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'Let your light shine' Matthew 5:16

Year 5/6 Maths Long Term Plan 2022-2023

Year 5

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number **Place value**			Number **Addition and subtraction**		Number **Multiplication and division A**			Number **Fractions A**			
Spring	Number **Multiplication and division B**			Number **Fractions B**		Number **Decimals and percentages**			Measurement **Perimeter and area**		**Statistics**	
Summer	Geometry **Shape**			Geometry **Position and direction**		Number **Decimals**			Number **Negative numbers**	Measurement **Converting units**		Measurement **Volume**

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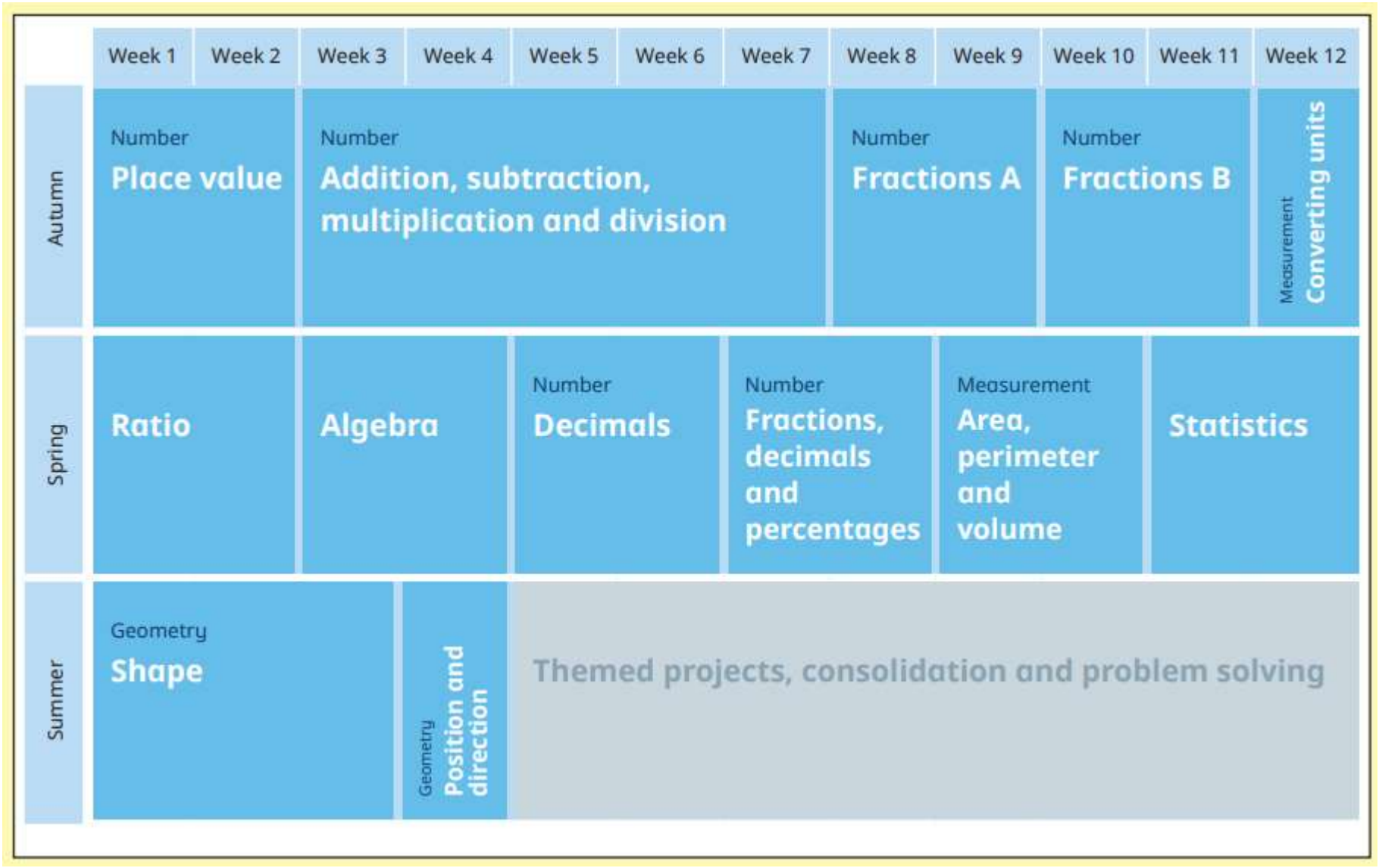
Year 5/6 Maths Long Term Plan 2022-2023

Year 6



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Year 5/6 Maths Long Term Plan 2022-2023

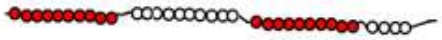
Number and Place Value

Core concept: MAGNITUDE and COMPARISON

Introduce pupils to a range of calculations in which a secure understanding of place value is required to support the solution.

For example, 2.005 + 3.24.

Estimation drawing out the concept of 'distance' of numbers to target numbers / benchmarks in preparation for rounding.

20,000 and 

I can see that 20,034 is 4 from 20,030 and 6 from 20,040.
20,034 is nearer to 20,030 than to 20,040.

Comparison to benchmark numbers
Using number knowledge to look for 'nearly numbers' in calculations.

7834 + 79,996

79,996 is 4 less than 80,000 and that's an easier number to add.

