Dryden School
Business and Enterprise College

Maths KS3/KS4 Scheme of Work & Rolling Programme

Number	Measurement	Geometry	Statistics
Number and Place Value • Counting, • Comparing & Ordering Numbers • Reading & Writing Numbers • Number Bonds • Place Value • Counting in Multiples • Recognising & Describing Patterns. **Calculation** • Addition • Subtraction • Multiplication • Division	**Weight and Volume** • Measuring Mass/Weight, • Measuring Volume/Capacity **Length and Height** • Measuring Length • Measuring Height **Time** • Time **Money** • Money	**Shape** • 2D Shape • 3D Shape **Position, Direction & Movement** • Position, Direction & Movement	• Problem Solving • Data Handling ***Data Handling & Problem Solving to be incorporated into sessions throughout the year.***

Dryden School
Business and Enterprise College

	1	2	3	4	5	6	7	8	9	10	11	12	13
Autumn Term	**Number: Number and Place Value**					**Number: Calculation**				**Measurement: Money**			
Spring Term	**Number: Number and Place Value**				**Geometry: Shape**			**Number: Calculation**			**Measurement: Time**		
Summer Term	**Measurement: Length and Height**		**Geometry: Position, Direction & Movement**			**Number: Number and Place Value**			**Measurement: Weight and Volume**		**Number: Calculation**		

- Tuesday & WEdnesday Maths sessions to follow scheme of work, Thursday mornings to have a focus on money surrounding café activities.
- Statistics: Data Handling & Problem Solving to be incorporated into sessions throughout the year

Dryden School
Business and Enterprise College

Number: Number & Place Value

UNIT INFORMATION:

This unit explores counting and the understanding of number. Children will investigate numbers up to 100 and beyond. They will explore number facts, relationships within number and begin to understand and use the vocabulary associated with number.

COVERAGE:

Counting, Comparing & Ordering Numbers, Reading & Writing Numbers, Number Bonds, Place Value, Counting in Multiples, Recognising & Describing Patterns.

VOCABULARY:

- Words related to number names, such as: zero, one, two, three, four, fifteen, sixteen, seventeen, eight, ninety, one hundred, one thousand, etc.
- Words related to counting, such as: count, count up to, count on, count back, how many, one each, touch each one, move each one, set
- Words related to quantity such as: more, less, many, few
- Words related to counting in steps, such as: count in ones, two, tens…, odd, even, every other, multiple of, sequence, continue, predict Words related to estimating and rounding, such as: guess how many, estimate, nearly, close to, about the same as, just over, just under, too many, too few, enough, not enough, roughly, exact, exactly, round, round to the nearest 10
- Words related to comparing and ordering numbers, such as: compare, order, size, the same number as, greater/est, more/most, less/least, bigger/est, larger/est, smaller/est, fewer/est, first, second, third…tenth, next, after, before, between, above, below, equal to
- Words related to place value, such as: tens, ones,, hundreds, digitt, “teens number”, one-, two- or three-digit number, place, place value, stands for, represents, exchange

Number: Number & Place Value

STEPS OF PROGRESSION

- ⇒ Enjoys number games and rhymes
- ⇒ Rote counting to 5
- ⇒ Identifying 'one'
- ⇒ Rote counting to 10
- ⇒ Sort objects
- ⇒ Identifying 'lots'
- ⇒ Count objects
- ⇒ Represent numbers using objects or fingers
- ⇒ Represent objects
- ⇒ Sequencing patterns
- ⇒ Sequencing numbers to 5
- ⇒ Count/Read/Write Numbers up to 10
- ⇒ One to one correspondence
- ⇒ Count one more
- ⇒ Count one less
- ⇒ Compare groups using language such as less/more
- ⇒ Compare numbers
- ⇒ Order groups of objects
- ⇒ Order Numbers
- ⇒ Order Numbers 1st 2nd 3rd
- ⇒ Exploring a number line
- ⇒ Knowing numbers facts within 10
- ⇒ Recalling number bonds to 10
- ⇒ Recalling number bonds to 20
- ⇒ Counting in 2s
- ⇒ Counting in 5s
- ⇒ Counting in 10s
- ⇒ Counting forward and backwards within 20
- ⇒ Identifying Tens and Ones within 10
- ⇒ Counting forward and backwards within 50
- ⇒ Identifying Tens and Ones within 50
- ⇒ Compare numbers within 50
- ⇒ Count objects to 100
- ⇒ Read/write numerals to 100
- ⇒ Counting in 3s
- ⇒ Identifying numbers over 100 and relating to Hundreds, Tens & Ones.

