



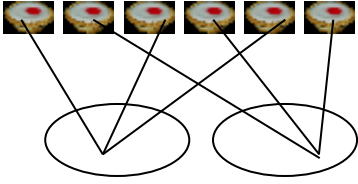
Hanley St. Luke's CE Aided Primary School

SSIP - Calculating Strand Policy: DIVISION (V4)

Calculating strand: DIVISION		
FS	Objectives taken from Strand 3: Knowing and Using Number Facts Strand 4: Calculating	Y1 MUST
SHOULD End of year expectations	<ul style="list-style-type: none"> Count repeated groups of the same size (FS) <i>Pupil learning outcomes: (will change depending on strategy: see below) e.g. I can count in twos</i> Share objects into equal groups and count how many in each group (FS) <i>Pupil learning outcomes: e.g. I can sort real objects into equal sets</i> 	
	Written Methods	Vocabulary

Sharing equally

E.g. 6 cakes are shared equally between 2 people. How many cakes does each person get?

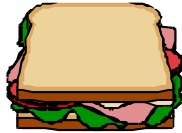


Sharing equally - dealing with 'left overs', (remainders)

Share the bananas equally between the monkey and the elephant. How many bananas does each one get? Are there any bananas left over? What could we do with the left over banana?



Cut the sandwich in half. How many pieces are there?



Grouping

How many pairs of socks can we make from this pile of socks? Count the pairs.

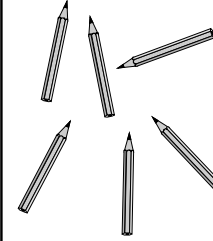


Twenty....nineteen.....eighteento zero, hundred...ninety.....eighty....to zero count, count back (from, to) count in ones, twos... tens..., how many times? Even. Pair, pattern, estimate ,halve, sort, equal, sets of

Test Questions

Share the biscuits out so that everyone has the same number.

Share these pencils equally between Asif and Ben.
How many pencils will each of them get.



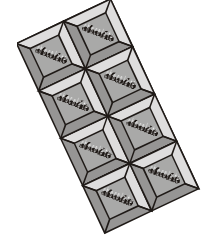
Share the teacups so that each teddy bear gets one teacup. We have 11 cakes. Each teddy bear needs two cakes, will there be any cakes left over?

How many children can have 2 coins from this pile of ten 10p coins?

Share the cards between the players so that each player gets 5 cards.

Share these coins between three children so that each child gets the same number of coins.

How many children can have two squares each of this chocolate?



Put half of these ten animals in the ark. How many of the animals are in the ark?

How many towers of 5 cubes can we make from this bucket of cubes? Count the groups of cubes.

How many pairs of socks can we make from this pile of socks? Count the pairs.

Share the stickers between 3 children equally. How many stickers does each child get? Are there any stickers left over?

Can you cut the cake in half? How many pieces are there?

Year 1

Calculating strand: DIVISION

FS COULD / Y2 MUST

SHOULD
End of year
expectations
in bold

Count on or back in ones, twos, fives and tens and use this knowledge to derive the multiples of 2, 5 and 10 to the tenth multiple (Y1)

Pupil learning outcomes (changes depending on unit) e.g.: I can count on or back in fives. If you give me a number I can say how many fives are in that number.

Solve practical problems that involve combining groups of 2, 5 or 10, or sharing into equal groups (Y1)

Pupil learning outcomes (changes depending on unit) e.g.: I can share objects into equal groups and tell you how many there are in one group

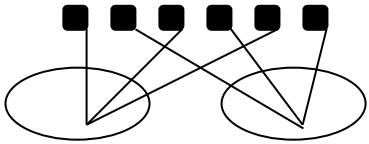
Written Methods

Sharing equally

Share items equally where there are no remainders, (see below.)

E.g. 6 sweets are shared equally between 2 people. How many sweets does each one get?

Recording as a pictorial representation AND related number sentences



$3 + 3 = 6$ "3 sweets for me and 3 sweets for you makes 6 sweets altogether"

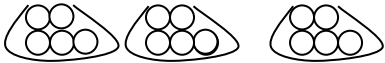
$6 \div 2 = 3$ "6 sweets shared between two people is 3 sweets each"

Also share items equally where there are remainders and discuss the items left over.