Addition and Subtraction

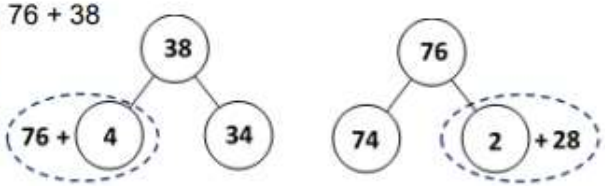
Core concept: UNITISING

Core skill: REGROUPING

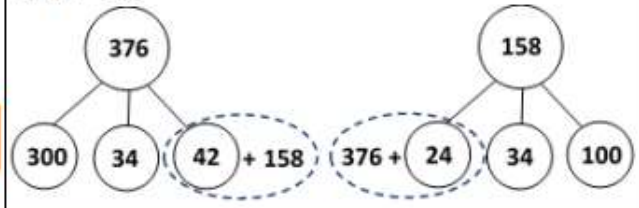
Think Regroup for addition
Part whole drawing out the skill of regrouping numbers to allow bridging through hundreds, tens and ones. Ask pupils to reason why they may wish to reorder the numbers.

Pupils should continue LKS2 learning and be encouraged to explore multiple ways of regrouping both addends (refer to number and place value experiences). Only a limited example is shown here.

76 + 38



376 + 158



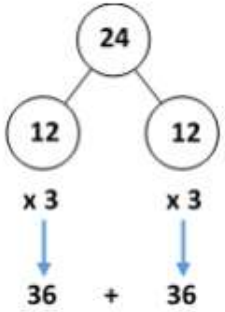
Multiplication and Division

Core concept: UNITISING

Core skill: REGROUPING

Think Regroup for multiplication and division
drawing out the distributive law for both multiplication and division and encouraging pupils to regroup and multiply in a variety of ways, evaluating the most useful.

24 x 3 =



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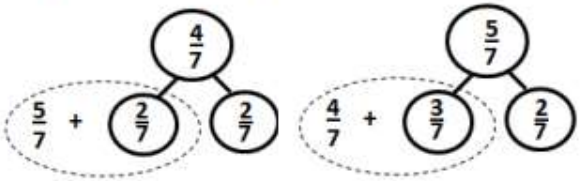
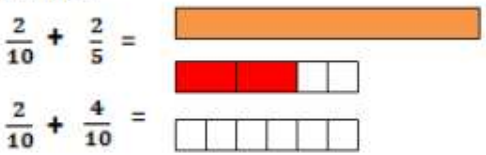
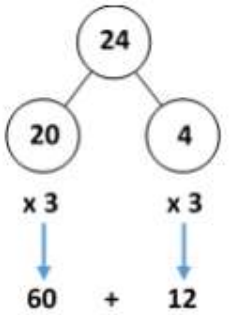
Number and Place Value	Addition and Subtraction	Multiplication and Division
Rounding Round 136,521 to the nearest 100, 1000 and 10,000. **Rounding as estimation for multiplication and division.** 688 x 79 = 688 rounds to 700 and 79 rounds to 80. The calculation 688 x 79 is close to 700 x 80, which is 56,000. 789 ÷ 79 = 789 rounds to 800 and 79 rounds to 80. The calculation 789 ÷ 80 is close to 800 ÷ 80, which equals 10.	Then adapted to decimal and fractional part whole as well as measures such as time and money. For example, $\frac{4}{7} + \frac{5}{7} =$ Here **both addends** can be regrouped using **complements to 1 and *some more*.**  Extend into UKS2 by converting fractions into equivalents with common denominators. Beginning with conversions where no regrouping is required. For example:  	24 x 3 =  

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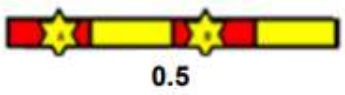
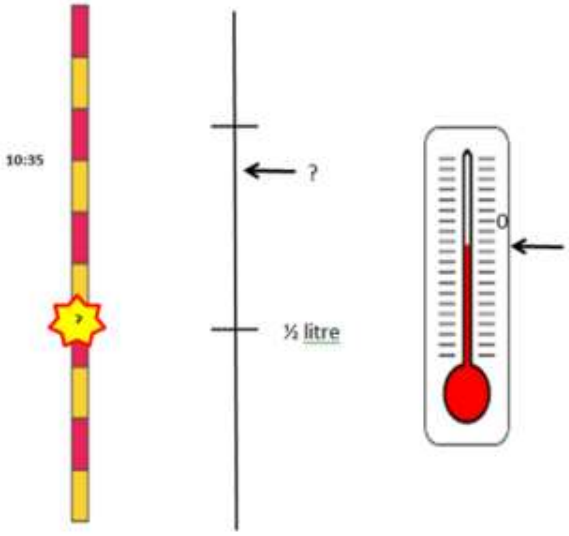
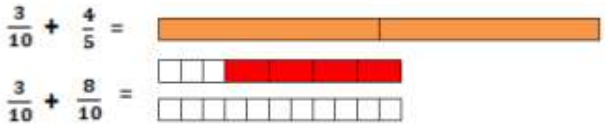
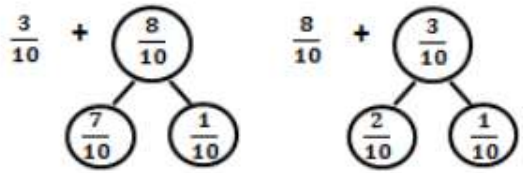
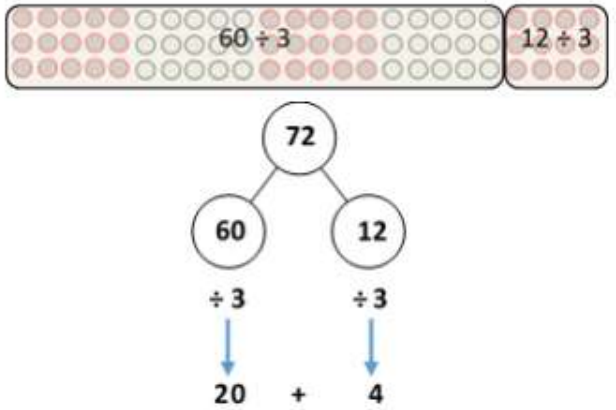
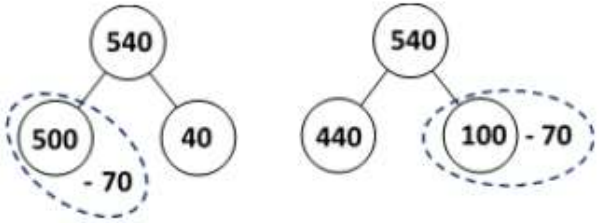
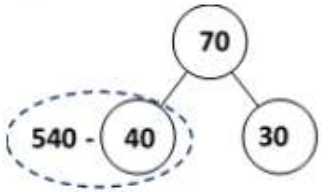
Number and Place Value	Addition and Subtraction	Multiplication and Division
Number magnitude drawing out the concepts of relative size, order and comparison of number.  Number estimation using scales should continue to be applied to scales of measurement including those with negative and dial scales.  	Progress to examples where regrouping would be a valid strategy.  Rehearse regrouping **either addend to make 1s and some more.**  	72 ÷ 3 =  15 x 3.4 = I know that 10 x 3.4 = 34 Then I can halve 34 to find 5 groups of 3.4 which is 17. After that, I have to recombine the products. This equals 51.