Area of learning	I Can Statements	Initial, Developing & Mastering Expectations	Possible Activities
Counting	I enjoy helping an adult count objects I am beginning to show an awareness or number activities and counting I can join in with number rhymes I can pair sets of items. I can indicate 'one' or 'lots' appropriately using words, symbols and signs. I am, beginning to indicate one or two through various ways of communication such as gestures. I can rote count to 5 I am beginning to use numbers up to 5 in familiar activities and number rhymes I can attempt to count 3 objects I can show up to 5 fingers correctly with assistance. I can use one to one correspondence in a range of contexts I can estimate how many objects I can see and check by counting them. I can match and compare the number of objects in two sets. I can rote count to 10 I can use 1:1 correspondence in practical activities e.g. when making juice for my class group at break time	***Initial expectations:*** Enjoys counting and joining in with number games and rhymes Knows when there is more than one object/item Beginning to rote count to 5 and beyond. Beginning to use numbers 1-5 with more accuracy e.g. counting objects, showing fingers. Beginning to use one to one correspondence ***Developing expectations:*** Rote counts from 0 or 1 to 20 or beyond and back from given number up to 20 Confident using one to one correspondence Rote counts up to 100, forwards and backwards from 0, 1 or any given number. May lack confidence and have problems crossing boundaries. ***Mastering expectations:*** Counts numbers to at least 100 in numerals and in words with mostly accurate spelling. Counts, reads and writes numbers up to 1000 in numerals and in words Connects and explains changes in numbers counted to place value	• Counting songs and rhymes • Counting around the circle • Missing numbers when counting around the circle, can they identify the m issing number? • Show the child two bowls – one containing one button, the other containing lots of buttons. Encourage child to label the bowls "one" and "lots" with symbols and or verbally • Have a group of lots of objects. Ask the child to give you "one". Label the new sets • Give children experiences daily in one-to-one correspondence by asking them to pass out snacks and drinks . Pencils etc counting how many they would need. • Ask children to show one or two using their arms, legs, hands or feet. • Put one spoon in each bowl / one cup on each saucer / one piece of fruit to each doll / one drink to each child / one hat on each doll / one playmobile person in each car / one cube in each train carriage etc. Increase the number of factors involved – e.g. start with two doll and two hats. Increase gradually to five dolls and five hats as competence develops. Complicate things by giving the child four cups and six saucers, or five bowls with two forks and four spoons. • Throw a big foam dice. Count or match objects on to each spot. Encourage children to say each number as the object is placed on the spot. • Guess the amount of cubes, oranges, toy people in a bag. Count each object as you take it out of the bag • Model counting strategies – placing all of the objects in a line and touching each one as it is counted aloud.

Area of learning	I Can Statements	Developing & Mastering expectations	Possible Activities
Counting (continued)	I can count objects to 5 in a picture I can count object to 10 consistently. I am beginning to count beyond 10. I can respond to the question 'How Many?' and use my own methods of counting I can collect a small number of items (up to 9) on request I can join in rote counting to 20. I can continue to rote count from a given point. I can estimate a small number and check by counting. I can use knowledge and understanding of counting to 10 to solve simple problems. I can recognise a small number of objects (up to 6) without counting. I count forward and backwards from 0 to 20 I can say who has more of less when comparing two different amount and check my answers by counting I can count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number	***Initial expectations:*** Enjoys counting and joining in with number games and rhymes Knows when there is more than ne object/item Beginning to rote count to 5 and beyond. Beginning to use numbers 1-5 with more accuracy e.g. counting objects, showing fingers. Beginning to use one to one correspondence ***Developing expectations:*** Rote counts from 0 or 1 to 20 or beyond and back from given number up to 20 Confident using one to one correspondence Rote counts up to 100, forwards and backwards from 0, 1 or any given number. May lack confidence and have problems crossing boundaries. ***Mastering expectations:*** Counts numbers to at least 100 in numerals and in words with mostly accurate spelling. Counts, reads and writes numbers up to 1000 in numerals and in words Connects and explains changes in numbers counted to place value	• Use motivating resources to practice the skill of touching each object as it is counted. • Make a set of picture cards for the children to match. They then have to find all the cards with two objects on, all the cards with three etc. • Put some small objects in a box. Ask the children to estimate how many are in the box by shaking. Tip the objects out and count to check • Use the carpet tiles 1-100 throw number on the floor, race to find numbers with a 7 in, numbers with a 5 in etc. take one away, last one standing wins. • Throw a large dice. Jump on this many tiles. • Play dominoes & floor dominoes, match and count the spots. • Each child has 10 objects on a plate. Throw the dice and give that many objects to the person on your right. Continue with each player giving objects to the person on the right. After each round, encourage children to count the objects they have. Talk about who has the most / least and who has more than they started with • Play "Grab a Handful" – place a some objects in a bag and ask the child to grab a handful then count how many they have got. For children at earlier stages of counting, use large objects. For children able to count larger sets, use smaller objects. • Using number cards 0-9 to make numbers up to 1000, can children identify the number you have shown?