Grouping

Understand the operation of division as **Grouping** (or repeated addition)

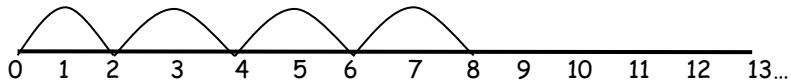
E.g. There are 15 apples in a box. How many bags of 5 apples can be filled? i.e. How many groups of 5 can you make from 15?



Grouping should also be modelled on a **number line** by the teacher and later by pupils.

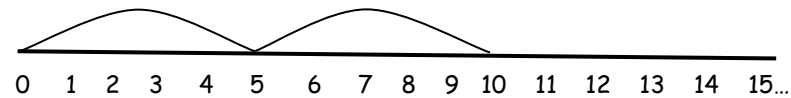
Use prepared fully marked and fully numbered number lines to begin with and also draw own 'groups' (jumps) as appropriate. Use **GROUPING ITP**.

e.g. 8 children are put into teams of 2. How many teams are there? I.e. How many groups of 2 are there in 8?



$8 \div 2 = 4$ "eight children divided into groups of two, makes four groups."

10 cakes are put into boxes of 5. How many boxes are there? I.e. How many groups of 5 are there in 10?



$10 \div 5 = 2$ "ten cakes divided into groups of five, makes two groups."

Assessment for learning

(AFL)

For AFL questions, see primary framework planning tools

www.standards.dfes.gov.uk/primaryframeworks/mathematics/planning/Year1/relationships/Unit3/

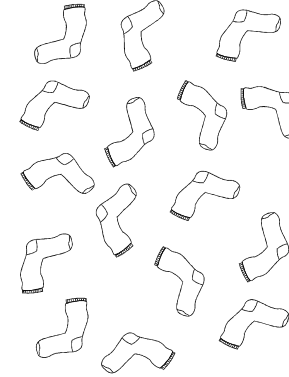
Vocabulary

problem, solution, calculate, calculation, number sentence, answer, method, explain, money, coin, pence, penny, pound, pay, change, buy, sell, price, spend number sequences, count back (from, to) in ones, twos...fives..... tens...less, few, many, odd, even, how many times? pair, multiple, half, halves

Test Questions

There are twenty children in a classroom.
Half of them are girls.
How many are boys?
KS1 1997 level 2b [oral]

How many pairs of socks are there?

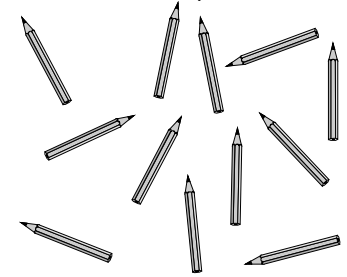


KS1 2000 level 2b

How many wheels do we need to make three cars?

We need to put 12 cakes into boxes of 3. How many boxes will we have? What if we had to put the same number of cakes into boxes of 4?

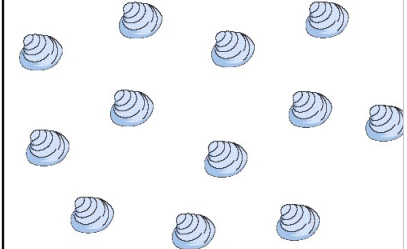
Here is a set of 12 pencils.



How many is half the set?

KS1 2002 level 2c

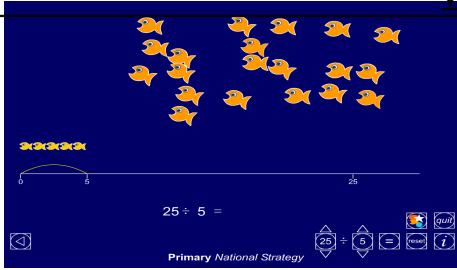
Four children share these shells. They each get the same number of shells.