Year 5/6 Maths Long Term Plan 2022-2023

Number and Place Value	Addition and Subtraction	Multiplication and Division
	Think regroup for subtraction **Part whole** drawing out the skill of regrouping **either the minuend or the subtrahend**. Pupils should be encouraged to explore multiple ways of regrouping both the **minuend** and **subtrahend** (refer to number and place value experiences). For example, 540 – 70 **Regrouping the minuend**  **Regrouping the subtrahend** 	

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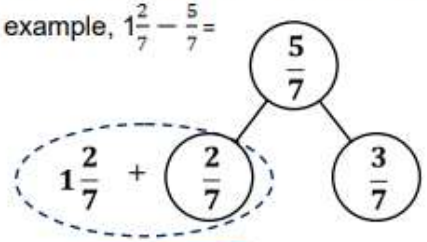
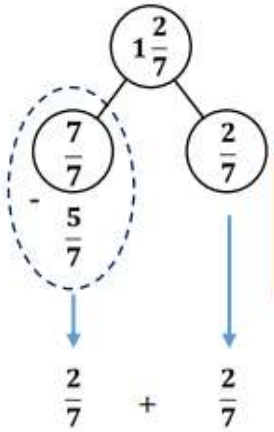
Number and Place Value	Addition and Subtraction	Multiplication and Division
	Then adapted to decimal and fractional part whole as well as measures such as time and money. For example, $1\frac{2}{7} - \frac{5}{7} =$  I can regroup the subtrahend $\frac{5}{7}$ into $\frac{2}{7}$ and $\frac{3}{7}$. Then I can take away the $\frac{2}{7}$ leaving $\frac{7}{7}$ or 1 and finally take away $\frac{3}{7}$.  ... or I could regroup the minuend, subtract from the 1 and then recombine.	

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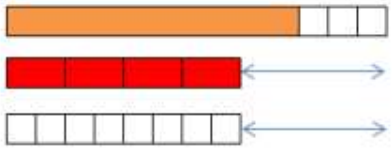
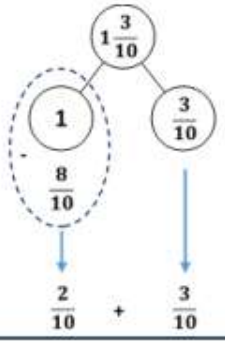
Year 5/6 Maths Long Term Plan 2022-2023

Number and Place Value	Addition and Subtraction	Multiplication and Division
	Extend into UKS2 by converting fractions into equivalents with common denominators. Beginning with conversions where no regrouping is required. For example, $\frac{2}{10} - \frac{1}{20} =$ Progress to examples where regrouping would be a valid strategy. For example, $1\frac{3}{10} - \frac{4}{5} =$ Pupils will have to know that $\frac{4}{5} = \frac{8}{10}$ before they can solve the calculation. Then they could regroup either the subtrahend or the minuend.  For example, $1\frac{3}{10} - \frac{8}{10} =$ $1\frac{3}{10}$ - $\frac{8}{10}$ (3/10, 5/10) **Partitioning the subtrahend** **Partitioning the minuend**  $1\frac{3}{10}$ → 1, $\frac{3}{10}$; 1 − $\frac{8}{10}$ → $\frac{2}{10}$ + $\frac{3}{10}$	

