Primary Maths

Planning for Deep Learning:

Securing the Small Steps needed for Mastery in Maths

Contents

Introduction

This resource has been developed to support effective implementation of the Mastery Approach.

In 2016, the NCETM highlighted the 5 'Big Ideas' of Mastery:

- Coherence
- Representation and Structure
- Variation
- Fluency
- Mathematical Thinking

Our small steps are designed to support planning and progression across school as they break down the learning journey towards age related expectations set out in the NC programmes of study into manageable, achievable steps.

This document is designed to support you to identify the small steps of learning needed for deep understanding and progression. It will support the planning of a coherent learning journey for all pupils, enabling them to make connections with their prior learning and secure mastery of key concepts.

The diagnostic assessment questions can be used to:

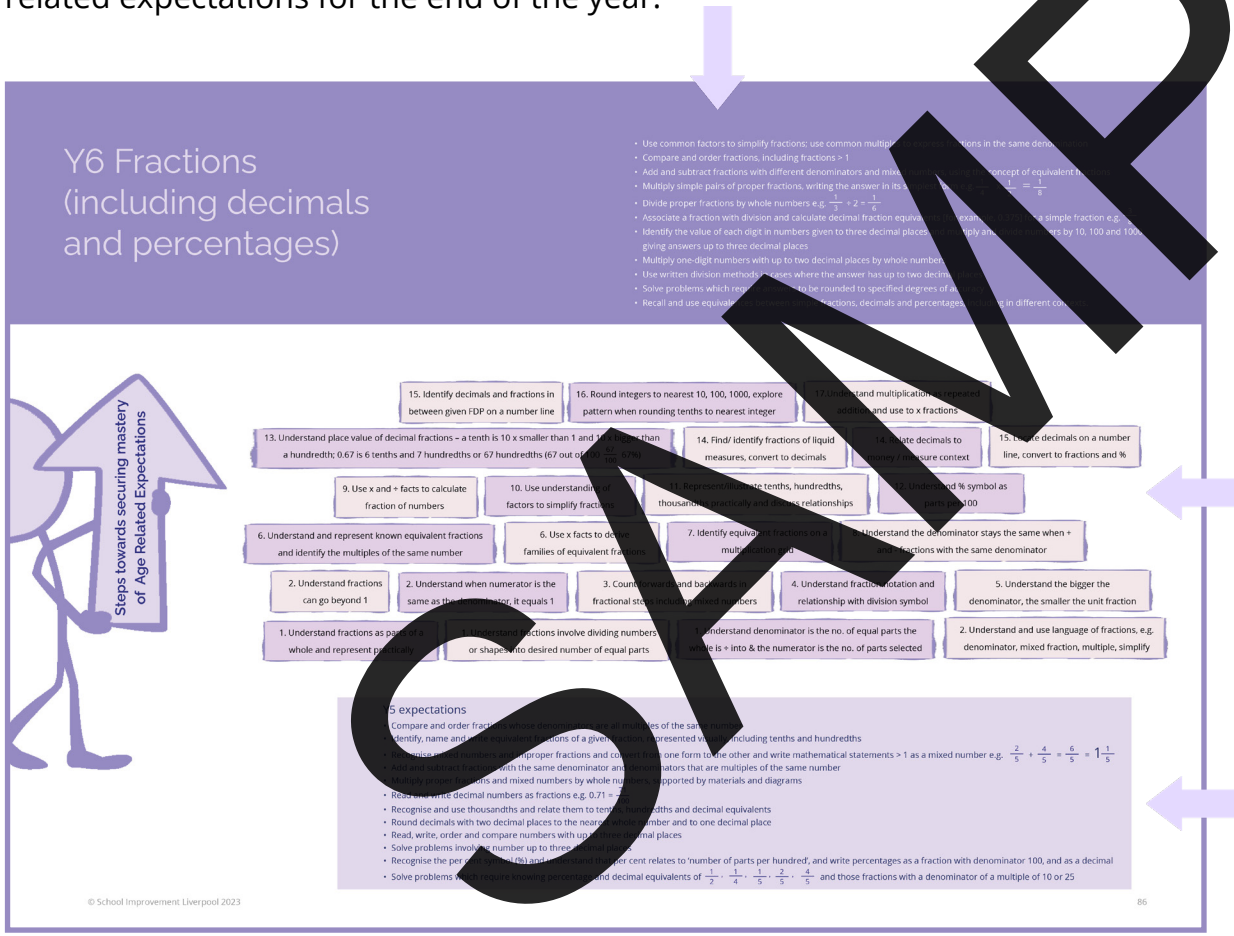
- Clarify starting points for a teaching sequence to ensure all learners begin their learning with confidence
- Identify gaps to be addressed through pre-teaching or additional support
- Aid the planning and delivery of an appropriate learning journey by revealing next steps for individual learners.

'Our SENDCo has found the diagnostic assessment questions useful as they enabled her to assess individual children and our teaching assistants have enjoyed being able to see the age related expectations for each year group'

Maths Subject Lead, St. Gerard's, Widnes 2018

How to use this guidance

The objectives at the top of the page are the statutory requirements detailed in the National Curriculum programmes of study for each year group, the age-related expectations for the end of the year:



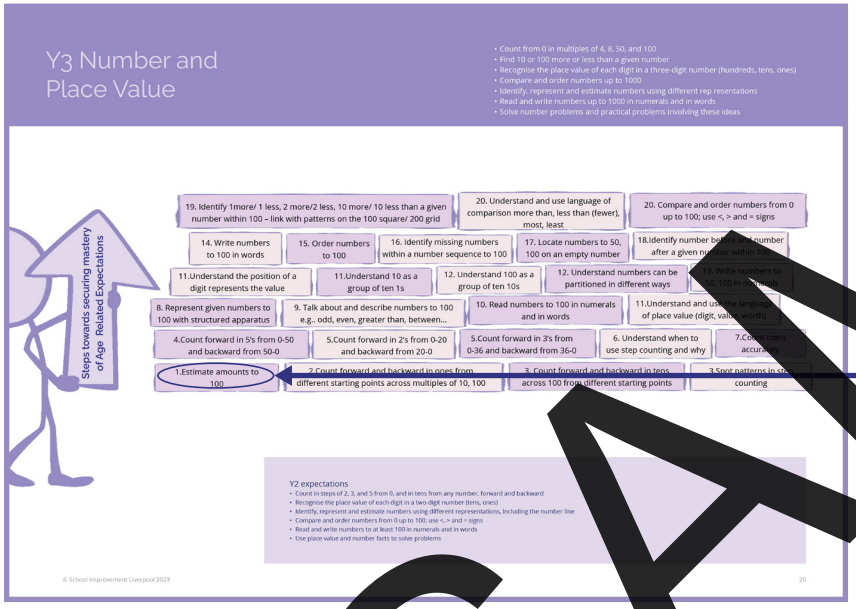
The small steps represent the child's journey towards securing mastery of their age-related expectations.

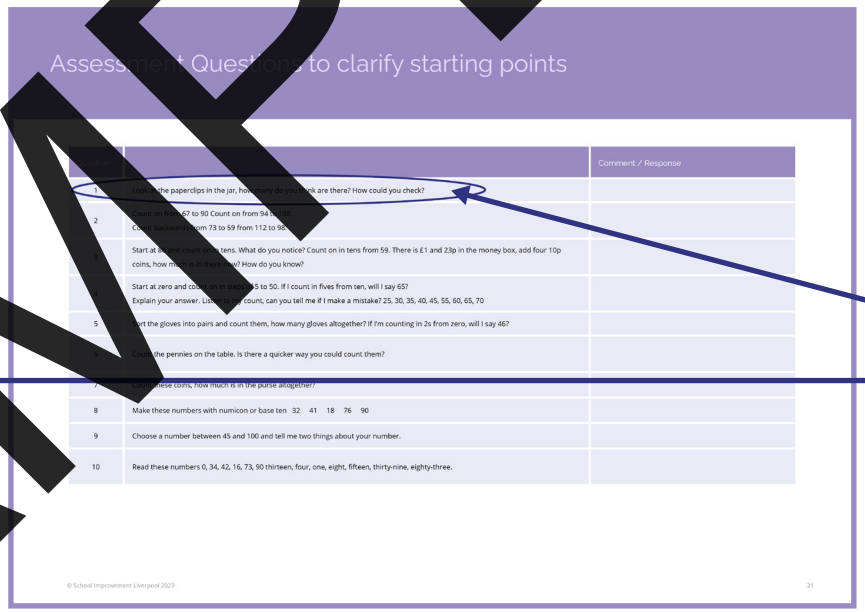
The objectives at the bottom of the page are the statutory requirements detailed in the National Curriculum programmes of study for the previous year group.

Worked example

You are preparing to teach a unit on Place Value in Year 3.

You could use the assessment questions with the whole class to clarify starting points for your teaching sequence and to identify any gaps in prior knowledge. You may not be a need to ask every question, you will know your cohort and select the questions accordingly.





Question 1 refers to the learning intention in Step 1.

In this example:

If the majority of children are struggling to estimate amounts to 100, then this would inform planning for the whole class. If a small number of children are struggling with this concept, then this could inform pre-teaching or intervention.

Please note that whilst the steps are not necessarily hierarchical, there is an expectation that the earlier steps are secured first.

Reception
Number

SAMPLE

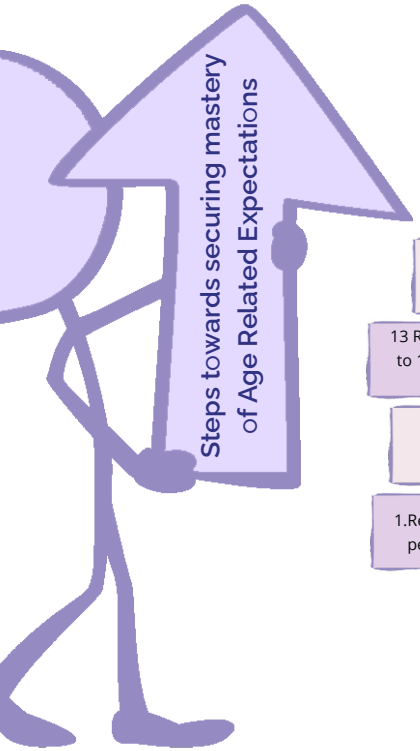
Reception

ELG: Number

- Have a deep understanding of number to 10, including the composition of each number;
- Subitise (recognise quantities without counting) up to 5
- - Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts

ELG: Numerical Patterns

- Verbally count beyond 20, recognising the pattern of the counting system;
- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity;
- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.