How many shells does each child get? KS1 2005 level 2c

Year 2	Calculating strand: DIVISION	Y1 COULD / Y3 MUST
<p>SHOULD End of year expectations in bold</p>	<p>Derive and recall division facts for the 2, 5 and 10 times-tables; recognise multiples of 2, 5 and 10 (Y2)</p> <p><i>Pupil learning outcomes (changes depending on unit) e.g.: I know my 2, 5 and 10 times-tables. I can work out division facts that go with the tables</i></p> <p>Represent sharing and grouping as division; use practical and informal written methods and related vocabulary to support division, including calculations with remainders (Y2)</p> <p><i>Pupil learning outcomes (changes depending on unit) e.g.: I can use a number line to do division and can work out remainders if there are any</i></p>	

Written Methods



Grouping

Use repeated addition (ie number families) as a method of grouping by counting up. Without remainders, and then with remainders.

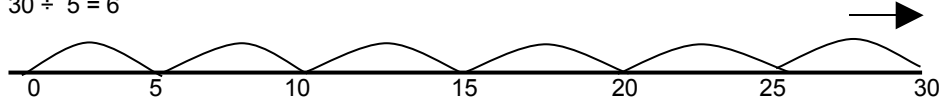
Model using the GROUPING ITP.

Use fully marked and fully numbered number lines, moving towards using empty number lines when pupils gain confidence in the use of number lines.

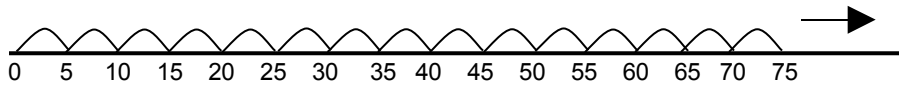
Begin by dividing with a divisor of 2, 5 or 10, (e.g. $20 \div 5$) moving towards divisors of 3, 4 and 6 (e.g. $18 \div 3$) as pupils

begin to gain confidence.

$$30 \div 5 = 6$$

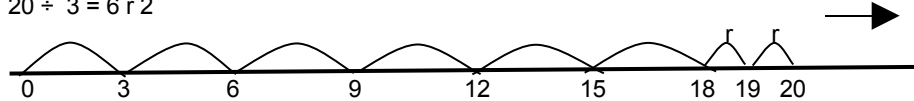


$$75 \div 5 = 15$$

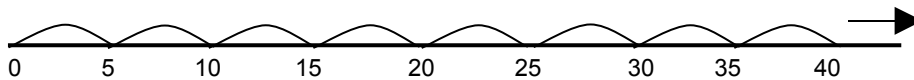


Remainders

$$20 \div 3 = 6 \text{ r } 2$$



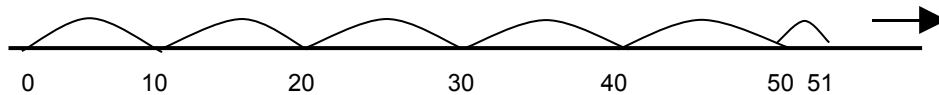
Luke worked out the correct answer to $40 \div 5$. His answer was 8. Show how he could have worked this out.



In Context

Understand the concept of a **remainder in context**.

Eg. How many lengths of 10 cms can you cut from 51 cm of tape? How many will be left?



Answer: 5 lengths of 10cm and 1 cm left over.

Assessment for learning (AFL)

See primary framework planning tools - AFL questions within the relevant units

www.standards.dfes.gov.uk/primaryframeworks/mathematics/planning/Year2/relationships/Unit3/

Vocabulary

calculate, calculation, inverse, answer, explain, method, sign, operation, symbol, number sentence, number line, mental calculation, written calculation, informal method, jottings, diagrams, pictures, images
grouping, halve, share, share equally, one each, two each, three each... group in pairs, threes... tens, equal groups of, ÷ sign, divide, divided by, divided into, left, left over, remainders

Test Questions

There are 35 children. They get into teams of 5.
How many teams are there altogether?
KS1 2003 level 3

Luke worked out the correct answer to $40 \div 5$.
His answer was 8 Show how he could have
worked out his answer.
KS1 2003 level 3 [adapted-]

Harry has a set of 22 pencils.
How many is half the set?
KS1 2002 level 2c [adapted]

At the shop, all packets of crisps cost the same.
Hannah buys 2 packets. She pays 40 pence.
How much does one packet cost?
KS1 2002 level 2c [oral]

Write the missing number in the box.
 $\square \div 2 = 7$

KS1 2001 level 3

23 children are coming to John's party.
Each child will get 1 ice cream.
There are 10 ice creams in a box.
How many boxes does John need to buy?
KS1 2001 level 2a

What is half of this amount?