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Number and Place Value	Addition and Subtraction	Multiplication and Division
	Core concept: CONSERVATION **Reordering and finding complements** across a range of numbers. For example: 47 + 603 0.15 + 1.85 0.45 + 1.63 £3.99 + £7.80 + £2.01 Two decimal numbers add together to make a total of 1. One number is 0.0006. What is the other number?	**Core concept: CONSERVATION** **Core skill: REARRANGING** **Factorisation** drawing on the associative law for multiplication and related division facts. For example, 24 x 3 = 12 x 3 x 2  Two and twelve are factors of 24 and I find it easier to calculate 12 x 3 first and then double it. **Doubling and halving** 12 x 2.5 = 16 x 6 ¼ = 12 x 2.5 = 6 x 5. I halved the 12 and doubled the 2.5 to make the calculation easier. 16 x 6 ¼ = 8 x 12 ½ = 4 x 25 = 100 I can make this easier for me by doubling and doubling again the 6 ¼. This means I have to halve and halve again the 16 to maintain the area. Now I get 4 x 25 = 100. *Application to KS2 example (Q11 paper 1 2016):* *71 x 8 = 142 x 4* *= 284 x 2*

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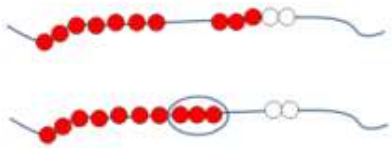
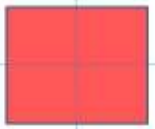
Number and Place Value	Addition and Subtraction	Multiplication and Division
	Core concept: CONSERVATION and COMPARISON **Core skill: REBALANCING** **Equal sum** drawing out the concept of equality when rebalancing the numbers in an addition calculation.  Pupils use bead strings to demonstrate that: 7 + 5 = 10 + 2 Apply concept to range of numbers and missing number problems. For example, 24 + ☐ = 30 + 3. **See Year 3 and 4 examples** These should include rehearsal using calculations such as: 39 + 52 345 + 198 0.39 + 6.54 5.1 + 2.7 = ☐ + 4.8	**Halving and halving for division** Once pupils are confident with the 'halve and double' strategy for multiplication, they will try to apply it to division and will need to understand why their answers do not make sense. Stress again the importance of estimation. Investigate the principle of halving and halving with pupils.  72 ÷ 4 = (72 ÷ 2) ÷ 2 When I am dividing by 4, I like to halve the number and halve it again. This strategy is best explored through practical contexts so pupils can clearly see that even though the dividend and the divisor are changing the quotient remains constant.

Year 5/6 Maths Long Term Plan 2022-2023

Number and Place Value	Addition and Subtraction	Multiplication and Division
	Ensure pupils are secure with the concept of **equal sum** before considering questions such as: 7834 + 79,996 79,996 is 4 away from 80,000. I can rebalance the sum by taking 4 from 7834 and giving it to the 79,996. Now I have 80,000 + 7,830 = 87,830. **Compensation** with the same calculation supports pupil's multi-strategy approach. Pupils can continue to ***evaluate*** strategies. 7834 + 79,996 Adding 79,996 is like adding 80,000 and subtracting 4. I can do 80,000 + 7834 - 4 = 87,830 Improve multi-strategy approaches by asking for two different ways of solving calculations such as: ☐ = 5,756 + 8,643 16.98 + 23.214 = ☐	For example, If I shared 12 cookies among 4 children each child would get 3 cookies. 12 ÷ 4 = 3  I can also see that 6 cookies shared between 2 people would give the same group size. The size of the group hasn't changed. So 12 ÷ 4 can be changed into 6 ÷ 2.  As I am trying to find out the group size, I can also see that 3 ÷ 1 gives me the group size. So 12 ÷ 4 can be thought of as 6 ÷ 3 and 3 ÷ 1. I can see all of these in the array. Applying this conceptual understanding to larger numbers encourages playfulness with division. *364 ÷ 16 =* 182 ÷ 8 = 91 ÷ 4 = 45.5 ÷ 2 = 22.75 I saw that I could halve both the dividend and the divisor, so I did to see if it made it easier. Then I realised that I could halve them again and again. *Apply core concepts in the context of fractions.*

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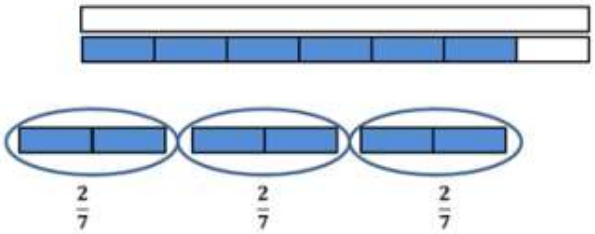
Number and Place Value	Addition and Subtraction	Multiplication and Division
	Equal difference using comparison drawing out the concept that **adding** or **subtracting** the same quantity from both the **subtrahend** and **minuend** will maintain the difference between the numbers.  I can add 4 or take 6 away from each of the numbers and the difference will be the same. **Remember** to rehearse simple calculations such as 367 - 9 before applying to a range of numbers. 132,457 - 11,999 = 11,999 is nearly 12,000. If I add one to each number the difference will stay equal. Now my calculation is 132,458 - 12,000 =	**Core concept: UNITISING** **Core skill: REGROUPING** **Division of fractions by integers** drawing out the concept of multiple groups of the numerator before teaching a rule. Ensure that pupils always refer to the whole. I know that 12 ÷ 3 can be thought of as 'If I share 12 equally between 3 groups, how many in each group?' So $\frac{6}{7} \div 3$ can be thought of as, 'If I share $\frac{6}{7}$ equally between 3 groups, how many in each group?' $\frac{6}{7} \div 3$ 