34. Record, using marks that they can interpret and explain

35. Recognise a pair as two things / objects

36. Begin to understand the word 'double'

37.Recognise half in a practical context

38. Understand the word 'sharing' in context

30. Say the number after a given number from 1 to 10

31. Begin to relate 1 less to the number before

31. Say the number before a given number from 1 to 10

32. Find the total number of items in 2 groups by counting all of them

33. In practical activities and discussion, beginning to use the vocabulary involved in adding and subtracting

34. Begin to identify own mathematical problems based on own interests and fascinations

25. Count forwards from a given number within 10 to another given number

26. Say the number that is one more than a given number within 10

27. Count backwards from 10 to 1

28. Use counting backwards to remove objects from a set within 10

29. Say the number that is one less than a given number within 10

30. Begin to relate 1 more to the number after

18. Recognise numbers can be represented in different ways on a five frame

19. Recognise numbers can be represented in different ways on a ten frame

20. Find one more from a group of up to 5 objects, then 10 objects

21. Find one less from a group of up to 5 objects, then 10 objects

22. Order numbers to 5

23. Order numbers to 10

24. Identify missing numbers within a number sequence to 10

13 Represent given numbers to 10 with fingers, objects / equipment

13. Recognise 10 fingers on 2 hands

14. Select the correct numeral to represent 1 to 5, then 1 to 10 objects

15. Use the language of more and fewer to compare two sets of objects

16. Understand amounts can be equal

16. Understand conservation of number

17.Begin to understand numbers can be made in different ways

7. Understand cardinality – last number in the count is how many are in the set

8. Count actions or objects which cannot be moved

9. Recognise finger patterns to 5

9.Understand there are 5 fingers on one hand

10. Count an irregular arrangement of up to ten objects

11. Count out up to six objects from a larger group

12. Estimate how many objects they can see and check by counting them

1.Recognise numerals of personal significance

2. Recognises the difference between numerals and letters

3. Recognise numerals in the environment

4. Subitise small amounts

5. Recognise regular arrangements of small numbers

6. Recite a counting string, say number names in order to 10

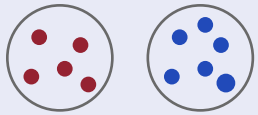
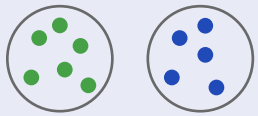
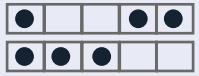
7. Count up to 3 or 4 objects using 1-1 correspondence: 1 number name per object

Development Matters 30 – 50 months

- Count objects, actions and sounds.
- Count beyond 10
- Subitise
- Compare numbers
- Link the number symbol (numeral) with its cardinal number value
- Understand the 'one more than/one less than' relationship between consecutive numbers
- Explore the composition of numbers to 10.

Assessment Questions to clarify starting points

Question		Comment / Response
1	How many people live in your house? Can you find that numeral on the table?	
2	Read these symbols: h 4 1 s t 5 2 What can you tell me about them?	
3	Where have you seen numbers in your house? Do you know the number of the house you live in? Where might you see this sign? 	
4	(Put 3 dinosaurs on the table) Look at the dinosaurs, how many can you see? Repeat with other objects.	
5	Roll the dice, what can you see? Can you find a number card to match the dice?	
6	Start counting from zero and I'll tell you when to stop.	
7	Count the animals. How many animals are there? (Do they say the number or count again?)	
8	Count my claps. Jump 4 times.	
9	Show me 3 fingers on one hand, can you show me in a different way? (Do they show you 3 fingers instantly or count them one at a time?) Can you show me 4 fingers? 5 fingers? Zero fingers?	
10	Count the sweets for me. Please repeat with other objects.	
11	Here are some apples, put four apples into the basket. Here are some pennies, put six pennies into the purse. Repeat with other objects.	
12	Look at the farm, how many animals do you think there are altogether? How could you find out?	
13	How many animals are on the farm? Show me the answer on your fingers. Can you find the matching Numicon piece?	
14	How many fingers am I holding up? Can you find the matching numeral card?	

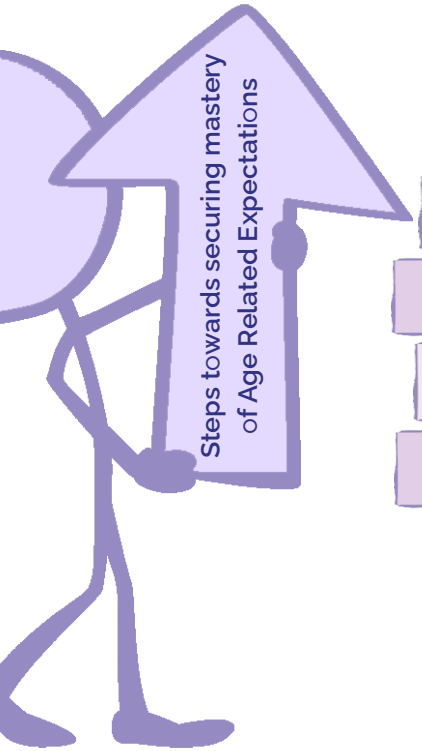
Question		Comment / Response
15	You have red counters, I have blue, who has more? Who has fewer?  How do you know?	
16	Look at the counters on the plates, which has more? Fewer?  Look at the counters now, are there more blue or green counters?  Tell me how you know.	
17	Look at the flashcard, what do you see? How many spots can you see? Can you see any groups of spots? 	
18	Look at the five frames, what do you notice? Use the counters to show 3 in another way. 	
19	Look at the ten frames, what do you notice?  Use the counters to show this number in a different way. Show me on your bunny ears.	
20	(Model practically) There are 5 biscuits on the plate, here is another one, how many biscuits are there now? (Does the child count again?)	
21	(Model practically) There are 4 balls in the jar, if I take one out, how many will be left in the jar?	
22	Look at these numeral cards (0-5), which is the smallest number? Largest? Put them in order, smallest to largest.	

Question		Comment / Response
23	The numbers 0-10 on the washing line are all mixed up, put them in order, smallest to largest.	
24	Look at these numbers: 4, 5, 6, 8, 10 What do you notice?	
25	Starting at 4, count to 9.	
26	Jane has 5 pennies, if her friend gives her another penny, how many pennies does she have now?	
27	Count backwards from 10 to zero.	
28	You have 9 pennies in your hand, count backwards as you put 3 pennies into the money box, how many do you have now?	
29	Joe has 5 sweets, he eats one, how many does he have now?	
30	What is 1 more than 6? Show me with the teddies. What is the number after 6? Show me on the number track. What do you notice?	
31	What is 1 less than 9? Show me with the cubes. What is the number before 9? Show me on the number track. What do you notice?	
32	There are 4 apples in the bowl and 3 bananas, how many pieces of fruit altogether?	
33	You have 4 counters and I give you another 3 counters, what do you notice? You have 7 cars in your car park, give two cars to your friend, what do you notice about the cars in your car park now?	
34	Tell me a story about your lego people/ dinosaurs/small world Draw a picture to explain your story.	
35	Sort the socks into pairs. (or counting people).	
36	What does double mean? Can you find a double domino?	
37	Cut the piece of bread in half, the cake... Give me half of your play dough please.	
38	Share the snack between the two plates.	

NUMBER AND PLACE VALUE

Y1 Number and Place Value

- Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number
- Count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens
- Given a number, identify one more and one less
- Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least
- Read and write numbers from 1 to 20 in numerals and words



26. Recognise coins and begin to relate to value

27. Recognise a pair as two things / objects

28. Begin to understand even as paired and odd as unpaired

29. Recognise 5 fingers on one hand

30. Recognise 10 fingers on 2 hands

31.Recognise 2, 5 and 10 using coins and structured apparatus, e.g. numicon, five frames, ten frames

19. Say the number before/ after a given number from 1 to 10, 20

20. Begin to relate 1 more to the number after

21.Begin to relate 1 less to the number before

22. Use language of more and fewer when comparing 2 sets of objects

23. Understand amounts can be equal

24. Find 1 more than a small number of objects

25. Find 1 less than a small number of objects

13. Understand some numbers have 1 digit, some have more than 1 (digits make numbers as letters make words)

14. Identify first object in a row / number in a sequence; 2nd, 3rd, ..last

15. Order numbers to 10, 20

16. Identify missing numbers within a number sequence to 10

17. Identify numbers in between given numbers on the number line

18. Locate numbers to 10, 20 on an empty number track/ line

10. Match correct numerals to 1-5 objects, 1-10 objects, 1-20 objects

10.Write numbers to 5, 10 in numerals and words

11. Count out a given number of objects from a larger set

11. Understand and represent zero

12. Understand anything can be counted, e.g. actions, sounds, jumps

13. Read numbers to 5, 10 in numerals and words

13. Talk about and describe numbers to 10, 20, e.g. odd, even

7. Recite a counting string, say number names in order to 10, 20

7. Count forwards from a given number within 20 to another given

8. Count backwards from 10 to 1, from 20 to 1

8.Count backwards from a given number within 20 to another given number

9. Count objects accurately using 1-1 correspondence – 1 number name per object

10. Understand cardinality – last number in the count is how many are in the set

1.Recognise numerals of personal significance

2.Subitise small amounts

3. Understand conservation of number

4.Estimate amounts to 10 and beyond

5. Recognise regular arrangements of small numbers

6. Represent given numbers to 10 with fingers, objects / equipment, to 20

6. Understand numbers can be made in different ways

ELG:

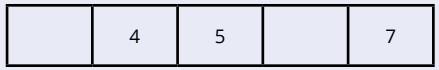
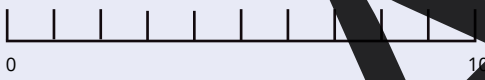
- Verbally count beyond 20, recognising the pattern of the counting system
  Have a deep understanding of number to 10, including the composition of each number;
- Subitise (recognise quantities without counting) up to 5;
- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity.

Development Matters

- Count objects, actions and sounds.
- Count beyond 10
- Subitise
- Compare numbers
- Link the number symbol (numeral) with its cardinal number value
- Understand the 'one more than/one less than' relationship between consecutive numbers
- Explore the composition of numbers to 10.