KS1 2005 level 3

Mary eats half of these cherries.

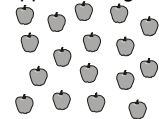


How many does she eat? KS1 1999 level 2b

Write the answer.

$45 \div 5 = \square$ KS1 2002 level 3

John puts these apples in bags.



He puts 5 apples in each bag. How many apples
will be left over?

KS1 1997 level 2b

There are 20 eggs.

A box holds 6 eggs.

How many boxes are needed to hold all the
eggs?

KS1 2000 level 2a

Year 3	Calculating strand: DIVISION	Y2 COULD / Y4 MUST
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SHOULD End of year expectations in bold	<p style="color: red;">Derive and recall division facts for the 2, 3, 4, 5, 6 and 10 times-tables; recognise 2, 5 or 10 up to 1000(Y3)</p> <p style="color: blue;"><i>Pupil learning outcomes (changes depending on unit) e.g.: I can use my knowledge of multiplication tables to find division facts</i></p> <p style="color: green;">Use practical and informal written methods to divide two-digit numbers (e.g. $50 \div 4$); round remainders up or down, depending on the context(Y3)</p> <p style="color: blue;"><i>Pupil learning outcomes (changes depending on unit) e.g.: I can divide a two-digit number by a one-digit number</i></p> <ul style="list-style-type: none"> <li style="color: green;">• Understand that division is the inverse of multiplication and vice versa and use to derive and record related multiplication and division number sentences (Y3) <p style="color: blue;"><i>Pupil learning outcomes (changes depending on unit /written method) e.g. I can give the multiplication fact that is linked to a division fact</i></p>
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Written Methods	Assessment for learning (AfL)	Vocabulary
<p>Grouping by repeated addition, counting up, with remainders $50 \div 4 = 12 \text{ r } 2$</p> <p style="text-align: center; font-size: 2em;">→</p> <p><u>Understand remainders in context</u> Where the solution to a problem has a remainder, know when the required answer should be more or less than the quotient (where $20 \div 4 = 5$, 20 is the dividend, 4 is the divisor and 5 is the quotient.)</p> <p>Using tables knowledge and manipulation of facts. Be familiar with the language of products and factors. Using arrays (as found in multiplication methods)</p>	<p>See primary framework planning tools - AfL questions within the relevant units www.standards.dfes.gov.uk/primaryframeworks/mathematics/planning/Year3/relationships/Unit3/</p>	<p>problem, solution, calculate, calculation, inverse, answer, method, explain, predict, estimate, reason, operation, symbol, number sentence, equation, mental calculation, written calculation, informal method, jottings, number line, pound (£), penny/pence (p), note, coin, units of measurement and their abbreviations</p> <p>share, share equally ,one each, two each, three each. group in pairs, threes... tens , equal groups of ,÷ sign, divide, division , divided by, divided into, left, left over, remainder, inverse</p>

