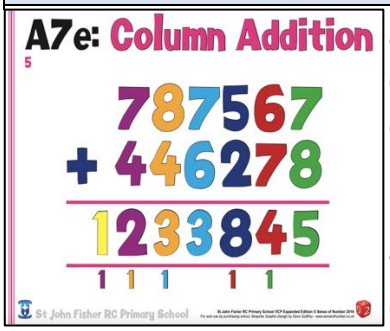
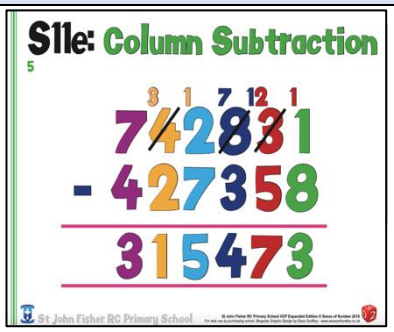
St John Fisher RC Primary School
Year 6 Maths Knowledge Organiser
Autumn Term One Block 2 - Four Operations (1) – Addition & Subtraction

Objectives	Teacher
• Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition & subtraction).	
• I can solve addition and subtraction word and practical problems with one or more steps.	
• I can use estimation to check answers to calculations and determine an appropriate degree of accuracy.	

Column Addition & Subtraction



Starting with the ones, add each column in turn. Regroup tens, hundreds, thousands, ten thousands as required.



Starting with the ones, subtract each column in turn. Exchange tens, hundreds, thousands and/or ten thousands as required.

Key Vocabulary

addition	The way of combining things and counting them together as one large group.
addend	Any number that is added to another.
sum	The result of adding two or more numbers together.
subtraction	The process of finding the difference between two amounts.
minuend	A number or quantity from which an amount is to be subtracted.
subtrahend	A number or amount that is being subtracted from another.
difference	The result of subtracting one amount from another.
estimate	To use mathematical knowledge to give a not exact answer or amount.
Column Addition	A formal written method to calculate an addition question.
Column Subtraction	A formal written method to calculate a subtraction question.

Stem Sentences

In column addition/subtraction we start with the ___ place value column.	The ___ is in the ___ column. It represents ___ .

Assessment

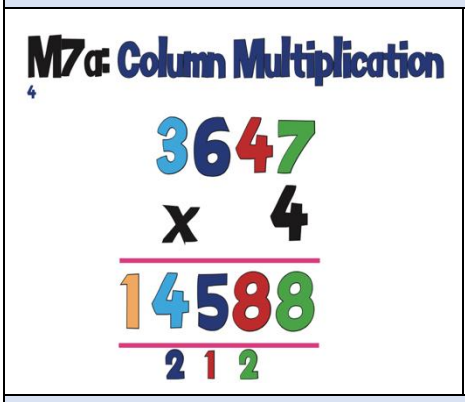
St John Fisher RC Primary School

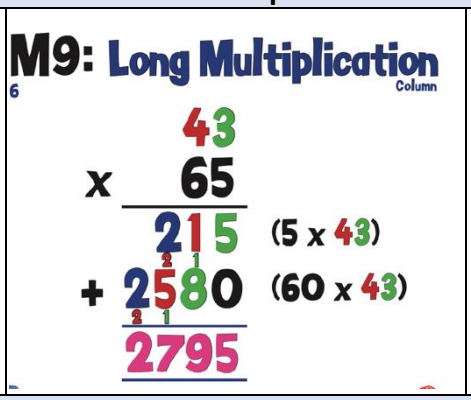
Year 6 Maths Knowledge Organiser

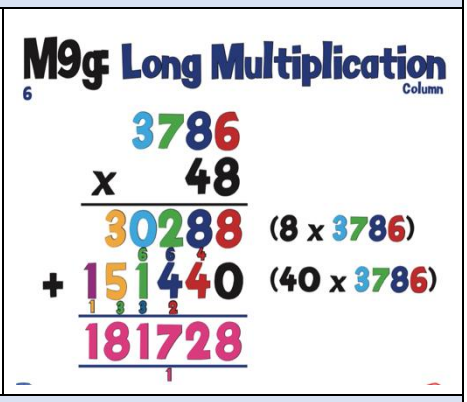
Autumn Term One Block 2 - Four Operations (2) – Multiplication

Objectives	Teacher
I can multiply numbers of up to 4 digits by a two-digit number using a formal written method.	
I can use estimating to check answers and problem solving.	