Assessment Questions to clarify starting points

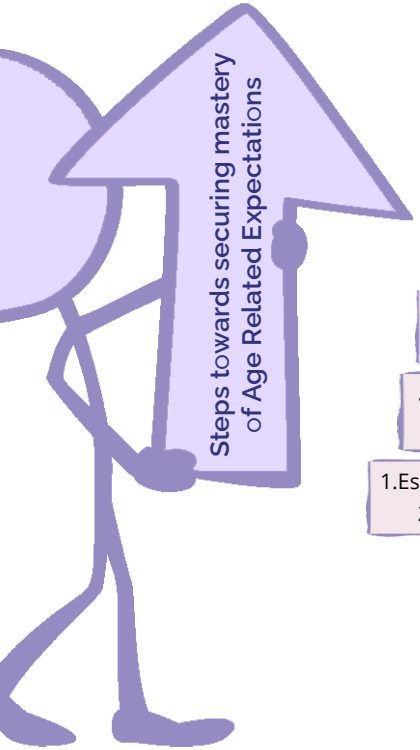
Question		Comment / Response
1	How old are you? Can you see that number on the table?	
2	(Arrange up to 5 objects randomly on the table) Can you tell me how many are there? (without counting)	
3	(Arrange 11 objects randomly on the table) How many objects are there? (Move them around) How many now?	
4	Look at the pencils in a pencil pot, how many do you think are there? How could you check?	
5	Show different ten frames, how many can you see? Repeat with dice patterns, Numicon shapes.	
6	Show me 7 on your bunny ears, can you show me in a different way? Make these numbers with Numicon or bundles of straws 12 7 14 2	
7	Starting from zero, count on for me and I'll tell you when to stop. Starting at 4, count on to 18. Listen to my count, can you tell me if I make a mistake? 3, 4, 5, 6, 8, 9	
8	Starting at 10, count back to 3. Starting at 20, count back to 10. Starting at 7, count back to 3. Starting at 18, count back to 6.	
9	Count the people. Can you count them in a different way?	
10	Count the objects in each of the baskets and label how many are there Can you write the following numbers as I say them? 14 8 20 12 7	
11	Give me 8 marbles out of the jar. Sam takes zero sweets from the jar, show me how many Sam takes.	

Question		Comment / Response
12	Count my claps. Do 8 star jumps.	
13	Read these numbers 3, 0, 4, 2, three, five, one, two? 7, 10, 6, 8, ten, seven, nine, eight? Look at these numbers: 3, 7, 12, 5 Which is the odd one out and why?	
14	Look at the people in the queue, point to the person who is first in the queue, fifth, second, sixth, third, last. How do you know?	
15	Put these numbers in order 4, 0, 7, 8, 6, 3, 2 Put these numbers in order 18, 16, 17, 15, 13, 14, 12, 10, 11	
16	Complete the sequence: 	
17	Tell me a number in between 7 and 10 12 and 18 45 and 100 Look at these two numbers: 3 and 19, Are they close together or far apart? How do you know?	
18	Place 3 on the number line, how do you know it goes there? Place 8 on the number line and explain why you put it there. Place a number in between 3 and 8 and give reasons for its position. 	
19	What is the number after 6? 3? 11? 15? 20? What is the number before 5? 2? 9? 13? 12? 17?	
20	What is 1 more than 11? What is the number after 11? What do you notice?	

Question		Comment / Response
21	What is 1 less than 7? What is the number before 7? What do you notice?	
22	Look at the 2 baskets of cubes, which has more? Fewer? Here is another basket of cubes, which basket has the most? Least?	
23	Jake has 7 cubes and Kate has 8. Jake says if I get 1 more cube, we will have the same, is he right? Show me how you know.	
24	Kate has 8 cubes and gets one more, how many does she have now?	
25	Jake has 7 cubes. He takes one cube out of the basket, how many will be in the basket now?	
26	Label the following coins, what can you tell me about them?	
27	Sort the socks into pairs; how many socks altogether?	
28	Ethan said 7 is an odd number, is he right? Show me how you know. Sort the numicon shapes into odd and even (Lay 0-20 numbers cards on the table) Sort these cards into odd and even.	
29	Show me 5 fingers, can you count in 5s?	
30	Show me 10 fingers, can you count in 10s?	
31	Here are some coins, sort them into 2ps, 5ps and 10ps. Count the 2ps, how much altogether? Repeat for other coins. Sort the Numicon shapes, how many 2 shapes do you have? How many altogether? Put the counters onto the five frames or ten frames, How many counters altogether?	

Y2 Number and Place Value

- Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward
- Recognise the place value of each digit in a two-digit number (tens, ones)
- Identify, represent and estimate numbers using different rep resentations, including the number line
- Compare and order numbers from 0 up to 100; use <, > and = signs
- Read and write numbers to at least 100 in numerals and in words
- Use place value and number facts to solve problems



21. Understand and use language of comparison more than, less than (fewer), most, least

22. Understand numbers can be partitioned in different ways

18.Identify number before and number after a given number within 100

19. Identify 1 more and 1 less than a given number within 100, 2 more / less

20. Identify 10 more/ 10 less than a given number within 100 – link with patterns on the 100 square/ 200 grid

13. Write numbers to 20 in words

14. Order numbers to 20, 50

15. Identify missing numbers within a number sequence to 50

16. Identify numbers in between given numbers

17. Locate numbers to 10, 20 50 on a partially demarcated number line

10. Read numbers to 50, 100 in numerals and to 50 in words

11.Understand the position of a digit represents the value

11.Understand and use the language of place value (digit, value, worth)

11.Understand 10 as a group of ten 1s

12. Write numbers to 50, 100 in numerals

7.Count 2p, 5p and 10p coins accurately

8. Represent given numbers to 20, 50 with structured apparatus

9. Talk about and describe numbers to 50 eg. odd, even, greater than, number before

9. Understand some numbers have 1 digit, some have more than 1 (digits make numbers as letters make words)

4.Count forward in 5's from 0-50 and backward from 50-0

5.Count forward in 2's from 0-20 and backward from 20-0

6.Understand when to use step counting and why

6.Understand we group 2 objects when counting in 2', 5 objects when counting in 5s etc.

1.Estimate amounts to 20 and beyond

2.Count forward and backward in ones from different starting points across multiples of 10, 100

3. Count forward and backward in tens across 100 from different starting points

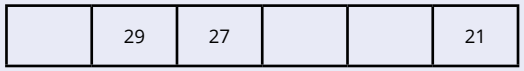
3.Begin to spot patterns in step counting

Y1 expectations

- Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number
- Count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens
- Given a number, identify one more and one less
- Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least
- Read and write numbers from 1 to 20 in numerals and words

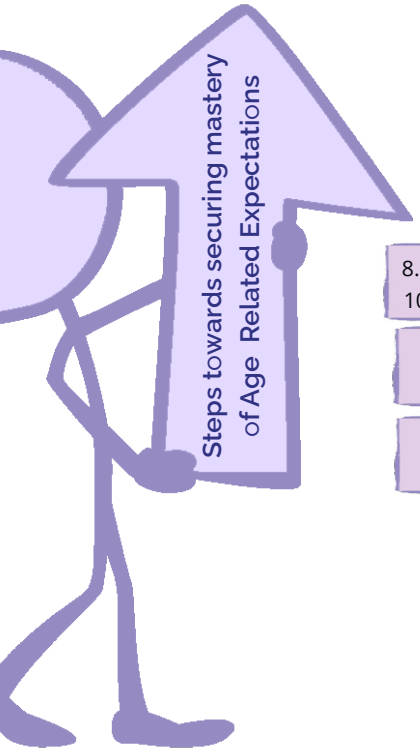
Assessment Questions to clarify starting points

Question		Comment / Response
1	Look at the marbles in the jar, how many do you think are there? How could you check?	
2	Count on from 28 to 45 Count on from 87 to 112. Count backwards from 52 to 29, from 105 to 92.	
3	Start at 26 and count on in tens. What do you notice? Count on in tens from 83. There is 23p in the money box, add six 10p coins, how much is in there now? How do you know?	
4	Start at zero and count on in steps of 5 to 50. If I count in fives from zero, will I say 42? Explain your answer. Listen to my count, can you tell me if I make a mistake? 40, 35, 30, 25, 20, 10, 5, 0	
5	Sort the gloves into pairs and count them, how many gloves altogether? If I'm counting in 2s from zero, will I say 46?	
6	Count the dinosaurs on the table. Could you count them in a different way? What do you notice?	
7	Count these coins, how much is in the purse altogether?	
8	Make these numbers with numicon, base ten or bundles of straws 12 7 14 19 32 41 18 21	
9	Choose a number between zero and 50 and tell me two things about your number.	
10	Read these numbers 23, 0, 34, 42, 16, 80, 51, 33, 19, 67 thirteen, four, one, eight, fifteen, thirty-nine.	
11	Show me 34 using Numicon, straws, place value cards, money What is the value of the 3 in 34? 13?	