	Test Questions												
	<p>Circle the three numbers which divide by 5 with no remainder.</p> <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <tr><td style="padding: 2px 5px;">84</td><td style="padding: 2px 5px;">85</td><td style="padding: 2px 5px;">86</td></tr> <tr><td style="padding: 2px 5px;">91</td><td style="padding: 2px 5px;">92</td><td style="padding: 2px 5px;">93</td></tr> <tr><td style="padding: 2px 5px;">98</td><td style="padding: 2px 5px;">99</td><td style="padding: 2px 5px;">100</td></tr> <tr><td style="padding: 2px 5px;">105</td><td style="padding: 2px 5px;">106</td><td style="padding: 2px 5px;">107</td></tr> </table> <p>KS2 1997 Paper A level 3</p> <hr/> <p>20 children sit at tables in groups of 4. How many groups will there be? (KS1 1999 level 2a [oral])</p> <hr/> <p>What is the remainder when twenty-seven is divided by five? KS2 2005 Mental test level 3</p> <hr/> <p>Circle the two divisions which have an answer of 5 remainder 2 $17 \div 5$ $17 \div 3$ $22 \div 4$ $22 \div 5$ Y5 optional test 2003 Paper A level 3</p> <hr/> <p>Ten children can sit at one table. There are 43 children.</p> <p>How many tables are needed so that each child can sit at a table? KS1 2005 level 3</p> <hr/> <p>Lucy has 16 cards. She gives a quarter of her cards to Kiran. How many cards does Lucy give to Kiran? KS2 2003 Paper A level 3</p>	84	85	86	91	92	93	98	99	100	105	106	107
84	85	86											
91	92	93											
98	99	100											
105	106	107											
	<p>Divide forty-two by six. Y4 optional test Mental test level 4</p> <hr/> <p>Five is a quarter of a number. What is the number? KS1 2003 level 3 [oral]</p> <hr/> <p>Write the missing number in the box. $\square \div 2 = 7$ KS1 2001 level 3</p> <hr/> <p>There are 35 children. They get into teams of 5. How many teams are there altogether? KS1 2003 level 3</p> <hr/> <p>Write the answer. $45 \div 5 = \square$ KS1 2002 level 3</p> <hr/> <p>A carton of orange fills 6 cups. Mrs Green wants to fill 50 cups with orange. How many cartons of orange does she need to buy? KS1 2003 level 3</p> <hr/> <p>Write a number in each box to make this correct. $300 \div 2 = \square \times \square$ KS1 2003 level 3</p>												