Area of learning	I Can Statements	Developing & Mastering expectations	Possible Activities
Recall of Number Facts: Number bonds	I know several ways how sets of 10 may be split into 2 groups I know some pairs of numbers with totals to 10 I can recall all number bonds to 10 I can use my number bond facts in numbers up to 100 e.g. adding a 0 for number bonds to 100 I can recall all number bonds to 100 I can recall all number bonds to 20	***Initial expectations:*** Can split objects up to 10 into 2 groups and count how many are in each group. Enjoys playing games which include number bond activities e.g. skittles Can recall at least one of the 6 number bonds for 10 ***Developing expectations:*** Demonstrates some understanding of number bonds in games e.g. skittles Starts to memorise and reason with number bonds to 10 in several forms e.g. 1+9 = 10, 10 +9 = 1 Can recall at least four of the 6 number bonds for 10 ***Mastering expectations:*** Recall all number bonds to and within 10 and use these to reason with and calculate bonds to and within 20, recognising other associated additive relationships (e.g. If 7 + 3 = 1-, then 17 + 3 = 20 Can calculate number bonds to 100 using methods for 10 e.g. ig 6+4=10 60+40 = 100	• Number bonds Bingo • Number bonds challenge cards • Each child has 10 items , how many ways can they put these objects into two groups? • Building blocks of towers to 10 using two colours, how many different ways can you make 10 using the two colours. • Number bond snao and matching games • Matching game with partners, like musical statues but when the music stops can you match up with your matching number bond? Swap cards each round. • Number bond colouring of towers. • Hit the button number bonds online game—number bonds to 10, 20 and 100 • Sticking two 'hands' on paper with moveable fingers, can children manipulate the fingers (putting them up/down) to show number bonds to 10 **Activities can all be repeated to show number bonds to 20.** • Use carpet tiles to find matching pairs of number bonds to 100 • Roll two dice to make a 2 digit number, can they identify the number bond to 100

Dryden School
Business and Enterprise College

Area of learning	I Can Statements	Developing & Mastering expectations	Possible Activities
Reading & Writing Numbers	I am developing an awareness of number names through enjoyment of action rhymes and songs. I can recognise numerals to 2 I know a symbol represents each number name I can recognise and select the correct numeral from a choice of 2 or more I can match numerals to 5 I can recognise and name numbers to 5 I can recognise the numerals 1-9, in a random order. I can identify numbers in all familiar situations i.e. clock, telephone, shops I can read and write numerals 1-9 I can read numbers 1– 10 in words I can count, read and write numerals to 100	***Initial expectations**:* Recognising numbers in the environment Beginning to understand each number has a symbol and what that symbol represents Can read all numbers up to 10 ***Developing expectations:*** Can read all numbers up to 20 Reads and writes all numbers from 1 up to 20 in numerals and some in words. ***Mastering expectations:*** Reads and writes all numbers up to 100 in numerals and all numbers to 20 in words. Reads and writes numbers to at least 100 in numerals and in words with mostly accurate spelling Connects and explains changes in numbers counted to place value	• Respond to songs or questions about quantity and numerals by showing the appropriate number of fingers • Match identical numerals to each other on a number track or grid • Make collections of numerals using numerals of different sizes colours and fonts • Find the “numbers” in a counting book or page numbers in a story book • Float magnetic numbers in the water tray. Use a magnet on the end of a piece of string to catch a number. If you can read your number, a token? Who has the most tokens after three turns? • Find „three“ (or another quantity) e.g. 3 spoons, 3 pencils, 3 bricks. Can you label each collection with a large numeral „3“ • Hide wooden numbers in the sand. Try to guess the number by feel alone before you dig it out of the sand • An adult does a short sequence of claps. Children count the claps together. • Make numerals out of play dough and press the correct number of counters into the number • Name the numbers or match to numeral cards • Practise drawing large numerals with chalk • Label small containers with numbers. Ask children to put the correct number of something in each tub • Number hunt around school—what numbers are they able to recognise in their community? • Bingo • Number square activities—writing numbers to 100