Question		Comment / Response
12	Write the following numbers as I say them? 14 28 13 34 41 30 15 63 50 83 24	
13	Write these numbers in words 18 11 3 13 14 12	
14	Put these numbers in order 18, 6, 17, 15, 13 , 14, 12, 10, 11 51, 48, 50, 54, 49, 45, 52, 46, 53, 47	
15	Complete the sequence: 	
16	Tell me a number in between 23 and 18 45 and 60 93 and 100 Look at these two numbers: 43 and 79, Are they close together or far apart? How do you know?	
17	Place 20 on the number line, how do you know it goes there? Place 45 on the number line and explain why you put it there. Place a number in between 30 and 35 and give reasons for its position. 	
18	What is the number after 61? 32? 19? 76? 100? What is the number before 60? 26? 89? 84? 19? 57?	
19	What is 1 more than 64? 19? 37? What is 1 less than 99? 70? 42? 2 more than 54? 2 less than 73?	
20	What is 10 more than 64? 13? 95? What is 10 less than 82? 12? 59?	
21	Sam has 57 points and his brother has 75, who has more? How do you know? Their friend Joe has 67, who has the most? Least?	
22	Charlotte has three 10ps and six pennies, Owen has two 10ps and sixteen pennies, who has the most? (Use base ten to model 54 with base ten as 5 tens and 4 one) Ask child to use the base ten to partition 54 in 3 different ways	

Y3 Number and Place Value

- Count from 0 in multiples of 4, 8, 50, and 100
- Find 10 or 100 more or less than a given number
- Recognise the place value of each digit in a three-digit number (hundreds, tens, ones)
- Compare and order numbers up to 1000
- Identify, represent and estimate numbers using different rep resentations
- Read and write numbers up to 1000 in numerals and in words
- Solve number problems and practical problems involving these ideas



19. Identify 1more/ 1 less, 2 more/2 less, 10 more/ 10 less than a given number within 100 – link with patterns on the 100 square/ 200 grid

20. Understand and use language of comparison more than, less than (fewer), most, least

20. Compare and order numbers from 0 up to 100; use <, > and = signs

14. Write numbers to 100 in words

15. Order numbers to 100

16. Identify missing numbers within a number sequence to 100

17. Locate numbers to 50, 100 on an empty number

18.Identify number before and number after a given number within 100

11.Understand the position of a digit represents the value

11.Understand 10 as a group of ten 1s

12. Understand 100 as a group of ten 10s

12. Understand numbers can be partitioned in different ways

13. Write numbers to 50, 100 in numerals

8. Represent given numbers to 100 with structured apparatus

9. Talk about and describe numbers to 100 e.g.. odd, even, greater than, between...

10. Read numbers to 100 in numerals and in words

11.Understand and use the language of place value (digit, value, worth)

4.Count forward in 5's from 0-50 and backward from 50-0

5.Count forward in 2's from 0-20 and backward from 20-0

5.Count forward in 3's from 0-36 and backward from 36-0

6. Understand when to use step counting and why

7.Count coins accurately

1.Estimate amounts to 100

2.Count forward and backward in ones from different starting points across multiples of 10, 100

3. Count forward and backward in tens across 100 from different starting points

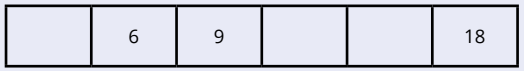
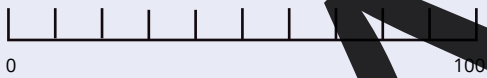
3.Spot patterns in step counting

Y2 expectations

- Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward
- Recognise the place value of each digit in a two-digit number (tens, ones)
- Identify, represent and estimate numbers using different representations, including the number line
- Compare and order numbers from 0 up to 100; use <, > and = signs
- Read and write numbers to at least 100 in numerals and in words
- Use place value and number facts to solve problems

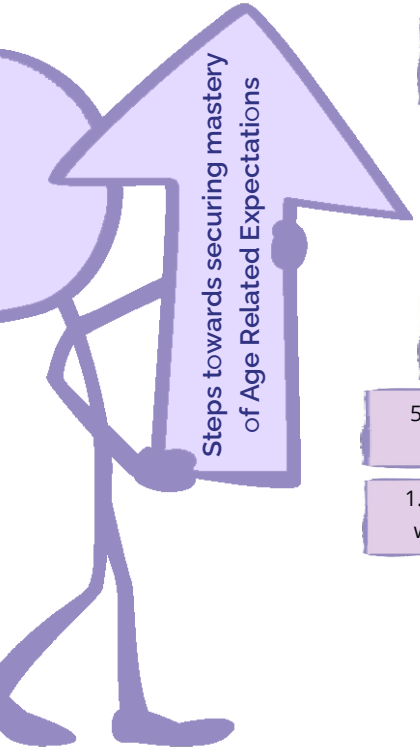
Assessment Questions to clarify starting points

Question		Comment / Response
1	Look at the paperclips in the jar, how many do you think are there? How could you check?	
2	Count on from 67 to 90 Count on from 94 to 108. Count backwards from 73 to 59 from 112 to 98.	
3	Start at 86 and count on in tens. What do you notice? Count on in tens from 59. There is £1 and 23p in the money box, add four 10p coins, how much is in there now? How do you know?	
4	Start at zero and count on in steps of 5 to 50. If I count in fives from ten, will I say 65? Explain your answer. Listen to my count, can you tell me if I make a mistake? 25, 30, 35, 40, 45, 55, 60, 65, 70	
5	Sort the gloves into pairs and count them, how many gloves altogether? If I'm counting in 2s from zero, will I say 46?	
6	Count the pennies on the table. Is there a quicker way you could count them?	
7	Count these coins, how much is in the purse altogether?	
8	Make these numbers with numicon or base ten 32 41 18 76 90	
9	Choose a number between 45 and 100 and tell me two things about your number.	
10	Read these numbers 0, 34, 42, 16, 73, 90 thirteen, four, one, eight, fifteen, thirty-nine, eighty-three.	

Question		Comment / Response
11	Show me 19 using place value cards What is the value of the 9 in 19? What is the value of the 6 in 63?	
12	There are 34 pennies in the purse, exchange some pennies for 10 pences? How many different ways can you do this?	
13	Write the following numbers as I say them? 30 19 90 15 63 50 83 24 102	
14	Write these numbers in words 18 12 30 88 90 56.	
15	Put these numbers in order 76, 4, 18, 91, 53, 44, 39.	
16	Complete the sequence: 	
17	Place 30 on the number line, how do you know it goes there? Place 85 on the number line and explain why you put it there. Place a number in between 30 and 85 and give reasons for its position 	
18	What is the number after 61? 32? 19? 76? 100? What is the number before 60? 26? 89? 84? 19? 57?	
19	What is 1 more than 74? 69? What is 1 less than 80? 45? 2 more than 63? 2 less than 20? 10 more than 61? 10 less than 51?	
20	Dad is 45 and Mum is 54, who is older? Write an inequality statement to show this.	

Y4 Number and Place Value

- Count in multiples of 6, 7, 9, 25 and 1000
- Find 1000 more or less than a given number
- Count backwards through zero to include negative numbers
- Recognise the place value of each digit in a four-digit number
- Order and compare numbers beyond 1000
- Read Roman numerals to 100 (I to C) and know over time, the numeral system changed to include the concept of zero and place value
- Identify, represent and estimate numbers using different representations
- Round any number to the nearest 10, 100 or 1000
- Solve number and practical problems that involve all of the above and with increasingly large positive numbers



16. Order and compare 2 digit and 3 digit numbers

17. Compare and order numbers from 0 up to 100; use <, > and = signs

18. Locate 2 and 3 digit numbers onto an empty number line

19. Identify missing numbers within a number sequence to 1000

14. Understand and use the language of place value (digit, value, worth)

14. Understand the position of a digit represents the value (2 and 3 digit numbers)

15. Understand multiplicative aspect of place value/ scaling (560 is 10 x bigger than 56 etc.)

11. Read and write numbers to 1000 in numerals and in words

11. Understand zero as a place holder

12. Partition numbers in different ways

13. Understand additive component of place value - partitioning and recombining (to identify 10, 100 more/ less than a given number)

8. Talk about and describe numbers to 1000 e.g. Half, double, odd, greater than, between, multiple

9. Understand numbers can be represented in a range of ways, e.g. base ten, money, array, on a number line)

10. Estimate and represent 2 and 3 digit numbers with equipment

5. Understand 100 as a group of ten 10s, 1000 as a group of ten 100s, 1 as a group of ten tenths

6. Understand relationship between doubling and halving

7. Understand what a negative number is (in context of below ground level, temperature

1. Count forward and back-ward in 2s, 3s, 5s and 10s

2. Count forward and backward in 4s and 8s

3. Identify spatial patterns in multiples on 100 square/ 200 grid and under-stand relationship with counting in 4s to 8s, 5s to 50s,10s to 100 to 1000

4. Understand what a multiple is

Y3 expectations

- Count from 0 in multiples of 4, 8, 50, and 100
- Find 10 or 100 more or less than a given number
- Recognise the place value of each digit in a three-digit number (hundreds, tens, ones)
- Compare and order numbers up to 1000
- Identify, represent and estimate numbers using different representations
- Read and write numbers up to 1000 in numerals and in words
- Solve number problems and practical problems involving these ideas

Assessment Questions to clarify starting points

Question		Comment / Response
1	Count 2ps, 5ps and 10ps into a money box, how much altogether? Listen to my count, can you tell me if I make a mistake? 36, 33, 30, 27, 25, 21, 18, 15, 12, 6, 3, 0.	
2	Starting at 20, count on in 4s to 48. Count backwards from 48 and stop at 24. These cubes are in sticks of 8, how many cubes altogether?	
3	On a 100 square, colour the multiples of 4 in one colour and the multiples of 8 in another, what do you notice? Look at the multiples of 5, explain how they may help you to count in 50s. Show me with 5ps and 50ps.	
4	Tell me a multiple of 4, prove it with Numicon. Is 13 a multiple of 3? Explain your answer.	
5	How many tens in 100? 200? 500? How many 100s in 1000? 3000? How many tenths in 1? 4?	
6	What is half of 18? Do you know a double fact that could help you? Double 36 is 72, what is half of 72? Show me with equipment.	
7	Read these numbers -4, -1, -6 where might you see them?	
8	Choose a 2 digit multiple of 4 and tell me two things about your number. Choose a 3 digit number and tell me 3 things about it.	
9	Think of the number 16, write or draw 16 in as many different ways as you can, compare with friends.	
10	Look at the cubes in the tray, estimate how many are there, show me with base ten.	