Year 4	Calculating strand: DIVISION		Y3 COULD / Y5 MUST
SHOULD End of year expectations in bold	<p>Derive and recall division facts up to 10×10, and multiples of numbers to 10 up to the tenth multiple(Y4)</p> <p><i>Pupil learning outcomes (changes depending on unit) e.g. If you give me a multiplication fact I can give you one or two division facts to go with it</i></p> <p>Divide numbers to 1000 by 10 and then 100 (whole number answers), understanding the effect; relate to scaling up or down (Y4)</p> <p>Develop and use written methods to record, support and explain division of two-digit numbers by a one-digit number, including remainders, e.g. $98 \div 6$ (Y4)</p> <p><i>Pupil learning outcomes (changes depending on unit) e.g.: I can use a written method to divide a two-digit number by a one-digit number and find the remainder.</i></p>		
Year 5	Calculating strand: DIVISION		Y4 COULD / Y6 MUST
SHOULD End of year expectation in bold	<p>Recall quickly multiplication facts up to 10×10, use to multiply pairs of multiples of 10 and 100 and derive quickly corresponding division facts (Y5)</p> <p><i>Pupil learning outcomes (changes depending on unit) e.g.: I can use multiplication and division facts to multiply and divide multiples of 10 and 100</i></p> <p>Refine and use efficient written methods to multiply and divide HTU \div U (Y5)</p> <p><i>Pupil learning outcomes (changes depending on unit) e.g.: I can use a written method to divide a three-digit number by a one-digit number and explain each step</i></p>		
Written Methods		Assessment for learning (AFL)	Vocabulary
Chunking method	Written Methods		See primary framework planning tools - AFL questions within the relevant units
Chunking – without remainders	Chunking – with remainders		www.standards.dfes.gov.uk/primary/frameworks/mathematics/planning/Year4/relationships/Unit3/
$96 \div 6 = 16$ $\begin{array}{r} 16 \\ 6 \overline{) 96} \\ \underline{6} \\ 36 \\ \underline{36} \\ 0 \end{array}$	$98 \div 6 = 16 \text{ r } 2$ $\begin{array}{r} 16 \\ 6 \overline{) 98} \\ \underline{6} \\ 38 \\ \underline{36} \\ 2 \end{array}$	primary/frameworks/mathematics/planning/Year4/relationships/Unit2/	share, share equally, halve, one each, two each, three each... group in pairs, three, tens, equal groups of divide, division, divided by, divided into, divisible by, remainder, factor, quotient, inverse
Subtracting 'chunks' of 10x, of the divisor ...	progressing to subtracting 'chunks' of 20x or 30x ... of the divisor	...then subtracting 'chunks' of 100x and 20x ... of the divisor without remainders	What is twenty-seven divided by nine? Y4 optional test 1999 Mental test level 4
$187 \div 8 = 23 \text{ r } 3$ Approximate first, $(160 \div 8 = 20)$	$187 \div 8 = 23 \text{ r } 3$ Approximate first, $(160 \div 8 = 20)$	$847 \div 7 = 121$ Approximate first, $(1000 \div 10 = 100)$	What is the smallest number that leaves: a remainder of 1 when divided by 2; a remainder of 2 when divided by 3; a remainder of 3 when divided by 4; a remainder of 4 when divided by 5? KS2 2003 Paper A level 4
$\begin{array}{r} 23 \text{ r } 3 \\ 8 \overline{) 187} \\ \underline{- 80} \\ 107 \\ \underline{- 80} \\ 27 \\ \underline{- 24} \\ 3 \end{array}$	$\begin{array}{r} 23 \text{ r } 3 \\ 8 \overline{) 187} \\ \underline{- 160} \\ 27 \\ \underline{- 24} \\ 3 \end{array}$	$\begin{array}{r} 121 \\ 7 \overline{) 847} \\ \underline{- 700} \\ 147 \\ \underline{- 140} \\ 7 \\ \underline{- 7} \\ 0 \end{array}$	How many times are there in five tens? KS2 2003 Paper A level 4 Divide ten by three. KS2 2003 Mental test I 3 KS2 2003 Mental test level 3 Calculate 56 \div 4 KS2 2005 Paper A level 3 How many tens are there in two hundred and ten? What is the remainder when you divide 53 by 4? KS2 2006 optional test 2003 Paper A level 3
$\begin{array}{r} 3 \\ 3 \overline{) 9} \\ \underline{- 9} \\ 0 \end{array}$		Progressing to HTU \div U subtracting 'chunks' of 100x and 20x ... of the divisor with a remainder	What is the smallest whole number that is divisible by five and by three? KS3 2004 Mental test level 4 Calculate $847 \div 7$. KS2 2001 Paper A level 4 Ten times a number is eighty-six. What is the number? KS2 2002 Mental test level 5
			Test Questions Write the answer. $84 \div 7 =$ Y4 optional test Paper A level 4 Divide thirty-one point five by ten.----- KS2 2003 Mental test level 4 Calculate $928 \div 4 =$ 32 24 Y5 optional test 2003 Paper A level 4 Write in the missing numbers of peanuts. She gave the shopkeeper £2 and gets 80p of change. How many bags of peanuts? KS2 2004 Paper A level 4 Write the four missing digits could be. Write in the missing numbers. KS2 1997 Paper A level 4 $4 \times \square = 200$ KS2 2002 Paper A level 3 There are 54 marbles; and they are put into 6 bags. How many marbles are in each bag? KS2 2004 Paper A level 4 What is the remainder when you divide 53 by 3? KS2 2003 Paper A level 4 How many bags contain? A 108 marbles B 18 marbles C 15 marbles D 12 marbles E 9 marbles TIMSS 1995 Grade 4