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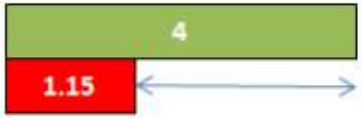
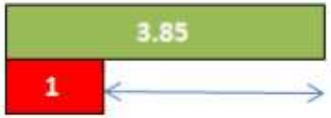
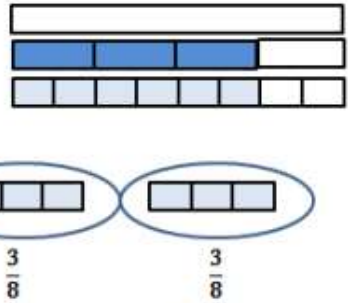
Number and Place Value	Addition and Subtraction	Multiplication and Division
	Use a range of examples. ☐ = 4 - 1.15   It is easier if I subtract 0.15 from each number. The difference will stay the same. Now my calculation is 3.85 - 1 = **Compare** this to **compensation** 132,457 - 11,999 = Subtracting 11,999 is like subtracting 12,000 and then adding 1. Now my calculation is 132,457 - 12,000 + 1 =	Progress to dividing fractions in which the fraction needs converting. $\frac{3}{4} \div 2$  ¾ ÷ 2 can be understood as: "If I share ¾ equally between 2 groups, how many in each group?"

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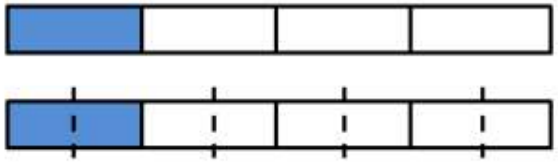
Number and Place Value	Addition and Subtraction	Multiplication and Division
		Multiplication of fractions by fractions **Equal groups** I know that 3 x 4 could mean 3 groups of 4. So ½ x ¼ means half a group of ¼. ½ x ¼ =  When we find half of any number, we divide it by two. The blue part has a value of $\frac{1}{4}$. When I halve it, it makes $\frac{1}{8}$. Pupils should focus upon the denominators and reason why, when multiplied, we find the product of the denominators. Once understood pupils can employ the rule.

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Number and Place Value	Addition and Subtraction	Multiplication and Division
		Halve and double The '**halve and double**' rule can be applied to fractions. Pupils have already secured conceptual understanding of this rule, for example: $5 \times 4 = 10 \times 2 = 20 \times 1$ Apply this understanding to fractions, for example: $\frac{1}{2} \times \frac{1}{4} =$ If we double the first term and halve the second, we can transform the calculation to: $1 \times \frac{1}{8} = \frac{1}{8}$ *For further detail regarding the multiplication and division of fractions refer to the 'HfL Bar Modelling Progression' document.*

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Upper KS2 examples

Place Value

937 + 100 1969 + 100 546 - 40
1.7 + 0.05 40 000 - 500
246 ÷ 1 100 x 217 0.4 ÷ 10
1.68 x 100 100 x 100

Examples from 2016 KS2 and Sample Papers

435 - 30 979 + 100 3.005 + 6.12 2.15 + 0.05
100 x 412 0.9 ÷ 10 1.28 x 100 50,000 – 500
10 x 100

Two decimal numbers add together to equal 1 One of the numbers is 0.007. What is the other number?

Circle two numbers that added together make 0.25
0.05 0.23 0.2 0.5

Circle two numbers that multiply together to equal 1 million 200 2,000 5,000 50,000

Write the number that is 5 less than 10 million

Write the number that is one hundred thousand less than six million

Round 124,531 to the nearest 10,000, 1,000, 100

Think Regroup

58 + 6 5 + 47 630 + 73 680 + 78
560 + 89 8900 + 230
74 - 7 97 - 8 320 - 50 2300 - 600
3400 - 1700
5 - 2.65 8.1 - 2.75 $1\frac{2}{5}+\frac{3}{10}=$ $1\frac{3}{10}-\frac{2}{5}=$
£3367.40 - £1021.23

Examples from 2016 KS2 and Sample Papers

4 - 1.15 $1\frac{4}{5}+\frac{3}{10}$ $1\frac{1}{4}+\frac{1}{3}$ $1\frac{1}{5}-\frac{1}{4}$ $\frac{3}{4}+\frac{7}{8}=$
5,756 + 8,643 936 + 285

Compensation

56 + 8 72 + 9 56 - 8 72 - 9
371 + 18 255 + 49 304 + 299
673 - 99 854 - 398 3720 - 996
0.71 + 0.09 0.56 + 0.08 0.34 - 0.09
£1.17 + £0.39 £8.89 - £4.99

Examples from 2016 KS2 and Sample Papers

468 - 9 472 - 9 15.98 + 26.314
12 - 6.01 15.4 - 8.88

Rebalancing - Equal sum

56 + 8 72 + 9 371 + 18 255 + 49
304 + 267
£37.67 + £3.85 563 + 397 890,488 + 4,890
229,899 + 31,321

Examples from 2016 KS2 and Sample Papers

89,994 + 7,643 936 + 285 89,994 + 7,643

Rebalancing - Equal difference

85 - 18 42 - 17 88 - 43 437 - 103
819 - 504 532,525 - 9897
£122.56 - £87.99 9.1 - 6.7 15.3 - 5.7

Examples from 2016 KS2 and Sample Papers

468 - 9 472 - 9 122,456 - 11,999
4 - 1.15 12 - 6.01
15.4 - 8.88 234,897 - 45,996

Think Partition for x and ÷

32 x 4 29 x 2 122 x 4 4.6 x 2
75 x 3 8.3 x 6 39 x 7
3.3 x 7 5 x 49 4 x 198 96 x 0.3