Column Multiplication







Key Vocabulary

multiplication	The way of adding a number to itself a required amount of times (repeated addition).
multiplicand	A number or an amount that is being multiplied.
multiplier	A number or an amount that is doing the multiplication.
product	The total amount when a number is multiplied by another.
estimate	To use mathematical knowledge to give a not exact answer or amount.
column multiplication	A formal written method to calculate the product of numbers being multiplied.
short multiplication	A formal written method of multiplying a number with two or more digits by a one-digit number.
long multiplication	A formal written method of multiplying a number with two or more digits by a two-digit (or more) number.

Stem Sentences

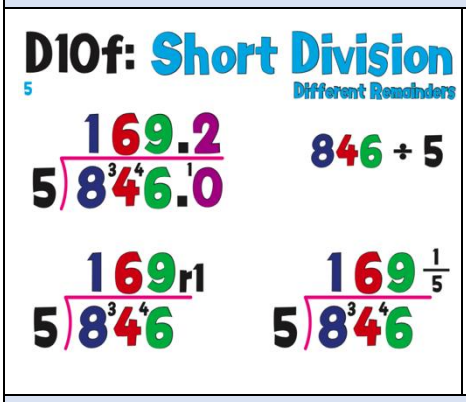
The product of ___ and ___ is ___ .	To multiply by a two-digit number, first multiply the ___ , then multiply by the ___ and then find the ___ .
Multiplying by ___ is the same as multiplying by ___ and then multiplying the answer by ___ .	___ = ___ x ___ , so to multiply by ___ I can multiply by and then multiply the product by ___ .

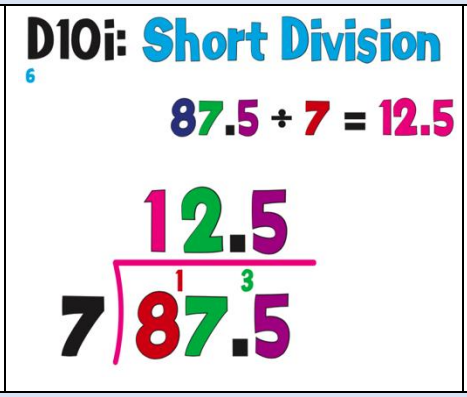
Assessment

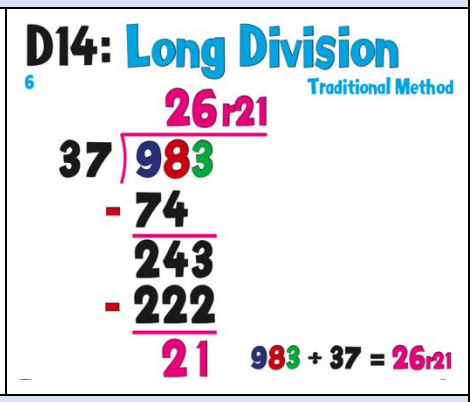
St John Fisher RC Primary School
Year 6 Maths Knowledge Organiser
Autumn Term One Block 2 - Four Operations (3) – Division

Objectives	Teacher
I can divide numbers of up to 4 digits by a two-digit number using a formal written method of long division, showing remainders, fractions or rounding as appropriate.	
I can use estimating to check answers and problem solving.	

Column Division







Key Vocabulary

division	The sharing of a number or amount into equal groups.
dividend	A number or amount being divided.
divisor	A number that will divide the dividend into equal groups.
quotient	The number (or groups) obtained when one number is divided by another.
remainder	The amount left over when a number cannot be exactly divided by another.
column division	A formal written method of dividing a number by another number.
short division	A formal written method of dividing a number with two or more digits by a one-digit number.
long division	A formal written method of dividing a number with two or more digits by a two-digit (or more) number.

Stem Sentences

___ thousands divided by ___ is equal to ___ thousands with a remainder of ___ .	___ hundreds divided by ___ is equal to ___ hundreds with a remainder of ___ .
___ cannot be divided by ___ ,so there is a _____ of ___ .	___ = ___ x ___ , so to divide by ___ I can divide by ___ and then divide the quotient by ___ .