Year 6	Calculating strand: DIVISION		Y5 COULD
SHOULD End of year expectations in bold	<ul style="list-style-type: none"> Use knowledge of place value and multiplication facts to 10×10 to derive related division facts involving decimals, e.g., $4.8 \div 6$ (Y6) <i>Pupil learning outcomes (changes depending on unit) e.g.: I can use place value and my tables to work out division facts for decimals</i> Calculate mentally with integers and decimals: $TU \div U$, $U.t \div U$ (Y6) <i>Pupil learning outcomes (changes depending on unit) e.g. I can divide whole numbers and decimals</i> Use efficient written methods to divide integers and decimals by a one-digit integer (Y6) <i>Pupil learning outcomes (changes depending on unit) e.g.: I can use efficient written methods to divide whole numbers and decimals</i> 		
<u>Written Methods</u>		<u>Assessment for learning (AfL)</u> See primary framework planning tools - AfL questions within the relevant units www.standards.dfes.gov.uk/primaryframeworks/mathematics/planning/Year6/relationships/Unit1/	<u>Vocabulary</u> calculate, calculation, equation, operation, symbol, inverse, answer, method, strategy, explain, predict, reason, reasoning, pattern, relationship, decimal, decimal point, decimal place, estimate, approximate, pound (£), penny/pence (p), units of measurement and abbreviations, degrees Celsius halve, share, share equally, one each, two each, three each... group in pairs, threes... tens equal groups of, divide, division, divided by, divided into, remainder, factor, quotient, divisible by inverse, integer
Chunking method			
Decimal calculations	Inverse operation	In context (simple HTU÷TU)	<u>Test Questions</u>
Calculate $U.t \div U$ mentally using knowledge of 10×10 facts e.g. I know $4.2 \div 6 = 0.7$ because $42 \div 6 = 7$ $U.t \div U$ using chunking $27.6 \div 6 = 4.6$ $\begin{array}{r} 4.6 \\ 6 \overline{) 27.6} \\ \underline{- 24.0} \quad (6 \times 4) \\ 3.6 \\ \underline{- 3.0} \quad (6 \times 0.5) \\ 0.6 \\ \underline{- 0.6} \quad (6 \times 0.1) \\ 0.0 \end{array}$	Write in the missing digit. $5 \square \times 8 = 456$ KS2 1995 Paper A level 4 Use the inverse operation to complete calculations such as these. $\begin{array}{r} 57 \\ 8 \overline{) 456} \\ \underline{- 400} \quad (8 \times 50) \\ 56 \\ \underline{- 56} \quad (8 \times 7) \\ 0 \end{array}$	Eggs are put in trays of 12. The trays are packed in boxes. Each box contains 180 eggs. How many trays are in each box? KS2 1999 Paper A level 4 $\begin{array}{r} 15 \\ 12 \overline{) 180} \\ \underline{- 120} \quad (12 \times 10) \\ 60 \\ \underline{- 60} \quad (12 \times 5) \\ 0 \end{array}$	Divide four point eight by eight. KS2 2004 Mental test level 4 [adapted] ----- Divide four point two by six. Y4 optional test 1998 Mental test level 4 [adapted] ----- Divide four point two by seven. KS3 2004 Mental test level 4 [adapted] ----- Write in the missing number. $\square \div 5 = 22$ (KS2 1995 Paper A level 4) ----- Calculate $123 \div 5$. Calculate $16.5 \div 3$. Calculate $847 \div 7$. KS2 2001 Paper A level 4 Calculate $942 \div 6$ Y5 optional test 2003 Paper A level 4 Write in the missing numbers. $32.62 \div 10 =$ Y5 optional test Paper A level 4
Schools may then wish to progress to the 'short division' method with a single digit divisor ($HTU \div U$), for children who are confident with multiplication and division facts, and with subtracting multiples of 10 mentally, and whose understanding of partitioning and place value is sound.			
Year 6+	Calculating strand: DIVISION		



COULD
End of year expectations in bold

Consolidate rapid recall of number facts, including multiplication facts to 10×10 and the associated division facts
 Recognise and use multiples, factors, divisors, common factors, highest common factors and lowest common multiples in simple cases(Y6/7)
 Understand how the commutative, associative and distributive laws, and the relationships between operations, including inverse operations, can be used to calculate more efficiently; use the order of operations, including brackets(Y6/7)
 Consolidate and extend mental methods of calculation to include decimals, fractions and percentages (Y6/7)
Pupil learning outcomes (changes depending on unit) e.g.: I can divide a decimal by 2, 10 or 100
 Extend division to dividing a three-digit integer by a two-digit integer (Y6 / 7)
Pupil learning outcomes (changes depending on unit) e.g.: I can use a written method to divide a 3-digit number by a 2-digit number