Question		Comment / Response
11	Read these numbers 100, 304, 72, 12, 735, 901 one hundred and thirteen, forty, fifty-eight, five hundred and three Write the following numbers as I say them in numerals and words? 39 109 90 818 603 59 47 14 571	
12	Make 452 with base ten and record as an addition statement (400 + 50 + 2) Can you partition 452 in a different way?	
13	Partition 302, what is 10 more than 302? 100 more than 302? 10 less? 100 less?	
14	Show me 324 using place value cards, what is the value of the 3 in 324? What is the 2 worth in 324? Repeat with other numbers.	
15	Make 26 with base 10 on the place value mat, multiply it by 10, what do you notice? Make 451 with base 10, how many groups of ten are there in 451? Prove it. How many ones are there in 451? Repeat with other numbers.	
16	Put these numbers in order 176, 43 108, 91, 101, 110, 783	
17	Jake has £1.07, Ellie has £1.70, who has more? Write an inequality statement to show this.	
18	Place 250 on the number line, how do you know it goes there? Place 700 on the number line and explain why you put it there.  	
19	Complete the sequence:  	

Y5 Number and Place Value

- Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit
- Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000
- Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero
- Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000
- Solve number problems and practical problems that involve all of the above
- Read Roman numerals to 1000 (M) and recognise years written in Roman numerals

17. Locate numbers to 100 000 on an empty number line including decimals

18. Identify missing numbers within a number sequence including decimals to 2 dp

14. Compare and order numbers from 0 up to 1000; use <, > and = signs

15. Order and compare numbers up to 100 000 including decimals to 2dp

16. Round any number up to 100 000 to the nearest 10, 100, 1000 and 10 000

12.Understand and use the language of place value (digit, value, worth)

12. Understand the columnar value of each digit in numbers up to 100 000 including decimals to 2 dp

13. Understand multiplicative aspect of place value/ scaling (e.g. hundredths are 100 x smaller than ones, tens are 1000 x bigger than hundredths)

10.Understand zero as a place holder

11. Partition numbers in different ways

11. Understand additive component of place value - partitioning and recombining (to identify 10, 100 1000, 10 000, 100 000 more / less than a given number)

7.Estimate numbers to 100, 1000, 10 000, 100 000

8. Read and write numbers to 10 000 in numerals and in words

9. Read and write decimal numbers to 2dp

10. Understand all numbers can be represented using the digits 0, 1, 2, 3, 4, 5, 6, 7, 8 or 9

5.Interpret negative numbers in context e.g. below ground level, temperature

5.Count forward in 1's from -10 to 10 and backward from 10 to -10

6. Understand 1000 as a group of ten 100s, 100 as a group of ten 10s, 10 as a group of ten 1s, 1 as a group of ten tenths

1.Count forward and backward in 2s, 3s, 4s, 5s, 6s, 7s, 8s, 9s and 10s

2. Count forwards and backwards in steps of powers of 10 for any given number to 100 000

3. Understand what a multiple is

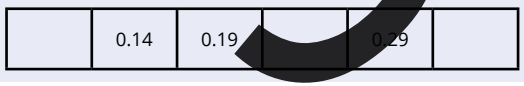
4. Talk about and describe numbers to 1000 eg. Half, double, odd, greater than, between, multiple

Y4 expectations

- Count in multiples of 6, 7, 9, 25 and 1000
- Find 1000 more or less than a given number
- Count backwards through zero to include negative numbers
- Recognise the place value of each digit in a four-digit number
- Order and compare numbers beyond 1000
- Read Roman numerals to 100 (I to C) and know over time, the numeral system changed to include the concept of zero and place value
- Identify, represent and estimate numbers using different representations
- Round any number to the nearest 10, 100 or 1000
- Solve number and practical problems that involve all of the above and with increasingly large positive numbers

Assessment Questions to clarify starting points

Question		Comment / Response
1	Starting at 42: count forward in 2s, backwards in 3s, forward in 6's, backwards in 7s etc.	
2	Start at 459, count on in 100s and I'll tell you when to stop, start at 53, count on in 1000s , start at 15 630, count on in 10 000s. Start at 1234, count back in 100s , start at 5468, count back in steps of 1000.	
3	Tell me a multiple of 7, explain how you know. Is 43 a multiple of 3? Explain your answer.	
4	Choose an even 3-digit number and tell me three things about your number.	
5	Read these numbers -19, -6, -2 where might you see them? Start at 8 and count back in 2s to -10	
6	How many tens in 1000? 200? 700? How many 100s in 2000? 3000? How many tenths in 1? 6? 10? How many hundredths in 1?	
7	Look at the jar of pasta, estimate how many pieces of pasta you can see. Where might you see 10 000 people?	
8	Read these numbers 1008, 3046, 7271, 1286, 735, 901 one thousand two hundred and thirteen, forty thousand, five thousand and three, five hundred and eight thousand, four hundred and three Write the following numbers as I say them in numerals and words? 139 109 000 9036 81 893 60 701 5900 8701	
9	Write the following numbers as I say them 9006.1, 12.56, 9.05, 467.22, 5685.01	
10	Use the numeral cards 3, 0, 5, 8 and 1, what is the largest number you can make? Smallest? Justify your answer.	

Question		Comment / Response
11	Make 2452 with base ten and record as an addition statement (2000 + 400 + 50 + 2) Can you partition 2452 in a different way? What is 100 more than 2452? 1000 less?	
12	What is the value of the 3 in 207 635? 42.13? 328 097? What is the 7 worth in 472? 0.074? 1 765 432	
13	Make 426 with base 10 on the place value mat, multiply it by 10, what do you notice? Multiply it by 100, what do you notice? Make 2031 with base 10, how many groups of ten in 2031? Prove it. How many ones in 2031? Repeat with other numbers.	
14	Use <, > to make these statements correct: 854 ☐ 201 0.14 ☐ 0.41 4.09 ☐ 4.49	
15	Put these numbers in order 176, 17.6, 76.1, 67.01, 170 61 , 1.76	
16	Round these numbers to the nearest 10, 100, 1000 6578 1085 672 Round these to the nearest: 10 000 34 657 67 500 Round these to the nearest whole number 76.4 19.6	
17	Place 0.5 on the number line, how do you know it goes there? Place 0.65 on the number line and explain why you put it there. Place a decimal number in between 0.2 and 0, give reasons for its position.  Repeat with locating numbers on number line 0-1000	
18	Complete the sequence:  	

Y6 Number and Place Value

- Read, write, and order and compare numbers up to 10 000 000 and determine the value of each digit and place value
- 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

15. Locate numbers to 1 000 000 on an empty number line

16. Identify missing numbers within a number sequence including decimals to 3 dp

13. Order and compare numbers up to 1 000 000 including decimals to 3dp and use <, > and =

14. Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000, 100 000

11. Understand and use the language of place value (digit, value, worth)

12. Understand multiplicative aspect of place value / scaling (e.g. hundredths are 100 x smaller than ones, tens are 1000 x bigger than hundredths)

9. Read and write numbers to 1 000 000 in numerals and in words

10. Read and write decimal numbers to 3dp

11. Understand the position of a digit represents the value

7. Understand zero as a place holder

8. Partition numbers in different ways

8. Understand additive component of place value - partitioning and recombining

6. Understand 1000 as a group of ten 100s, 100 as a group of ten 10s, 10 as a group of ten 1s, 1 as a group of ten tenths

7. Understand all numbers can be represented using the digits 0, 1, 2, 3, 4, 5, 6, 7, 8 or 9

1.Count forwards and backwards in steps with positive and negative whole numbers including through zero

2. Count forwards and backwards in steps of powers of 10 for any given number to 1 000 000

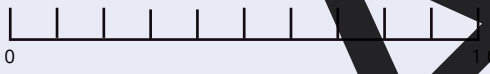
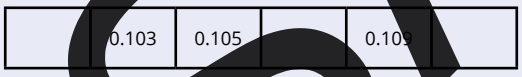
3. Understand what a multiple is

Y5 expectations

- Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit
- Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000
- Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero
- Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000
- Solve number problems and practical problems that involve all of the above
- Read Roman numerals to 1000 (M) and recognise years written in Roman numerals

Assessment Questions to clarify starting points

Question		Comment / Response
1	Starting at 14, count on in 2s, 7s, starting at 18, count on in 9s Starting at 12: count backwards in2s, 3s, 6's	
2	Start at 459, count on in 1000s and I'll tell you when to stop, start at 153, count on in 1000s, start at 15 630, count on in 10 000s, start at 345 671, count on in 100 000s Start at 1234, count back in 100s, start at 5468, count back in steps of 1000, start at 456 356, count back in 10 000s	
3	Tell me a 3-digit multiple of 5 and explain how you know. Is 124 a multiple of 4? Explain your answer.	
4	Think of an even 4-digit number and tell me three things about your number.	
5	Look at the jar of rice, estimate how many pieces of rice you can see.Where might you see 100 000 people?	
6	How many tens in 10 000? 2000? 700? How many 100s in 20 000? 700 000? How many tenths in 10? 50? How many hundredths in 2?	
7	Using the digits 9, 5, 3, 0, 1, 2 and 7, what is the largest number you can make? Smallest? Justify your answers.	
8	Partition 34 873 (30 000 + 4000 + 800 + 70 + 3) Can you partition it in a different way? What is 1000 more than 34 873? 10 000 less?	
9	Read these numbers 10 708, 301 146, 708 701, 12 864, 735, 9001 one thousand two hundred and thirteen, forty thousand, fifty-eight thousand and three, five hundred and twenty eight thousand four hundred and three Write the following numbers as I say them in numerals and words 139 109 000 9036 81 893 167 701 590 700 870 111	
10	Read the following numbers 76.853 1.908 456.981 Write the following numbers as I say them? 9306.145, 192.506, 98.325, 7.229, 805.017	

Question		Comment / Response
11	What is the value of the 3 in 207 635? 42.13? 328 097? What is the 7 worth in 472? 0.074? 1 765 432	
12	Put 23.67 on the place value mat, multiply it by 100, what do you notice? What is the value of the 3 now? Divide 234 791 by 1000, what is the value of the 7 now?	
13	Use <, > to make these statements correct 230 854 ☐ 453 201 0.143 ☐ 0.412 4,409 ☐ 4,490 Put these numbers in order 23.098 23.908 2.398 239.802 239.082	
14	Round these numbers to the nearest 10, 100,1000, 10 000, 100 000: 16 578 107 852 608 726 Round these to the nearest 1 000 000: 534 657 474 500 739 982 Round these to 1 decimal place 76.46 19.68 23.082 Round these to the nearest whole number 43.09 673.112 87.092	
15	Label the number line. Place a number between 500 000 and 600 000 and justify the position  	
16	Complete the sequence:  	

ADDITION AND SUBTRACTION

Y1 Addition and Subtraction

- Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs
- Represent and use number bonds and related subtraction facts within 20
- Add and subtract one-digit and two-digit numbers to 20, including zero
- Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ☐ - 9

15. Understand and use the language of addition and subtraction

16. Begin to recognise that addition is commutative and subtraction is not

17. Recall double facts to 10 and beyond

18. Recall halves of even numbers to 10

12. Begin to use structured apparatus to demonstrate inverse

13. Can say how many more and how many less when comparing two sets of objects or structured apparatus

14. Can find missing numbers by counting on when the second number is hidden

9. Find the total number of two groups by counting on from largest number

10. Can find the answer to a subtraction problem by counting out and taking away

11. Can remove a smaller number from a larger number by counting back / up

6. Demonstrates an awareness that numbers can be spilt to make smaller ones

7. Recalls number bonds within 10

8. Find the total number of two groups by: counting them all then counting on from first number

1. Recognise numerals to 20 (and beyond)

2. Count objects accurately in ones with 1-1 correspondence

3. Count sounds accurately

4. Understand and use the language of more and fewer

5. Count backwards accurately in ones

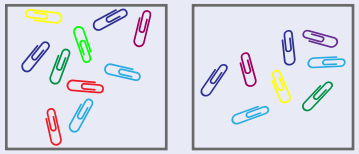
ELG:

- Have a deep understanding of number to 10, including the composition of each number;
- Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.
- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity.