Area of learning	I Can Statements	Developing & Mastering expectations	Possible Activities
Comparing & Ordering Numbers	I am beginning to follow a sequence as indicated by an adult I can recite number names in sequence I can use the vocabulary of positioning, such as first, second, third. I can compare two quantities to 10 and recognise larger/smaller I can compare two quantities to 10 and recognise fewer/more From a given number to 10 I can find the number before and after From a given number to 10 I can find the number one more/less. I can count backwards from 10 to 0 I can solve problems involving counting e.g. places 'mixed up' numbers in order I can understand vocabulary associated with the comparison of number e.g. less than, more than, greater than etc. I can identify numbers 10 more or less than a given number I can order any numbers from 0—100	***Initial expectations**:* Begins to use objects to support understanding of numbers and quantities. Can identify which number is larger/smaller when using objects Can identify the number that comes next, within 10 Can verbally count to 10 Is beginning to identify 1st and last ***Developing expectations:*** Can count on from any given number within 10 Starts to use ordinal numbers 1st, 2nd, 3rd to 10th Begins to use objects and pictorial representations, including the number line to support understanding of numbers and quantities. Compares and orders numbers up to 20 ***Mastering expectations:*** Compares and orders numbers up to 100 identifies the number that is 10 more or less than any number to 100 and then to 1000 Continues to confidently identify and represent numbers to 20 and beyond using objects and structured apparatus	• Mix up numbers on the washing line while the children have their eyes shut. Can they spot what has happened and put the numbers back in order? • Put numbered carpet tiles in order to make your own number track Give children Velcro backed numerals and ask them to place them on a number stick in the right order • Find out by counting which of two collections has more/fewer objects. • Count the girls and boys. Are there fewer girls or fewer boys • cut a number track into pieces to make a jigsaw for the children to reassemble • Use a rope as a number line. Children turn over each number card in turn and estimate its position on the • Know that a number following another number in the counting sequence is bigger. • Arrange in order a complete set of numbers (objects, dot patterns, numerals): from 1 to 3 then to 5… progressing to 10 or more… Say the complete sequence. • Playing games & sports/races Identify who came 1st 2nd etc. • Lining up in a que, who is 1st? Who is 2nd? Who is last? • Using playing cards play 'play your cards right' can children identify higher or lower/bigger or smaller • Completing missing number patterns for larger numbers up to 100 • Using a number square or splat square to make patterns an identify missing numbers

Area of learning	I Can Statements	Developing & Mastering expectations	Possible Activities
Place Value	I can demonstrate an understanding of place value of 10s and 1s in a two digit number using resources to support me if necessary. I can compare and order numbers from 0—100 I can recognise the place value of each digit in a two-digit number (tens, ones) I can recognise the place value of each digit in a two-digit number (hundreds, tens, ones)	***Initial expectations**:* Begins to use objects to support understanding of numbers and quantities Beginning to understand each number has a symbol and what that symbol represents Can identify larger/smaller when using tens/ones cubes. E.g. which one looks the biggest? Which one looks the smallest? ***Developing expectations:*** Uses objects and pictorial representations to develop understanding of place value in numbers to 20 and beyond. Partition a two-digit number into tens and ones to demonstrate an understanding of place value, though they may use structures resources to support them ***Mastering expectations:*** Pupil can partition any two-digit number Consolidates understanding of place value of each digit in a two-digit number, (tens, ones) and starts to extend to three digit numbers. Starts to round numbers to the nearest 10	**For initial expectations—use activities from 'Counting' section, repeat these activities to develop understanding of number and quantity.** • Using cubes making towers of different lengths from 1-20, ask children to order these towers from smallest to largest. Mix the cube towers with Numicon shapes—children to match Numicon and tower with the same numerical value. • Organise birthdays in class—grouping children who were born on a day with a single digit/double digit • Resognising the odd one out e.g. in this group of numbers 12,16,17,15,44,18 which is the odd one out? Why? • Using number cards (1 set with numerals 1-20, 1 et with words 1 -20) picking numbers do they match? If so take the pair if not put them back. Children then to order themselves in order how do they know they are correct? • Using hula hoops with 1s, 10s, 100s pieces of paper inside, give children their own number—which hoop do they need to stand in how do they know? Can children sort themselves into a line, holding their number cards from smallest to biggest • Activities using tens and ones cubes, can children make a number requested using the correct cubes? • Partitioning towers of cubes using colours to show tens and ones • Completing part and whole numbers for partitioning number

Area of learning	I Can Statements	Developing & Mastering expectations	Possible Activities
Counting in Multiples	I can double numbers up to 5 I can count in 10's to 50 I can count in 10's to 100 I can put up to 20 items into groups of 2 or 5 equal groups. I can count in 5's to 50 I can count in 5's to 100 I can count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward	***Initial expectations:*** Enjoys joining in with number rhymes such as double rhymes. Can represent 10 on fingers Beginning to double 1 in a variety of situations e.g. using a variety of objects to demonstrate ***Developing expectations:*** Can count in multiples of 10 Starts to count in multiples of two and to relate these to odd and even numbers. Can count forward and backwards in multiples of 10 ***Mastering expectations:*** Counts fluently in twos, fives and tens from 0 and use counting strategies to solve problems Can use knowledge of multiplication tables to solve problems e.g. counting the amount of chairs in the hall when they are placed in rows of 5	• Using floor number square to count in 10s what do they notice about where they have to move? Repeat for other multiples such as 5 and 2. • Number rhymes such as doubling rhymes • Double activities, can children match what they already have on their plates, in their hands, in front of them and double what they have? • Counting in 5s and 10s using hands, can children show 5 and 10 on their hands? Can they count on? • Repetition of times tables and counting in multiples, circle activities. Going around the circle counting forwards and backwards in different multiplication tables. • Children organizing themselves into a line when they are holding a number card within multiplication tables . • Using 100 square or splat square to count in multiplication tables.