Y6 COULD Decimals	Y6 COULD (Level 5)	Y6 COULD (Level 5)
<p>More able could progress to calculate $TU.t \div U$ to one d.p $87.5 \div 7 = 12.5$</p> $ \begin{array}{r} 12.5 \\ 7 \overline{) 87.5} \\ \underline{- 70.0} \quad (7 \times 10) \\ 17.5 \\ \underline{- 14.0} \quad (7 \times 2) \\ 3.5 \\ \underline{- 3.5} \quad (7 \times 0.5) \\ 0.0 \end{array} $	<p>HTU \div TU (chunks of 10x the divisor) $560 \div 24 = 23 \text{ r } 8$ Approximate first, ($500 \div 25 = 20$)</p> $ \begin{array}{r} 23 \text{ r } 8 \\ 24 \overline{) 560} \\ \underline{- 240} \quad (24 \times 10) \\ 320 \\ \underline{- 240} \quad (24 \times 10) \\ 80 \\ \underline{- 48} \quad (24 \times 2) \\ 32 \\ \underline{- 24} \quad (24 \times 1) \\ 8 \\ 3 \end{array} $	<p>HTU \div TU (chunks of multiples of 10x the divisor) $560 \div 24 = 23 \text{ r } 8$ Approximate first, ($500 \div 25 = 20$)</p> $ \begin{array}{r} 23 \text{ r } 8 \\ 24 \overline{) 560} \\ \underline{- 480} \quad (24 \times 20) \\ 80 \\ \underline{- 72} \quad (24 \times 3) \\ 8 \end{array} $

Rules of arithmetic	Instructions	Examples	
Brackets	Always carry out first any calculations that are within brackets	$40 - (3 + 2) = 40 - 5 = 35$ $20 \div (18 - 13) = 20 \div 5 = 4$	What is three thousand divided by twenty? KS2 2002 Mental test level 5 ----- What is the smallest whole number that is divisible by five and by three? KS3 2004 Mental test level 4 -----
Multiplication and division	After working out those calculations in the brackets do the multiplication and division calculations next before addition and subtraction. If the expression involves only multiplication and division calculations work from left to right or reorder moving a number with its associated operation.	$5 \times 2 - 8 \div 2 = 10 - 4 = 6$ $9 \times 8 \div 3 = 72 \div 3 = 24$ $9 \times 8 \div 3 = 9 \div 3 \times 8 = 3 \times 8 = 24$	Write two factors of twenty-four which add to make eleven. KS2 2005 Mental test level 5 ----- Calculate $900 \div (45 \times 4)$. KS2 2004 Paper A level 5 -----
Addition and subtraction	Finally do the addition and subtraction calculations. If the expression involves only addition and subtraction calculations work from left to right or reorder moving a number with its associated operation.	$25 + 19 - 11 - 18 = 44 - 11 - 19 = 33 - 19 = 14$ $25 + 19 - 11 - 18 = 25 - 11 + 19 - 18 = 13 + 1 = 14$	What is three point nine divided by two? KS3 2003 Mental test level 6 ----- Write in the missing digit. $\square 92 \div 14 = 28$ KS2 1995 Paper A level 5 ----- Calculate $924 \div 22$. KS2 2002 Paper A level 5 -----
Laws of arithmetic	Description	Examples	
Commutative laws for addition and multiplication	When adding two numbers the order of the numbers can be reversed. When multiplying two numbers the order of the two numbers can be reversed.	$4 + 18 = 18 + 4$ $5 \times 7 = 7 \times 5$	Write in the missing number. $50 \div \square = 2.5$ KS2 2003 Paper A level 5 -----
Associative laws for addition and multiplication	When adding three or more numbers any adjacent pair of numbers can be added first. When multiplying three or more numbers, any pair of adjacent numbers can be multiplied together first.	$3 + 6 + 4 = (3 + 6) + 4 = 3 + (6 + 4)$ $3 \times 4 \times 5 = (3 \times 4) \times 5 = 3 \times (4 \times 5)$	Calculate $157 \div 5$. ----- Calculate $1.75 \div 5$. -----
Distributive laws for multiplication and division over addition and subtraction	When a sum or difference is being multiplied by a number, each number in the sum or difference can be multiplied first and the products are then used to find the sum or difference. When a sum or difference is being divided by a number, each number in the sum or difference can be divided first and the dividends are then used to find the sum or difference.	$(30 + 8) \times 7 = (30 \times 7) + (8 \times 7)$ $(30 - 3) \times 9 = (30 \times 9) - (3 \times 9)$ $(20 + 8) \div 4 = (20 \div 4) + (8 \div 4)$ $(60 - 12) \div 3 = (60 \div 3) - (12 \div 3)$	Calculate $37.2 \div 8$. ----- Write in the missing digits. $323 \times \square 7 = 1518\square$ KS2 1995 Paper A level 5