Development Matters

- Solve real world mathematical problems with numbers up to 5
- Compare quantities using language: 'more than', 'fewer than'.
- Understand the 'one more than/one less than' relationship between consecutive numbers
- Explore the composition of numbers to 10
- Automatically recall number bonds for numbers 0–5 and some to 10

Assessment Questions to clarify starting points

Question		Comment / Response
1	Show number cards … what is this number? (0-10 then beyond)	
2	Count the dinosaurs into the basket. How many altogether? Find the numeral and label the basket. Put six dinosaurs into the small world	
3	Count these pennies as I drop them into the tin, how many pennies in the tin altogether?	
4	Which group of paper clips has more? Fewer?  (no counting!)	
5	There are 20 pennies on the table, start counting them into the tin keeping track of how many pennies you have left: 20p, 19p, 18p, 17p etc. when I say stop, tell me how many pennies you have left.	
6	Here are 7 counters and 2 plates, put the counters onto the plates and record what you have done, e.g.  4 and 3 equals 7 Is there another way you could arrange the counters?	
7	How many ways can you make 5? 6?7? 8? 9? 10? (Use equipment, say or record mathematical statement)	
8	How many balls altogether? 	

Question		Comment / Response
9	Here are 2 sets of counters. In the first set there are 6 (cover up) in the second set there are 3. How many altogether?	
10	There are 7 chickens in the pen. 4 escape, how many chickens are left?	
11	How could you work out 9 – 3? Use the counting objects or number line to help.  	
12	Show 3 + 7 =10 using numicon. How could this help you to solve 10-7? Green + red equals yellow. Tell me what else you can see in the bar model below. 	
13	Sam has 6 counters, Megan has 4, who has more? How many more? 	
14	Count on to find the missing number.  	
15	Do you recognise these symbols + - ? Which other words do you know that mean add? Subtract? Do you know what these mean? Can you put a word into a sentence? Use counting objects to help.	
16	What is 3 + 6? 6 + 3? What do you notice? Is 7 – 2 the same as 2 – 7? Show me with the counters.	
17	What is double 3? 5? 4? Etc. Prove it with counters.	
18	What is half of 10? 6? 8? Show me with the counting objects.	

Y2 Addition and Subtraction

- Solve problems with addition and subtraction:
  - using concrete objects and pictorial representations, including those involving numbers, quantities and measures
  - applying their increasing knowledge of mental and written methods
- Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100
- Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:
  - a two-digit number and ones
  - a two-digit number and tens
  - two two-digit numbers
  - adding three one-digit numbers
- Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot
- Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems

18. Partition and recombine 2-digit numbers

19. Can solve missing number calculations to 20

14.Can choose to solve a subtraction problem by counting up or counting back

15. Can subtract 10 from a teen number

16. Locate numbers on a number line to 50 accurately, 100

17. Understand the value of a digit is determined by its position

10. Use number facts to bridge through 10

11. Double numbers to 10 and beyond and recognise near doubles

12. Recall halves of even numbers to 10

13. Can add 10 to single digit number

6. Reorder numbers to support mental calculations

7. Can find totals and solve addition problems by counting on from the first number

8. Count on from larger number to find a total

9. Can make a mathematical statement to match a set (2 sets etc)

4. Recall number bonds to 10

4. Understand addition and subtraction are inverse operations

5. Use number bonds to 10 to derive number bonds to 20

6. Understand commutativity of addition

1. Count forward and backward across 100

2. Understand and use the language of addition and subtraction, e.g. Sum, total, more, add, plus, subtract, minus, difference, take-away, fewer

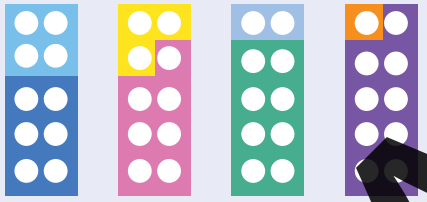
2. Understand and use +, - and = symbols

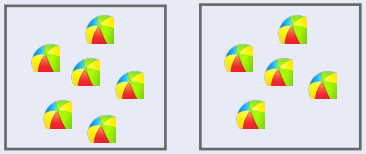
3. Understand numbers can be partitioned in different ways

Y1 expectations

- Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs
- Represent and use number bonds and related subtraction facts within 20
- Add and subtract one-digit and two-digit numbers to 20, including zero
- Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ☐ - 9

Assessment Questions to clarify starting points

Question		Comment / Response
1	Count on in ones from 78 to 110 Count back in ones from 62 to 25.	
2	Look at this symbol + What does it mean? Look at this symbol - What does it mean? Look at this symbol = What does it mean? 5 + 2 = 7 Tell me a story about this calculation 8 - 5 = 3 Read this calculation, use the counters to show me what it means.	
3	Use these cubes (9) how many ways can you make 9? Record your solutions, what do you notice? Repeat for other numbers.	
4	Make pairs to 10 with numicon, cubes, Cuisenaire.. Record addition calculations. If you know 6 + 4 = 10, which subtraction facts do you know? 	
5	Represent 6 + 4 with apparatus, what do you need to add to 6 to get to 20? Show me. If 2 + 8 = 10, what is 12 + 8? I need 20 cards, I have 17, how many more do I need?	
6	Joe said 5 + 6 is the same as 6 + 5 Is he right? Prove it Add these numbers 2, 11, 9, 8 How did you do it?	
7	James has 12p, his Dad gives him 5p, how much does he have now? Show me on the number line.	
8	There are 3 sheep and 9 cows in the field. Count on from the larger number to find out how many animals altogether.	

Question		Comment / Response
9	Write a mathematical statement to describe these pictures. 	
10	Which number facts could help us to solve 18 + 7? 14 – 6?	
11	There are 6 people sitting downstairs on the bus and 6 people sitting upstairs, how many altogether? Record the calculation. Would this double fact help you to work out 6 + 7? Explain your answer.	
12	There are 14 balls in the bag, half are blue and half are red. How many are red?	
13	What is 16 +10? Show me with the apparatus, 28 + 10? 31 + 10? What do you notice?	
14	Lucy has 18 sweets and gives 11 to Liam. How many does she have left?	
15	**Stationary shop** Pencil 16p Ruler 19p Rubber 18p Felt tips 15p The shop is having a sale, everything is being reduced by 10p. Calculate the new prices	
16	Show me with the counting objects, where is 27? Will 12 be before /after it? Where is 42? etc.	
17	What is the value of the 7 in 17? 73? What is the 6 worth in 61? 16?	
18	Make 23 on the place value chart with numicon/ money/ straws and match the arrow cards e.g. 20 3 Repeat for 18 and 45	
19	3 + ☐ = 9 5 + ☐ = 8 ☐ + 6 = 10 ☐ + 8 = 10 Complete the calculations and explain your thinking. Choose 2 calculations and tell a story about them, e.g. I have 3 grapes, I get some more, now I have 9, how many more did I get?	

Y3 Addition and Subtraction

- Add and subtract numbers mentally, including:
  - a three-digit number and ones
  - a three-digit number and tens
  - a three-digit number and hundreds
- Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction
- Estimate the answer to a calculation and use the inverse operations to check answers
- Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction

15. Can use apparatus to subtract a 2- digit number from a 2-digit number with no regrouping and regrouping

12. Understands the value of the digit is determined by its position

13. Can partition and recombine 2-digit numbers

14. Can use apparatus to add two 2-digit numbers, with no regrouping and regrouping

9. Can count up or back to subtract

10. Can add/ subtract a multiple of 10 to any two digit number by counting in 10's

11. Understand and use language of + and -

6. Understands addition is commutative and subtraction is not

7. Can add 3 one digit numbers using known number facts

8. Understand the inverse relationship between addition and subtraction

3. Can solve addition problems by counting on from the larger number

4.Know and use number bonds to 10, to 20 and complements to 100

5. Recognise and use double facts and near doubles to add mentally

1. Count forwards and backwards in 1's across 100

2. Count forwards and backwards in 10s crossing 100s boundary

2. Count forwards and backwards in 10s from different starting points

Y2 expectations

- Solve problems with addition and subtraction:
  - using concrete objects and pictorial representations, including those involving numbers, quantities and measures
  - applying their increasing knowledge of mental and written methods
- Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100
- Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:
  - a two-digit number and ones
  - a two-digit number and tens
  - two two-digit numbers
  - adding three one-digit numbers
- Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot
- Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number

Assessment Questions to clarify starting points

Question		Comment / Response
1	Count forwards and backwards in ones from given starting points.	
2	Starting at 80, count on in 10s. Starting at 110, count back in 10s. Starting at 13, count on in 10s Starting at 96, count back in 10s.	
3	For his birthday, Liam received 39 cards. At his party he received 8 more. How many did he get altogether? How did you work this out?	
4	Roll the 0-9 dice and say the number needed to make 10. Add 7 to 36, which number facts do you use? Roll 1-20 dice and say the number needed to make 20. Roll the multiples of 10 dice and say the multiple of 10 needed to make 100. Turn over 2 numeral cards to make a 2-digit number, tell me the complement to 100. Which number facts did you use to help you to work it out? Sam buys a pencil case for 28p, what change will he get from one pound? Use the number line to help.	
5	Jane has 13 dojos, Tom does too, how many dojos do they have altogether? Class 2 has 32 pupils; Class 4 has 33 how many pupils altogether? How did you work this out?	
6	If 12 + 32 =44 what is the missing number here: 32 + ☐ = 44? Could we do this for subtraction? Prove it	
7	Add the following numbers: 13 + 7 + 4 4 + 7 + 6 2 + 9 + 3 3 + 6 + 14 Did you use any number facts help you?	
8	If I know 8 + 7 = 15, what else do I know? Tell me another addition fact and 2 subtraction facts.	