Examples from 2016 KS2 and Sample Papers

15 x 6.1 24 x 3 1.52 x 6 7,505 ÷ 5
17 x 1½

Make links to doubling and halving

50 x 28 86 x 50 500 x 70 18 x 2.5
86 x 2.5 160 x 35 500 x 88 1.5 x 6.6
0.5 x 120 4.5 x 2.2 15% x 346 75% x 220

Examples from 2016 KS2 and Sample Papers

15% x 440 $\frac{2}{5}$ x 140 24 x 3
20% of 1500 95% of 240

Multiplying and dividing fractions

Examples from 2016 KS2 and Sample Papers

$\frac{3}{5}\div 3$ $\frac{2}{5}\div 2$ $\frac{3}{4}\div 2$ $\frac{2}{5}\times 140$ $\frac{1}{4}\times\frac{1}{8}$

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Re-ordering and finding complements 11 + 59 33 + 57 14 + 90 + 86 290 + 310 1.15 + 2.55 0.8 + 0.26 *Examples from 2016 KS2 and Sample Papers* 1,034 + 586 2.15 + 0.05 Circle two numbers that added together make 0.25 0.05 0.23 0.2 0.5	**x and ÷ by powers of 10** 10 x 53 87 x 10 1000 x 14 100 x 8.3 100 x 0.41 30 x 3 7 x 0.3 30 x 30 30 x 70 567 ÷ 100 36 ÷ 10 0.5 ÷ 10 280 ÷ 4 5600 ÷ 80 30 = ☐ ÷ 12 270 ÷ 9 = ☐ ÷ 0.9 7 x 0.001 1.8 ÷ 0.1 3.25 ÷ 0.00001 Circle two numbers that multiply together to equal 10 million 200 2,000 5,000 50,000 *Examples from 2016 KS2 and Sample Papers* 1440 ÷ 12 630 ÷ 9 1,320 ÷ 12 0.9 ÷ 10 20% of 1,800 20% of 1500 7,505 ÷ 5 95% of 240 100 x 412 0.9 ÷ 10 1.28 x 100 50,000 - 500 10 x 100 Circle two numbers that multiply together to equal 1 million 200 2,000 5,000 50,000	

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Year 5 and 6 Guidance

The curriculum assumes that all children enter Upper School with a firm understanding of the mental strategies needed to recall, manipulate and utilise their times tables fluently. In this section, we have included examples of how these earlier strategies may be applied and consolidated within the Year 5 and 6 curriculum and added examples of practical activities to support and reinforce these. The intention is that concrete materials expose the structure of the relationships and help give an understanding of the underlying concepts, whilst the visual helps children to internalise and visualise relationships so they gain the understanding to work in the abstract. For children who are not fluent, look for opportunities to revise earlier strategies.

- Guidance on inverse operations can be found on pages 11-15.
- It may also be useful to refer to the guidance for the Associative Property on page 43 and 53.

Opportunities to revise underlying skills

Objective	
Y5 Add and subtract numbers mentally with increasingly large numbers. Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction). Y6 Perform mental calculations, including with mixed operations and large numbers. Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. Y6 Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius. find unknown angles in any triangles, quadrilaterals and regular polygons.	• Consolidate strategies for doubling, halving, tripling and bridging from previous year groups whilst teaching these objectives. • Then use knowledge of place value, alongside practical apparatus, to apply for use with larger numbers, decimals and fractions.

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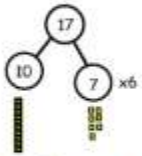
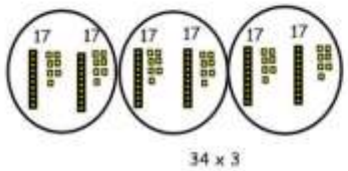
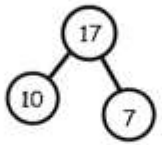
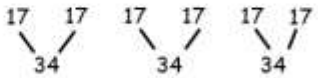
Using Tables Facts with Larger Numbers and Decimals

Linked Objectives	Notes	Concrete	Visual to Support Abstract
Y5 and 6 Multiply and divide numbers mentally drawing upon known facts Knowledge also required for use in long and short multiplication and division. Use knowledge of factors to multiply.	Use the properties of multiplication and known facts to work with larger numbers and decimals in same way as in previous years.	E.g. Explore different ways of finding 17x6. E.g. (10x6)+(7x6). 10x6=60 7x6=42  Consolidate understanding of how factors can be used to multiply, e.g. 17x6=17x2x3 (or 34x3). What would it look like drawn as 17x3x2?   What would 170x6 be? What about 1.7x6?	 (10x6)+(7x6)= 60+42=102  30x3=90 4x3=12 Visuals such as these can be used to gain understanding of the strategy of doubling one side and halving the other to gain an equivalent calculation. E.g. 17x6=34x3.
Count forwards or backwards in steps of powers of 10. (Y5) Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 (Y5).	Link larger numbers and decimals to known facts. Use to consolidate previous table knowledge and relationships. E.g. look at 3 on counting stick and tripling link.	Use the counting stick and post-it notes to put on the 1st, 10th and 5th multiples as markers. See section 'Using the Counting Stick', page 7). Explicitly link tables facts to new facts through place value relationships. Place value counters and sliders can be used alongside this. E.g. 0.4 0.8 1.2  40 80 120 This can also be used to explore the associative law. 7 x 40 = (7 x 4) x 10 = 280. Make links to known facts practically.	Draw a number line to represent the counting stick. Fill in missing numbers based on knowledge of relationships and place value, revising previous strategies and applying to larger numbers and decimals. 