Area of learning	I Can Statements	Developing & Mastering expectations	Possible Activities
Recognising & Describing Patterns	I am beginning to follow a sequence as indicated by an adult I can copy a simple pattern using objects or sounds when provided with a model e.g. apple, banana, apple, banana I can recognise errors in counting patterns to 10 I can give a number lying between 2 numbers between 1 and 10 e.g. name a number between 4 and 7 I can find a missing whole number represented by a box I can recognise dice pattern quantity without counting I recognise numbers 1-6 through patterns I can make predictions and test with examples e.g. Here is a sequence _, 7, 9, 11, 13, _ which numbers will be in the sequence? How do you know? I can regonise repeating patterns in multiplication tables I can use my knowledge of number patterns to make predictions	***Initial expectations:*** Can identify the next step of a musical pattern e.g. by clapping/tapping legs etc. Is able to continue a basic 2 step pattern with little to no support ***Developing expectations:*** Recognises and creates simple repeating patterns with objects and shapes sometimes with support. Can find the mussing number in a number sequence using numbers up to 10 Start to recognise patterns in the number system including odd and even numbers. ***Mastering expectations:*** Can use knowledge of multiplication tables and apply this to patterns. . Is able to identify common patterns in numbers and counting Develops understanding of a wider range of pattern in the number system including odd and even numbers.	• Explore musical patterns and sequences. Could use musical instruments or body parts to create a small sequence or pattern. Are students able to copy? • Following physical patterns—following a pattern of objects e.g. banana, apple, banana, apple. A pattern off colour red, yellow, red, yellow etc. Differentiated by different step patterns dependent upon ability. • Recognising patterns in number—identifying the missing number from a pattern • Match dice spots (or random patterns of spots) to numerals • Match numerals to dice spot patterns • Order dice spot patterns • Odd/even number patterns

Dryden School
Business and Enterprise College

Number: Calculation

UNIT INFORMATION:

This unit explores number manipulation and the four areas of calculation. Children will investigate how to group and share numbers/ objects, read and interpret mathematical statements and begin to understand and use the vocabulary associated with calculation.

COVERAGE:

Addition, Subtraction, Multiplication, Division

VOCABULARY:

- Words related to number such as odd, even, once, twice, three times, five times
- Words related to counting, such as: how many times, lots of, groups of, equals is the same as, difference between
- Words related to quantity such as: more, less, many, few
- Words related to addition such as number bonds, add, more, plus, make, sum, total, altogether
- Words related to subtraction such as subtract, takeaway, minus
- Words related to division such as half, halve, divide, divide by, left, left over , share, share equally
- Words related to multiplication such as double, multiple of, multiply, multiply by

Number: Calculation

STEPS OF PROGRESSION

- ⇒ Knows when there is more added to a group
- ⇒ Knows when there is less in a group
- ⇒ Can recognise which group has more/less without counting when visually obvious.
- ⇒ Group objects together to find a total
- ⇒ Remove objects from a group to find a total
- ⇒ Finding one more
- ⇒ Finding one less
- ⇒ Add by counting on
- ⇒ Relating objects to number sentences
- ⇒ Adding –adding together
- ⇒ Adding—adding more
- ⇒ Find and make number bonds within 10
- ⇒ Recognising the + sign
- ⇒ Recognising the– sign
- ⇒ Add by making 10
- ⇒ Subtraction—taking away, how many left?
- ⇒ Subtraction not crossing 10
- ⇒ Subtraction crossing 10
- ⇒ Related number facts
- ⇒ Comparing Number sentences
- ⇒ Make doubles
- ⇒ Counting in 2s
- ⇒ Counting in 5s
- ⇒ Counting in 10s
- ⇒ Recognise equal groups
- ⇒ Make equal groups
- ⇒ Add equal groups
- ⇒ Make arrays
- ⇒ Make doubles
- ⇒ Make equal groups—doubling
- ⇒ Make equal groups—sharing
- ⇒ Tens and ones using addition
- ⇒ Using a place value chart
- ⇒ Make equal groups—grouping
- ⇒ Divide by 2 (share)
- ⇒ Recognise odd and even numbers

