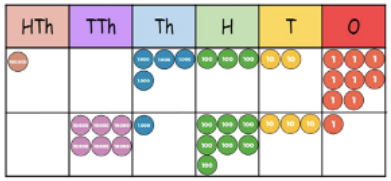
Part-whole model



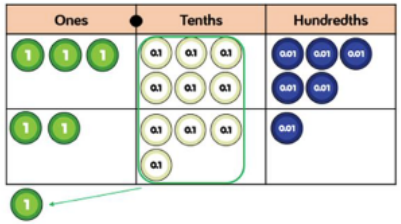
Bar model



Column method



1	0	4	3	2	8
+	6	1	7	3	1
1	6	6	0	5	9
		1			



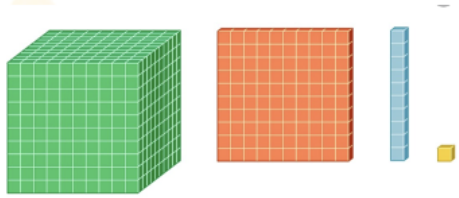
Concrete Resources

Group 7

Counters

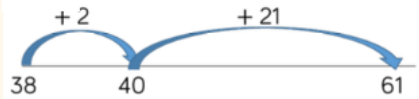
Place value counters

Base ten



Place value chart

Number lines (unlabelled)



Multiplication & Division

National Curriculum Goals

Group 7

- 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

Key Vocabulary

Group 7

Doubling
Halving

Repeated addition
Multiplication
Multiply
Multiplied by / times / groups of / factor / product
Multiple
Array(s) – Row and Column

Division
Dividing / divide by / divide into
Grouping / equal groups of
Sharing / share equally
Left / left over / remainder

Number sentence / Number problem / Equation

Fact family / factor pairs
Multiplication fact
Division fact
Inverse
Commutative
Non-commutative

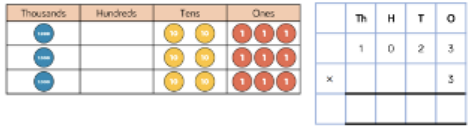
Square
Squared cube
Cubed

Number pattern

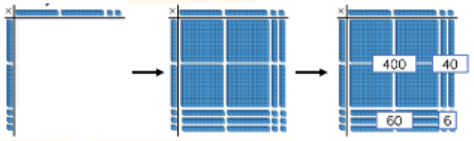
Calculation Methods / Representations

Group 7

Column method



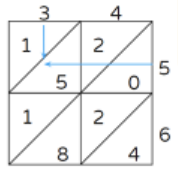
Area model



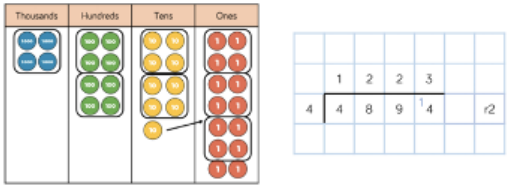
Grid method

	Hundreds	Tens	Ones
X	100	40	5
Tens 20			
Ones 3			

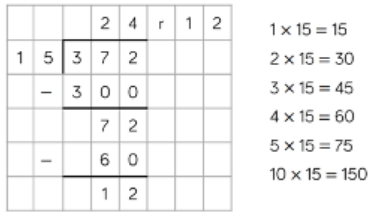
Lattice method



Short division (with grouping)