Assessment

St John Fisher RC Primary School

Year 6 Maths Knowledge Organiser

Autumn Term One Block 2 - Four Operations (4) – Factors, Multiples & Prime

Objectives	Teacher
• I can identify common factors, multiples and prime numbers.	
• I can identify and use cube numbers and their notation.	

Factors & Multiples

Common Factors

Factors of 48

1	2	3	4	6	8	12	16	24	48

Factors of 30

1	2	3	5	6	10	15	30

Common factors: 1, 2, 3, 6

Common Multiples

Multiples of 3

3	...	18	21	24	...	39	42

Multiples of 7

7	14	21	28	35	42

Common multiples: 21, 42...

Prime, Squared & Cubed Numbers

Primes

A prime number has only 1 and itself as factors: 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 33, 37, 41, 43

A composite number has factors other than 1 and itself.

Squares and Cubes

Square numbers result from a number being multiplied by itself (e.g. 5 × 5 = 25):

1, 4, 9, 16, 25, 36, 49, 64, 81, 100

Cube numbers result from a number being multiplied by itself twice (2 × 2 × 2 = 8):
1, 8, 27, 64, 125

Key Vocabulary

integer	An integer is a whole number. It can be positive, negative or zero.
factor	A factor is an integer that divides exactly into a whole number without a remainder.
multiple	A multiple is a whole number in the times table of a selected whole number.
common factor	An integer that is a factor of two or more numbers e.g. 2, 5 and 10 or common factors of 20.
common multiple	A multiple that is shared by two or more numbers e.g. 12 is a common multiple of 6 and 4.
prime number	A prime number is a whole number greater than 1 whose only factors are 1 and itself.
squared number	A squared number is the result (product) of when a number is multiplied by itself. The symbol for squared is ^{2}
cubed number	A cubed number is when a number is multiplied by itself and then itself again. The symbol for cubed is ^{3}

Stem Sentences

___ is a factor of all numbers.	The largest factor of a number is always ___ .
___ is a common multiple of ___ and ___ .	___ cubed is ___ x ___ x ___ .

Assessment

St John Fisher RC Primary School
Year 6 Maths Knowledge Organiser
Autumn Term One Block 2 - Four Operations (5) – Order & Calculations

Objectives	Teacher
• I can mentally calculate using a mix of the four operations and increasingly large numbers.	
• I can use the order of importance of the four operations when answering questions.	
• I can solve multi-step problems, deciding which operations and methods to use and explain why they were suitable.	

Order & Calculations

B	Brackets	10 × (4 + 2) = 10 × 6 = 60
O	Order	5 + 2^2 = 5 + 4 = 9
D	Division	10 + 6 ÷ 2 = 10 + 3 = 13
M	Multiplication	10 - 4 × 2 = 10 - 8 = 2
A	Addition	10 × 4 + 7 = 40 + 7 = 47
S	Subtraction	10 ÷ 2 - 3 = 5 - 3 = 2

Mental Calculations and Estimation

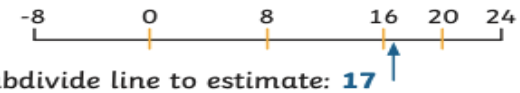
Order of calculations:

50 × 34 × 2 = 50 × 2 × 34 = 100 × 34 = 3400

Money: £8.99 + £3.49 = £12.48

Use £9 + £3.50 = £12.50 and subtract 2p

Estimate on a number line



Subdivide line to estimate: **17**

Key Vocabulary

equation	A mathematical statement that includes and equals (=) sign.
BODMAS	An acronym for the order in which operations should be calculated in an equation (Bracket, Order, Division, Multiplication, Addition, Subtraction).
brackets	Brackets are used to group parts of an equation separately.
order	Order refers to any squared or cubed symbols.
division	To divide a number by another. Multiplication and division are of equal importance, so should be completed in order of left to right.
multiplication	To multiply a number by another. Multiplication and division are of equal importance, so should be completed in order of left to right.
addition	To add a number to another. Addition and subtraction are of equal importance, so should be completed in order of left to right.
subtraction	To subtract a number from another. Addition and subtraction are of equal importance, so should be completed in order of left to right.
mental calculation	To not use written or formal methods to find a solution to a calculation.

Stem Sentences

First I need to work out ___ . The calculation I need to do is ___ .	Next I need to work out ___ . The calculation I need to do is ___ .
___ has greater priority than ___, so the first part of the calculation I need to do is ___ .	

Assessment