Area of learning	I Can Statements	Developing & Mastering expectations	Possible Activities
Addition	I can add numbers to 3 I can add numbers to 5 I can add numbers to 10 I use language related to addition I can use apparatus to add numbers to 10 I can solve problems involving addition e.g. I have 2 chocolate bars and Rebecca gives me 2 more, how many altogether? I can read, write and interpret mathematical statements involving addition and equals (=) signs I can add one-digit and two-digit numbers to 20, including zero I can solve one step problems that involve addition	***Initial expectations:*** Can show a basic understanding of addition using objects Beginning to understand the phrase 'How many are there altogether' ***Developing expectations:*** Solves one-step addition problems with support, using concrete objects and pictorial representations, and missing number problems such as 7 = ? + 3 . Starts to show that addition of two numbers can be done in any order Adds numbers using concrete objects, pictorial representations, and mentally Starting to understand the language of , add, altogether, total, more than and less than. Adds one-digit numbers, including zero. Realises the effect of adding zero. ***Mastering expectations:*** Adds one-digit numbers and two-digit numbers to 20, including zero. Starting to use the language of , add, altogether, total, more than and less than. Recognize and use the inverse relationship between addition and subtraction and use this to solve missing number problems with single digit numbers	• Building block towers with two colours—adding those both together. How many red? How many green? How many altogether? • Using a dice to make addition sums, adding up the dots how many altogether? • Threading beads onto a pipe cleaner, place beads on either side of the pipe cleaner and bend them over, how many on the left side? How many on the right side? How many altogether? • Adding up students in the class, how many boys/girls/ altogether, brown hair/blonde hair/altogether etc. • Addition in pictures/symbols • Playing dominoes, identifying the spots on the dominoes and counting, how many spots n this domino altogether? • Use uno cards to choose a pair and add numbers together • Completing written addition problems. First by completing a simple addition problem e.g. 3+4=?. Next filling in the missing number e.g. 3+?=7 and then by showing a variety of addition problems to make a number e.g. ?=?=7.

Area of learning	I Can Statements	Developing & Mastering expectations	Possible Activities
Subtraction	I can takeaway numbers to 3 I can takeaway numbers to 5 I can takeaway numbers to 10 I use language related to subtraction I can use apparatus to subtract numbers to 10 I can solve problems involving subtraction e.g. There are seven balls in this bag, I take out 4 how many are left? I can read, write and interpret mathematical statements involving subtraction (-) and equals (=) signs I can subtract one-digit and two-digit numbers to 20, including zero I can solve one step problems that involve subtraction	***Initial expectations:*** Can show a basic understanding of subtraction using objects Beginning to understand the phrase 'How many are there altogether' ***Developing expectations:*** Solves one-step subtraction problems with support, using concrete objects and pictorial representations, and missing number problems such as 7 = ? - 3 . Starts to show that subtraction of two numbers can be done in any order Subtracts numbers using concrete objects, pictorial representations, and mentally Starting to understand the language of , takeaway, altogether, total, more than and less than. Subtracts one-digit numbers, including zero. Realises the effect of subtracting zero. The pupil can recall halves in 10 ***Mastering expectations:*** Adds one-digit numbers and two-digit numbers to 20, including zero. Starting to use the language of , takeaway, altogether, total, more than and less than. Recognize and use the inverse relationship between addition and subtraction and use this to solve missing number problems with single digit numbers	• Building block towers with —starting with the tower as a whole and taking blocks away. How many are left? • Using a dice to make subtraction calculations. • Threading beads onto a pipe cleaner, place beads on either side of the pipe cleaner and bend them over, how many altogether? What happens if I take some away? • How many students are in the class altogether? What happens if I ask all the boys/girls to leave? How many left? Repeat with a variety of scenarios • Subtraction in pictures/symbols • Use uno cards to choose a pair and take away numbers. • Completing written addition problems. First by completing a simple subtraction problem e.g. 7-4=?. Next filling in the missing number e.g. 7+?=3 and then by showing a variety of addition problems to make a number e.g. ?=?=3. • Playing skittles in the classroom, how many skittles did we start with? How many have been knocked over? How many left? • Tower subtraction. Each student starts with a tower of blocks, roll the die and take away the number shown. First to zero wins.

Area of learning	I Can Statements	Developing & Mastering expectations	Possible Activities
Multiplication	I can solve problems including doubling I can solve multiplication problems using my 2, 5 and 10 multiplication tables	***Initial expectations:*** Can duplicate the objects I have and give to another person ***Developing expectations:*** Begin to use objects and pictorial representation to solve repeated addition problems. Starts to connect counting in twos, number patterns and arrays through practical experiences with support. The pupil can recall doubles to 10 Recall multiplication facts for the 10 multiplication table ***Mastering expectations:*** The pupil can recall doubles to 20 e.g. pupil knows that double 2 is 4, double 5 is 10 The pupil can recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables to solve simple problems Starts to connect the tables Connects the 10 multiplication table to place value and the five multiplication table to divisions on a clock face. Solves one step problems involving multiplication by calculating the answer using objects, arrays and pictorial representations with support.	• Number rhymes such as doubling rhymes • Double activities, can children match what they already have on their plates, in their hands, in front of them and double what they have? • Counting in 5s and 10s using hands, can children show 5 and 10 on their hands? Can they count on? • Repetition of times tables and counting in multiples, circle activities. Going around the circle counting forwards and backwards in different multiplication tables. • Children organizing themselves into a line when they are holding a number card within multiplication tables . • Using 100 square or splat square to count in multiplication tables.