Long division



1 × 15 = 15
2 × 15 = 30
3 × 15 = 45
4 × 15 = 60
5 × 15 = 75
10 × 15 = 150

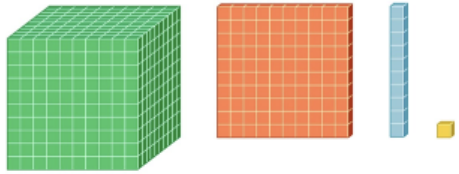
Concrete Resources

Group 7

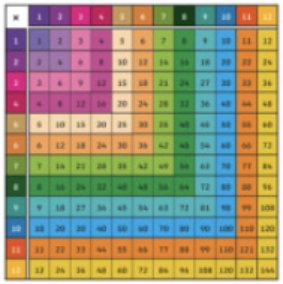
Place value counters

Dice

Base ten



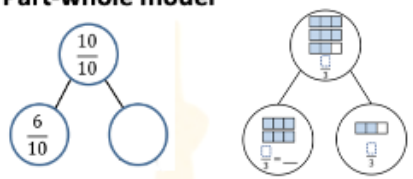
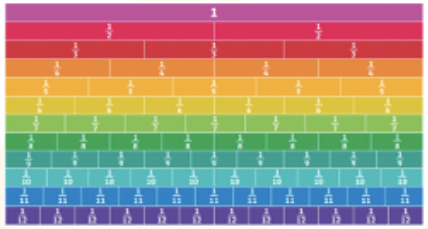
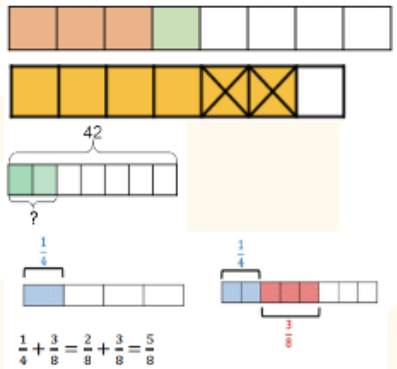
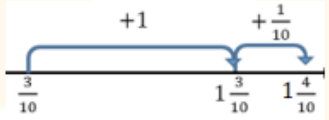
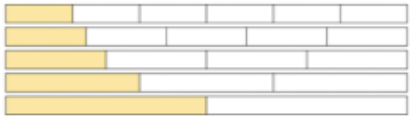
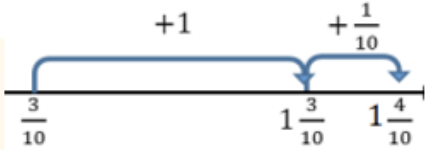
Multiplication square



Square number grid

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Fractions

National Curriculum Goals	Key Vocabulary	Representations	Concrete Resources
Group 7 • 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: $\frac{1}{3} \div 2 = \frac{1}{6}$)	Group 7 *Whole* *Fraction* *Numerator* *Denominator* *Unit fractions* *Non-unit fractions* *Proper fraction* *Improper fraction* *Mixed numbers* *Integer* *Factors* *Common factors / common multiples* *Highest common factor / Highest common multiple* *Lowest common factor / Lowest common multiple* *Divide* *Parts* *Split* *Equal / Equally* *Equivalent / equivalence* *Convert* *Simplify* *Operators*	Group 7 **Part-whole model**  **Fraction wall**  **Bar models**  **Number lines** 	Group 7 **Counters**  **Strips of paper**  **Number lines**  **Fraction tiles** 

Decimals, Percentages & Ratio

National Curriculum Goals

Group 7

- 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
- 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.
- Solve problems involving the relative sizes of two 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

Key Vocabulary

Group 7

Fraction
Whole
Integer

Decimal
Decimal point

Percentage – %
Percent

Tenths – 0.1
Hundredths – 0.01
Thousandths – 0.001

Compliments to 1

Halves
Quarters

Representation

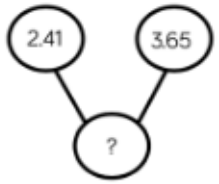
Place holder
Exchange
Equivalent
Convert

Ratio – □ : □
For every… there are…
Scale factor (of)
Enlargement
Proportions

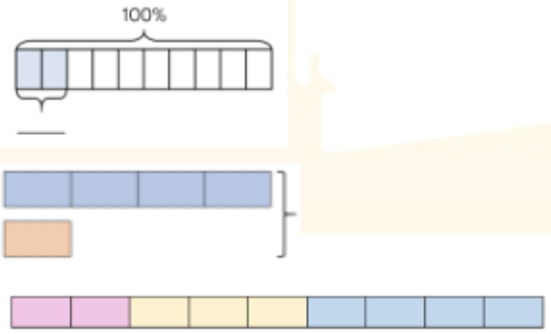
Representations

Group 7

Part-whole model

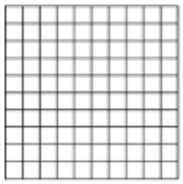


Bar model



Place value chart

Hundredth Square



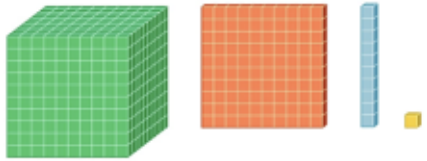
Concrete Resources

Group 7

Counters

Place value counters

Base ten



Number lines (labelled and unlabelled)

Place value chart

Hundredth Square