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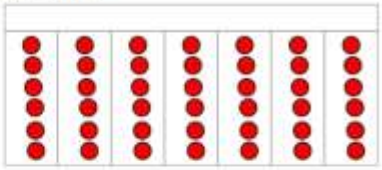
Generate and describe linear sequences. (Y6)
Multiply and divide numbers by 10, 100 and 1000 (up to 3dp). (Y6).

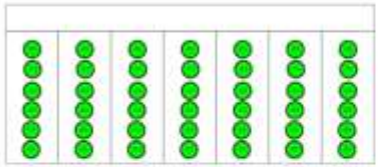
Multiply one-digit numbers with up to two decimal places by whole numbers. (Y6).

When working with decimals, Dienes equipment can also be useful, with a hundred block representing one whole, tens representing tenths and ones representing hundredths.

7x6=42



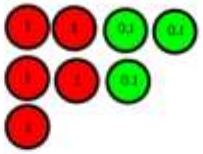
7x0.6=4.2.
The array formation can also show 6x0.7.

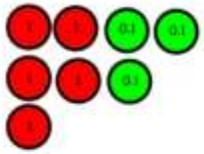


If 7x0.6=4.2, what would 7x1.6 be?
If 7x0.6=4.2, what would 14x0.6= etc?

Use a place value grid/place value slider to show the effect of multiplying and dividing by 10, 100 etc alongside practical apparatus to support understanding of place value.

Once place value knowledge is secure, apply doubling and halving strategies from previous tables.
5.3x15





5.3 x 15
10 5

5.3x10=53
5.3x5=26.5
53+26.5=79.5.

5.3 x 15
5 0.3

5x15=75.
0.3x15= 4.5.
75+4.5=79.5.

Draw place value counters alongside if needed to make links between known facts and decimals.

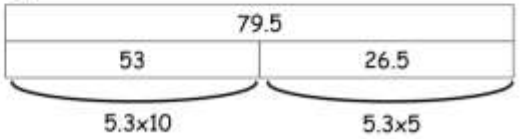
If 7x6=42, what would 7x60 be? What about 7x0.6? 7x6000?
Predict what will happen on place value slider or place value grid.

Th	H	T	O
		2	8
	2	8	0

Draw arrays /rectangles where each square is worth 0.1/10,100,1000 etc to prove it.

Write fact families that could be represented by the arrays (include division facts).
Use arrays, bar models and number lines to solve missing number problems, e.g. ___÷0.7=6.

Draw place value counters alongside calculations, moving onto bar models to reveal relationships, before working in the abstract.
E.g. 5.3x15.



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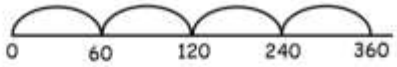
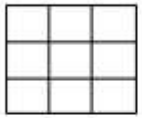
Convert between different units of metric measure, including problems involving conversion of time. (Y5) Solve problems involving calculation and conversion of units of measure (length, mass, volume, time), using decimal notation (up to 3dp). (Y6).	Look for contexts which may lend themselves to consolidation of particular tables.	E.g. Use work with conversion of time to revise x6 table. E.g. Time: 6 12 18 24 etc  60 120 180 240	 Use a number line and knowledge of 6x table to convert between units of time, e.g. Convert 265 minutes into hours.

Exploring Tables Facts through Common Multiples and Factors, Prime, Square and Cube Numbers.

Curriculum Links	Notes	Concrete	Visual to Support Abstract
Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes (Y5) Recognise that shapes with the same areas can have different	Encourage children to predict and generalise as they are working with practical apparatus. Also, make links to larger numbers and decimals, What if each	 Use multi-link cubes to make as many different rectangles as you can out of a given numbers of cubes. Find factor pairs. Predict all of the factors for each number given. Write calculations to match. Predict based on doubles/halves relationships. E.g. If 10 is a factor, what else will be a factor? Are there any numbers that will only make one rectangle? Predict which numbers will only make a square (no other rectangles). Why are these called square numbers?	 Draw rectangles to represent practical work. Predict and generalise about relationships within multiplication. E.g. If a 3x8 rectangle was drawn, if you double one side, what happens to the other side? If 60÷6=10, what would 60÷3 be? What about 60÷12? Etc. What do you notice about the numbers that will only form a square? Can you find any others?