Area of learning	I Can Statements	Developing & Mastering expectations	Possible Activities
Division	I can solve problems involving halving I understand division by sharing objects between a certain number I can solve division problems using my 2, 5 and 10 multiplication tables	***Initial expectations:*** Understands what it means to share equally Can share objects between 2 people ***Developing expectations:*** The pupil can recall halves in 10 Understands division is sharing and can share objects up to 20 between 2– 10 people Begin to use objects and pictorial representation to solve grouping problems. ***Mastering expectations:*** Developing an understanding of grouping and sharing as it relates to multiplication and division The pupil can recall halves in 20 Solves one step problems involving division, by calculating the answer using objects, arrays and pictorial representations with support.	• Sharing activities. Beginning with sharing with one other person and halving what they have. Halving. • Thinking about sharing objects throughout the class, how can we share so it is equal? Everyone has the same? • Using paper pictures to visualize taking half away, halving what you have. • Grouping items together in order to share/divide.

Dryden School
Business and Enterprise College

Measurement: Weight and Volume

UNIT INFORMATION:

This unit explores Weight and Volume. The focus on Weight provides opportunities for children to explore the concepts of heavy and light and to weigh objects using their bodies to judge weights. The focus on Capacity enables children to explore how much space is available and have lots of practical opportunities to explore this concept using sand, water and other apparatus. The children should also have opportunities to start measuring with non-standard and standard units .

COVERAGE:

Measuring Mass/Weight, Measuring Volume/Capacity

VOCABULARY:

- Words related to terms for measuring, such as: measure, size, compare, guess, estimate, about, roughly, enough, not enough, too much, too few, too little, too many, nearly, close to, about the same as, just over, just under
- Words to describe capacity and volume, such as: full, empty, half full, overflowing, holds, container
- Words related to comparative terms, such as: heavy / light, heavier / lighter, heaviest / lightest
- Words related to units of measurement, such as: litre (l), millilitre (ml), pint, teaspoon
- Words related to terms for measuring, such as: measure, size, compare, guess, estimate, about, roughly, enough, not enough, too much, too few, too little, too many, nearly, close to, about the same as, just over, just under
- Words to describe size and weight, such as: big, little, more, less, weigh, weighs, weight, balance, balances, scales
- Words related to comparative terms, such as: heavy / light, heavier / lighter, heaviest / lightest
- Words related to units of measurement, such as: kilogram (kg), half-kilogram, gram (g)

Dryden School
Business and Enterprise College

Measurement: Weight and Volume

STEPS OF PROGRESSION
⇒ Show understanding of big/small
⇒ Introduce weight/mass
⇒ Show awareness of difference in weight between objects
⇒ Measure weight/mass
⇒ Compare weight where there is a marked difference
⇒ Find heavy/light objects in response to requests
⇒ Compare weight
⇒ Compare mass
⇒ Introduce capacity and volume
⇒ Measure volume
⇒ Understand the concept of full/half full/empty
⇒ Compare volume
⇒ Measure weight in grams
⇒ Measure weight in kilograms
⇒ Measure volume in Millilitres
⇒ Measure volume in Litres
⇒ Add and subtract weight
⇒ Add and subtract volume