Question		Comment / Response
9	Ryan had 42 football cards. He gave 39 to his brother. How many did he have left? How did you work this out?	
10	Joe has 43p, his sister has 50p more than him; how much does she have? Jess has 67p, she spends 30p, how much does she have left?	
11	Look at these symbols: + - What do they mean to you? Can you tell a story about 23 + 17? 56 – 19?	
12	What is the value of the 6 in 126? 67? 659?	
13	Partition these numbers: 53 102 91 329	
14	Use base 10 or place value counters on the calculation mat to work out: 72 +13 35 + 63 38 + 47 85 + 28	
15	Use base 10 or place value counters on the calculation mat to work out: 79 – 34 68 - 26 72 – 29 55 - 38	

Y4 Addition and Subtraction

- Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate
- Estimate and use inverse operations to check answers to a calculation
- Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why

15. Can add 2 and 3-digit numbers with formal written methods, with no regrouping and regrouping

16. Can subtract a 2 and 3-digit number from a 3-digit number with no regrouping and regrouping

13. Understands the value of the digit is determined by its position

14. Can partition and recombine 2 and 3-digit numbers

14. Understand numbers can be partitioned in different ways

9. Understand and use the language of addition and subtraction

10. Understand the impact of adding and subtracting zero

11. Recognise subtraction as difference structure

12. Estimate through rounding to the nearest 10, 100

6. Recognise and use double facts and near doubles to add mentally

7.Understand addition is commutative and subtraction isn't

8. Understand inverse relationship of + and -

9.Understand and use symbols +, - , =

4.Understand how to use number facts to bridge through multiples of 10.

4 Understand how to use place value to derive known number facts

5.Understand and use adjustment strategy for + and - 9

1.Count forwards and backwards in 1s from different starting points across 100 boundaries

2.Count forwards and backwards in 10's from different starting points across 100.

3.Recall and use number bonds within 10, 20 and 100

Y3 expectations

- Add and subtract numbers mentally, including:
  - A three-digit number and ones
  - A three-digit number and tens
  - A three-digit number and hundreds
- Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction
- Estimate the answer to a calculation and use the inverse operations to check answers
- Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction

Assessment Questions to clarify starting points

Question		Comment / Response
1	Starting at 189, count on in 1s Starting at 213, count back in 1s	
2	Starting at 46 count on in 10's. Starting at 92 count back in 10's, what do you notice? There is 62p in my purse. If I add three 10p coins, how much do I have now? How do you know?	
3	Roll the 0-9 dice and say the number needed to make 10. Add 8 to 43, which number facts do you use? Roll 1-20 dice and say the number needed to make 20. Roll the multiples of 10 dice and say the multiple of 10 needed to make 100. Turn over 2 numeral cards to make a 2-digit number, tell me the complement to 100. Which number facts did you use to help you to work it out? The sunflower is is 67cm tall, how much does it need to grow to be 1m tall? Explain how you worked this out.	
4	Which number facts help you solve 48 + 7? Show me on the number line. Could this help you to solve 248 +7? 480 + 70? Repeat for 65 - 8 650 – 80 If you know 7 + 3 = 10, what is 70 + 30? 700 + 300? 0.7 + 0.3?	
5	Calculate 34 + 9 72- 9 How did you work this out?	
6	Liverpool have 83 points, Tottenham have 82, how many points do they have altogether? How did you work this out?	
7	If I know 73+ 25 = 98, will this help me to solve 25 + □ = 98? Write 2 subtraction calculations using the numbers 18, 45, 27	
8	If I know 86m +57m = 143m, what is 143m - 57m? What do you notice?	

Question		Comment / Response
9	What is the sum of 345 and 75? Deduct 39 from 456 Tell a story about this calculation 67 - 12 = 55 Tell a story about this calculation £1.24 + £1.09 = £3.43 Complete the statement: 34 - ☐ = 16 + ☐ Is there more than one answer?	
10	Calculate 578 + 0 and 927 – 0. What do you notice?	
11	I want to buy a game which costs £5, I have £3.27, how much more do I need? Hugh has 54 stickers, Jack has 37, how many more stickers does Hugh have than Jack? Show me on the numberline	
12	Round 367 to the nearest 10. Round 4289 to the nearest 10/100. Look at the marbles in the jar. How many do you think there are? Explain your answer. How could you check?	
13	What does the 1 represent in these numbers? 106, 1080, 8716, 231	
14	Make 155 with the base 10, and put it on the place value chart Make it again in a different way, repeat, how many different ways can you partition 155? How many tens are there in 155? (15)	
15	Solve these calculations using a written method : 672 + 311 456 + 495 (prove with base ten)	
16	Solve these calculations using a written method: 967 – 565 568 - 289 (prove with base ten)	

Y5 Addition and Subtraction

- Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)
- Add and subtract numbers mentally with increasingly large numbers
- Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy
- Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

19. Add and subtract 2, 3, 4-digit numbers and decimals in measures context

17. Can add 2, 3, 4 digit numbers with formal written methods, with no regrouping and regrouping

18. Can subtract a 2, 3, 4-digit number from a 4-digit number with no regrouping and regrouping

14. Understand the value of the digit is determined by its position

15. Can partition and recombine 2, 3 and 4-digit numbers

16. Understand numbers can be partitioned in different ways

11. Understand the impact of adding and subtracting zero

12. Recognise subtraction as difference structure

13. Estimate through rounding to the nearest 1, 10, 100, 1000

9. Understand inverse relationship of + and -

10.Understand and use symbols +, -, =, >, <

10. Understand and use the language of addition and subtraction

6.Understand and use adjustment strategy for + and – 9, 99 etc

7. Recognise and use double facts and near doubles to add mentally

8.Understand addition is commutative and subtraction isn't

4.Recall and use number bonds within 10, 20 and 100, 1000

4.Understand how to use number facts to bridge through multiples of 10, 100, 1000

5. Understand how to use place value to derive known number facts

1.Count forwards and backwards in 1s from different starting points

2.Count forwards and backwards in 10's, 100s, 1000s from different starting points.

3.Count forwards and backwards in tenths from different starting points

Y4 expectations

- Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate
- Estimate and use inverse operations to check answers to a calculation
- Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why

Assessment Questions to clarify starting points

Question		Comment / Response
1	Starting at 349, count on in 1s. Starting at 1000, count back in 1s	
2	Count on in tens from 90, 110, 920... count back in tens from 210 / 1190 Count on in 100s from 124 Count back in 100s from 1245	
3	Starting at zero, count on in tenths Starting at 4.5, count on in tenths. Starting at 1.6, count back in tenths	
4	Beat the teacher: how many number bonds to 20 can you write in 1 minute? To 100? Repeat with number bonds to 100. Turn over 3 numeral cards to make a 3-digit number, tell me the complement to 1000, which number facts did you use to help you to work it out?	
5	Which number facts could help you to solve 360 + 70? 3.6 + 0.7? 420 – 80? 4200 – 800?	
6	Calculate 340 + 99 372- 9 585 - 99 Explain how you did it.	
7	Look at these calculations, which ones could you solve mentally and which need a written method? Explain your answer. 235 + 235 342 + 567 1.5 + 1.6 61.7 + 34.8	
8	If 5.67 + 3.12 = 8.79, what is 3.12 + 5.67? Does 23 - 67 = 44? what is 44 – 23?	
9	If you know 165 + 18 = 183, write 2 corresponding subtraction facts.	
10	Which words do you know for + ? - ?. Tell a story about this calculation 334 + 431 = 765 Increase 1.5 by 3.1 Deduct 34 from 56 Complete these mathematical statements 23 < □ < 100 23 + □ = - 42	
11	456 - ▲ = 456 ▲ + 7.8 = 7.8 What does the ▲ represent?	

Question		Comment / Response
12	Harry has saved £4.50, how much more does he need to save to reach his target of £20? Explain how you can solve this mentally.	
13	Round 1367 to the nearest 10, 100 Round 3545 to the nearest 10, 100. Round 1.43 to the nearest whole number . Estimate the total of 578 + 312	
14	What is the value of the 3 in: 13.98 3146 31 890 7834.1	
15	Make the number 5679 with base 10 and represent it on the place value mat.	
16	How many different ways can you partition 5679?	
17	Solve the following calculations using a written method: 3014 + 1745 1096 + 765	
18	Solve the following calculations using a written method: 3478 – 1256 4912 - 678	
19	Sam spent £23.76, his brother spent £18.87, how much did they spend altogether? Jess completed the race in 16.45 secs, Jo completed it in 14.28 secs, How much longer did it take Jess?	

Y6 Addition and Subtraction

- Perform mental calculations, including with mixed operations and large 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
- Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.

18. Can subtract whole numbers with more than 4-digits using formal methods with no regrouping and regrouping

19. Add and subtract whole numbers and decimals in context

16. Understand numbers can be partitioned in different ways

17. Can add whole numbers with more than 4 digits using formal written methods, with no regrouping and regrouping

13. Estimate through rounding to the nearest 1, 10, 100, 1000, 10 000 etc

14. Understands the value of the digit is determined by its position

15. Can partition and recombine large numbers and numbers with up to 2 dp

10.Understand and use symbols +, - , =, >, <

10. Understand and use the language of addition and subtraction

11. Understand the impact of adding and subtracting zero

12. Recognise subtraction as difference structure

6.Understand and use adjustment strategy for + and – 9, 99 etc

7. Recognise and use double facts and near doubles to add mentally

8.Understand addition is commutative and subtraction isn't

9. Understand inverse relationship of + and -

4.Recall and use number bonds within 10, 20 and 100, 1000

4.Understand how to use number facts to bridge through multiples of 10, 100, 1000

5. Understand how to use place value to derive known number facts

1.Count forwards and backwards in 1s from different starting points

2.Count forwards and backwards in steps of powers of 10 from different starting points.