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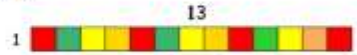
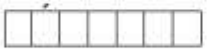
perimeters and vice versa (Y6) Establish whether a number up to 100 is prime and recall prime numbers up to 19. (Y5) Recognise and use square numbers and the notation for squared (²) cube numbers and the notation for cubed (³) (Y5). Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³), and extending to other units (e.g. mm and km). (Y6) Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers (Y5) Identify common factors, common multiples, prime numbers (Y6).	cube was worth 10, 100, 0.1 ?etc.	Use multi-link cubes or draw rectangles to systematically investigate all factors of a number. Record on factor rainbow. Find out which numbers from 1-20 can only make one rectangle made from a single line of cubes. E.g.  Consider the numbers up to 20. Which cannot be prime? Explain why. Get 16 multi-link cubes. How many different cuboids can you make? Write the multiplication sentences to go with each. Try with different numbers of cubes. Investigate which numbers can build a cube? Why is this?  Match/write different calculations to go with each cube/cuboid? Make cuboids of given dimensions e.g. 6x3x2. Show a cuboid and give its dimensions. Can the children quickly calculate its volume? Discuss the different ways it was solved. Make one face of a cube. Give to a partner. What cube number would it make? Build it to check. Explore the relationship between square and cube	A rectangle has an area of 48. What could its sides be? Represent as a factor rainbow.  What could its perimeter be?  Draw rectangles to identify which numbers only have one possible rectangle (where the cubes make one line). Sort numbers up to 20 according to whether or not they are prime. Which numbers do you know definitely can't be prime? Give out square numbers and prime numbers on cards and draw rectangles to represent them. Predict which will be prime? Which will be square? Draw to prove it. Draw cuboids and write/match calculations to go with them. Write equivalent calculations __x __ x__ = __x __ x__ Predict a calculation for another cube with the same volume. 3x4x5=__x2x6. Use cubes to check. Discuss different ways to solve. Use this to revise use of factors to find more efficient ways to multiply (i.e. associative law). E.g. 7x16= 7x8x2= 56x2 or 112.

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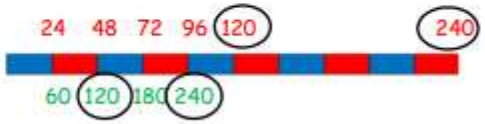
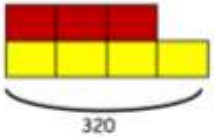
Fractions link: Compare and order fractions whose denominators are all multiples of the same number. (Y5) Fractions link: Use common factors to simplify fractions. Use common multiples to express fractions in the same denomination (Y6) Add and subtract fractions with the same denominator and denominators that are multiples of the same number (Y6) Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and x3=division facts (Y6).	Finding common multiples involves doubling, tripling and bridging strategies from previous years. Look back to strategies if children not secure. Problems such as these can provide opportunities for halving (by using halving and halving again to divide by 4) and tripling strategies.	numbers. Show cubes for children to predict the volume. Use a counting stick to find common multiples using two different coloured sticky notes for the different times tables. E.g. Find the common multiples of 24 and 60.  Jessica thinks 32 is a common multiple of 8, 12 and 16. Is she right? Explain how you know. Use Cuisenaire rods or cubes with bar models to show ratio. E.g. For every £3 Aisha saves, Ben saves £4. Ben has saved up £320. How much has Aisha saved? Aisha  Ben 	 Use different coloured pens to highlight the indivdual times tables and then identify which ones they have in common to find common factors/multiples. Draw bar models to show/work out relationships.  =320 320 ÷ 4= 80 =80 £80x3=£240

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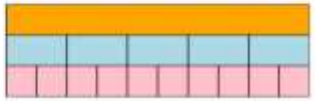
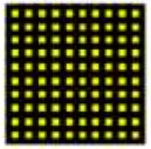
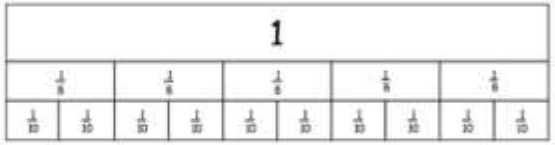
Consolidation through Fractions, including Decimals and Percentages).

Curriculum Links	Notes	Concrete	Visual to Support Abstract
Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths. (Y5) Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions. (Y6) Compare and order fractions, including fractions >1. (Y6) Divide proper fractions by whole numbers (e.g. 1/3 ÷ 2 = 1/6. (Y6)	Make links between thirds and sixths, quarters and eighths, sixths and twelfths etc by using doubling and halving strategies.	Revise underlying relationships (e.g. doubles/halves) for each table when working with fractions. For example, when working with fifths, arrange Cuisenaire rods into a bar model then discuss how many tenths it is equivalent to. Discuss the link between x5 and x10 in whole numbers and tenths and fifths in fractions.  How many tenths? How many fifths? What do you notice? How many fifths in 2? How many tenths in 2? Use a counting stick as one whole. Mark on fifths, tenths etc and discuss relationships. If this is one whole, what would a tenth look like? What would a fifth look like?  Put Dienes or place value counters in bar models and compare relationships between fifths and tenths. Repeat to link quarters and eighths, thirds and sixths etc.	 Karen says that you can find one tenth by doubling one fifth? Is she right? Prove it. Colour one tenth on a 100 square if the 100 square represents one whole. Colour one fifth etc. Record what you colour as a decimal, as a percentage, as tenths/hundredths etc. Revise strategies for individual tables when working with fractions. E.g. If 3/8=21, what will 6/8 be? Write down all the fractions equivalent to 1/3. What do you notice? Repeat with other fractions. Which of the fractions equivalent to one third can you make equivalent to one sixth? Show it on a bar model. Predict those which you won't be able to convert to one sixth. Explain why.

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Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements as a mixed number (E.g.: 2/5 + 4/5 = 6/5 = 1 1/5) (Y6)		How many eighths are in 4 whole ones? How can you find out? Use equipment such as Cuisenaire rods, Numicon or number lines/counting sticks to explore. Look to appropriate year group to reinforce tables strategy when working with given fractions. How many eighths in 2 whole ones? How can this help you work out how many in 4 whole ones?	Reinforce tables facts through work with mixed numbers. E.g. True or false: 15/4 > 23/8. Explain how you know.