3.Count forwards and backwards in tenths from different starting points

4.Count forwards and backwards across zero

Y5 expectations

- Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)
- Add and subtract numbers mentally with increasingly large numbers
- Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy
- Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

Assessment Questions to clarify starting points

Question		Comment / Response
1	Starting at 2348, count on in 1s Starting at 7601, count back in 1s	
2	Starting at 480, count on in 100s, starting at 8706, count back in 1000s Starting at 103 897, count on in 10 000s Starting at 56 890, count back in 10 000s.	
3	Starting at 12.63 count on in tenths Starting at 40.52, count on in tenths. Starting at 1.6, count back in tenths.	
4	Starting at 12, count back in 2s. Starting at -10, count on in 1s	
4	Beat the teacher: how many number bonds to 20 can you write in 1 minute? Repeat for number bonds to 100. Turn over 4 numeral cards to make a 4-digit number, tell me the complement to 10 000, which number facts did you use to help you to work it out?	
5	Which number facts could help you to solve 1060 + 50? 1.6+ 1.5? 1420 – 80?? 24200 – 800?	
6	Calculate 478 + 9 76340 + 999 652- 99 4585 - 999 Explain how you did it.	
7	Look at these calculations, which ones could you solve mentally and which need a written method? 1342 + 567 0.07 + 0.07 6.4 + 6.4 16.9 + 3.5 3203 + 3204	
8	If £34.45 + £65.55 = £100, what is £65.55 + 34.45. If you know 100-76 = 24, would this help you to solve 24-76? Explain your answer.	
9	If you know 2052 + 1801 = 3853, write 2 corresponding subtraction facts	

MULTIPLICATION AND DIVISION

Y1 Multiplication and Division

- Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.

10. See division as sharing or grouping

10. Begin to understand and use the language of multiplication and division

8. Use counting objects to solve sharing problems

9. Use objects or structured apparatus to solve grouping problems

6. Understand halving makes things smaller

7. Understand multiplication is repeated addition

7. Use step counting to solve repeated addition problems

3. Understand doubling is the same again

4. Understand doubling makes things bigger

5. Understand the relationship between doubling and halving

2. Understand counting in steps of equal sizes is based on 'unitising', e.g. treating a group of five objects as one unit of five

2. Understand equality and equal groups

1.Count forwards in ones to 20 and beyond

2. Know what a group or set is

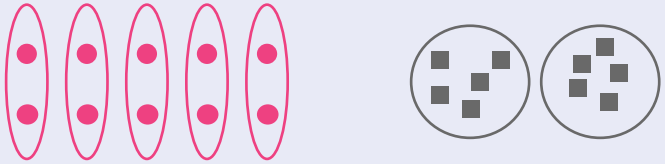
2. Count and organise objects into groups of 2, 5,10

ELG

- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

Assessment Questions to clarify starting points

Question		Comment / Response
1	Count these objects	
2	Put the counting people into groups of 2. How many groups do you have? How many people altogether? Look at the handprints, what do you notice? How could you count the fingers and thumbs to find out how many altogether?  If each set of pins has 10 pins, how many altogether?	
3	What is a double? Show me double 3 with your counters/ on your fingers. Find the dominos which show doubles. What is double 3? 5? 4? Etc.	
4	Anna puts 5p into the doubling machine, which coin will come out? Does she have more money now or less?	
5	Prove double 5 equals 10 with numicon/counters, does this help you to find half of 10? Show me half of 8 with counters. If double 7 is 14, what is half of 14?	
6	Which would you rather have, double 10p or half of 10p? Why?	

Question		Comment / Response
7	There are 5 sweets in the bag. Ethan has 3 bags of sweets, how many sweets does he have altogether? Draw a picture to help you to work this out.  Label the groups of counters and cubes and use step counting to find how many altogether.	
8	Jess shares her 6 sweets between 2 friends, how many sweets do they get each?	
9	Mum has a pile of 10 socks and asks Jack to sort them into groups of 2. How many pairs does he make? Draw a picture to show this.	
10	Joe has 8 cars, he shares them equally between 2 friends, use the toy cars to show me how he did this. How many cars do they get each? Aaron has 8 cars and he puts them into groups of 2, use the toy cars to show me how he did this. How many groups of cars does he make? What do you notice? Explain your thinking.	

FRACTIONS

Y1 Fractions

- Recognise, find and name a half as one of two equal parts of an object, shape or quantity
- Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity

9. Represent a quarter practically

8. Identify quarters in context, e.g. snack

8. Understand and use language of 'quarter'

7. Explore halves of numbers practically

8. Developing awareness of a quarter as one of four equal parts

4. Identify halves in context, e.g. snack

5. Understand fractions are part of a whole

6. Developing awareness of a half as one of two equal parts

2. Awareness of the relationship between doubling and halving

3. Relate half to half past on the clock

4. Recognise and combine 2 halves to make a whole

1. Connects halving to equal sharing

1. Understand and use language of 'half'

1. Represent a half practically, including liquid measure

ELG:

- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

Assessment Questions to clarify starting points

Question		Comment / Response
1	What is a half? Could you give me half of your play dough please? Look at this piece of lego,  find another lego piece which is half the size.	
2	Find a double domino. Explain why you think it's a double. Show me double 4 with equipment e.g. on 2 dice, with numicon, counters etc. If you know double 3 is 6, how can this help you to find half of 6?	
3	Look at the clock and tell me the time. Why do you think we call it 'half past' when the big hand is on the 6?	
4	Cut a piece of toast in half, what do you notice when you put your piece of toast next to mine?	
5	How many halves make a whole? Can you show me with the paper? Lego? Etc.	
6	Drew coloured half of these shapes, did she do it correctly? How do you know? 	
6	The 3 bears have a full bottle of coke, Baby Bear said 'We can all have half each' Is he right?	
7	Take 4 cubes  , can you give me half of them please? How many do you have now?	
8	How many pieces is this chocolate bar divided into?  If I take a piece, what fraction is this? Jack said he's coloured a quarter of his shape,  is he right? How do you know?	
9	Colour a quarter of this shape  Can you give me a quarter of your cubes please?	

Y6 Fractions (including decimals and percentages)

- 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 e.g. $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$
- Divide proper fractions by whole numbers e.g. $\frac{1}{3} \div 2 = \frac{1}{6}$
- Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction e.g. $\frac{3}{8}$
- 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.

15. Identify decimals and fractions in between given FDP on a number line

16. Round integers to nearest 10, 100, 1000, explore pattern when rounding tenths to nearest integer

17. Understand multiplication as repeated addition and use to x fractions

13. Understand place value of decimal fractions – a tenth is 10 x smaller than 1 and 10 x bigger than a hundredth; 0.67 is 6 tenths and 7 hundredths or 67 hundredths (67 out of 100 $\frac{67}{100}$ 67%)

14. Find/ identify fractions of liquid measures, convert to decimals

14. Relate decimals to money / measure context

15. Locate decimals on a number line, convert to fractions and %

9. Use x and ÷ facts to calculate fraction of numbers

10. Use understanding of factors to simplify fractions

11. Represent/illustrate tenths, hundredths, thousandths practically and discuss relationships

12. Understand % symbol as parts per 100

6. Understand and represent known equivalent fractions and identify the multiples of the same number

6. Use x facts to derive families of equivalent fractions

7. Identify equivalent fractions on a multiplication grid

8. Understand the denominator stays the same when + and - fractions with the same denominator

2. Understand fractions can go beyond 1

2. Understand when numerator is the same as the denominator, it equals 1

3. Count forwards and backwards in fractional steps including mixed numbers

4. Understand fraction notation and relationship with division symbol

5. Understand the bigger the denominator, the smaller the unit fraction

1. Understand fractions as parts of a whole and represent practically

1. Understand fractions involve dividing numbers or shapes into desired number of equal parts

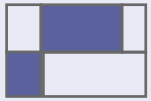
1. Understand denominator is the no. of equal parts the whole is ÷ into & the numerator is the no. of parts selected

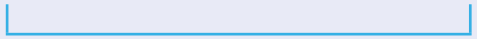
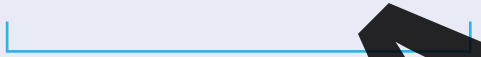
2. Understand and use language of fractions, e.g. denominator, mixed fraction, multiple, simplify

Y5 expectations

- Compare and order fractions whose denominators are all multiples of the same number
- Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths
- Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number e.g. $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$
- Add and subtract fractions with the same denominator and denominators that are multiples of the same number
- Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams
- Read and write decimal numbers as fractions e.g. 0.71 = $\frac{71}{100}$
- Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents
- Round decimals with two decimal places to the nearest whole number and to one decimal place
- Read, write, order and compare numbers with up to three decimal places
- Solve problems involving number up to three decimal places
- Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal
- Solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25

Assessment Questions to clarify starting points

Question		Comment / Response
1	Use the multilink or counters to show $\frac{3}{5}$ Harry shaded parts of the diagram  He said he'd shaded $\frac{2}{5}$, is he right? Explain your answer	
2	Look at the diagram. Beth said it shows $\frac{7}{6}$, Dan said it's $1\frac{1}{6}$ Who is correct? Explain your answer. 	
3	Starting at 2, count on in fifths. How many fifths in 3?	
4	What is 2 divided by 3? Write it as a fraction and draw a picture to explain.	
5	Which would you rather have, $\frac{1}{6}$ or $\frac{1}{9}$ of 50 sweets? Why?	
6	Write down 3 equivalent fractions of $\frac{3}{8}$ .What do you notice?	
7	Look at the multiplication grid, can you see any equivalent fractions?	
8	Ryan said $\frac{2}{5} + \frac{4}{5} = \frac{6}{10}$ Jack disagreed and said the answer must be > 1. Who is correct? Draw a picture to illustrate.	

Question		Comment / Response
9	Which would you rather have: $\frac{3}{5}$ of £35 or $\frac{4}{6}$ of £36? Explain your answer.	
10	Simplify the following fractions: $\frac{6}{12}$ $\frac{10}{14}$ $\frac{8}{24}$ $\frac{12}{4}$	
11	Using a Numicon baseboard, base 10 apparatus, a bead bar or squared paper, show $\frac{1}{100}$ and discuss relationship with $\frac{1}{10}$	
12	What does this symbol % mean?	
13	Convert 0.45 into a fraction and % (Show on squared paper/ numicon baseboard)	
14	Pour $\frac{1}{4}$ litre of water into the measuring jug, how many ml is this?	
15	Locate $\frac{3}{10}$, $\frac{1}{4}$, and $\frac{5}{10}$ on the number line. Place another fraction in between them and then convert it into a decimal.  0 1 Look at this number line,  0 2 where would $\frac{1}{4}$ go now?	
16	Round the following numbers to the nearest 1000: 455 976 Round 1.4 to the nearest whole number.	
17	Draw a picture to illustrate 4 x 5 Draw a picture to help you to calculate $\frac{1}{4}$ x 5, what do you notice?	

Primary Maths:

Planning for Deep Learning:

Securing the Small Steps needed for Mastery in Maths

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