Dryden School
Business and Enterprise College

Area of learning	I Can Statements	Initial, Developing & Mastering Expectations	Possible Activities
Measuring Mass/ weight	I can identify big and small in meaningful contexts I can use a balance scale I can find the lighter package I can find the heavier package I can estimate which might be heavier. E.g. a plate with 6 cupcakes on or a plate with 1 cupcake on I can order items by weight I can suggest suitable units to measure an object I am becoming aware of standard measuring tools i.e. rulers, scales, thermometers and measuring vessels I am confident in using language related to mass/weight Is able to use digital scales independently I	***Initial expectations:*** Beginning to understand big/small Can group items together that are big/small Starts to measure with support, ***Developing expectations:*** Starts to measure with support, mass/weight using non standard units and to use these to describe, compare and solve practical problems e.g. which is heavier / lighter? Starting to develop of use language such as heavy / heavier /light / lighter / lightest / weight ***Mastering expectations:*** Starts to find equivalent masses e.g. 1kg = 1000g Compares and orders measures Mass e.g. 1kg / 200g.Records results of comparisons using appropriate comparative language. Measures and records mass (kg/g)to nearest appropriate unit using standard units and uses these to describe, compare and solve practical problems e.g. Which is heavier? Compare and order lengths, mass, volume/ capacity using appropriate comparative language such as heavy/ heavier.	• Fill a variety of containers by pouring sand, water, beads, etc. into them. Encourage children to compare which ones are “bigger” or have got “more” in them. Introduce the vocabulary of heavy and light • Use a balance scales with a range of objects. Explore what happens when objects are placed only in one pan. Explore what happens if identical objects are placed in both pans. Explore what happens if different objects are placed in each pan • Cooking activities: measuring out ingredients. Use recipes that call for measurements in weight, use electronic scales and have a card that indicates the number on the display for the children to match. Discuss quantities (more / less) • Fitting items into a container – e.g. apples in a bowl, rice in a pot, etc. Which holds more, is it heavy or light? • Put a selection of parcels in order of weight. Start with three, with marked differences in weight. Increase the number of packages and decrease the difference between them. How can you find out which one is heaviest? • Play a dice game with die marked with symbol supported text “light” and “heavy”. Have a range of light and heavy parcels to collect. Challenge the children to find one that corresponds to the die • Big boxes – challenge the children to fill them up and try to lift them. If it’s too heavy, how could you make it lighter? (Taking things out / filling with lighter objects) • Heavy / light sort – have pairs of objects and ask children to sort them into light heavy sets, labelled with symbols. Make sure not all the heavy items are bigger! • What’s in the box? Feel weight of box. Show student two or more objects (e.g. feather and a toy bird) and let them feel them. Which one is in the box? Why? Encourage use of vocabulary.

Dryden School
Business and Enterprise College

Area of learning	I Can Statements	Initial, Developing & Mastering Expectations	Possible Activities
Measuring Capacity/ Volume	I can place objects in and out of containers, according to a target shape I can place a lid on a container I can pour water from one container into another I can identify big and small in meaningful contexts I enjoy filling and emptying containers I can use visual judgement to estimate container volume e.g. which container will hold more? I can check my estimate using liquid I can suggest suitable units to measure an object I am confident in using language related to capacity/volume I can identify full I can identify half full I can identify empty I am becoming aware of standard measuring tools i.e. rulers, scales, thermometers and measuring vessels	***Initial expectations:*** Understands the language of 'in' and is able to place things inside containers Enjoys filling and emptying containers Is able to independently pour water in and out of containers I can identify big and small ***Developing expectations:*** Is able to estimate what may hold the most/least Starts to measure with support, capacity / volume using non standard units and to use these to describe, compare and solve practical problems e.g. which jug contains more? Starting to develop use of language such as full / empty / more than / less than / half / half full. ***Mastering expectations:*** Starts to find equivalent masses e.g 1L =1000ml Compares and orders measures Capacities e.g. 1L / 200ml .Records results of comparisons using appropriate comparative language. Measures and records capacity (L/ml) to nearest appropriate unit using standard units and uses these to describe, compare and solve practical problems e.g. Which holds more? Compare and order lengths, mass, volume/ capacity using appropriate comparative language.	• Cooking activities: measuring out ingredients. Use recipes that call for measurements in cups, rather than by weight. Discuss how to measure accurately, ensuring cups are full, not partially full or overflowing. • Pour sand, water, beads, etc. from one container to another. Which holds container holds more / less? Which container can make this bottle full? Which containers are empty? • Pour drinks at break time: will we have enough drink to fill all of the cups? How much drink should we put in each cup so we don't spill any? • Fill containers: can you make sure it's full to the top? Can you empty it? Which of these containers is full? • Cubes – which container holds more cubes? Can you guess (or count) how many each will hold? • Estimate how many cups can be filled with a container: will they all be full, or only half full? • Play a dice game. Put the symbols "full" and "empty" on to the dice. Give each child five containers. Throw the dice and fill up a container if a "full" symbol is thrown, but empty it if the "empty" symbol is thrown. • Fit items into a container: how many can you fit in? Differentiate by asking some children to place large items into a relatively small container and some children to place smaller objects into a larger container? • Which holds the most – Supply the children with a selection of containers of different shapes and sizes, and something to fill them with, such as rice. Which container holds the most? Do any of the containers hold the same amount? How could you find out? • Draw a "fill line" at different levels on a variety of reclaimed plastic containers and ask children to fill them with sand, rice or water to the line.

Area of learning	I Can Statements	Initial, Developing & Mastering Expectations	Possible Activities
Measuring Capacity/ Volume (continued)	I can place objects in and out of containers, according to a target shape I can place a lid on a container I can pour water from one container into another I can identify big and small in meaningful contexts I enjoy filling and emptying containers I can use visual judgement to estimate container volume e.g. which container will hold more? I can check my estimate using liquid I can suggest suitable units to measure an object I am confident in using language related to capacity/volume I can identify full I can identify half full I can identify empty I am becoming aware of standard measuring tools i.e. rulers, scales, thermometers and measuring vessels	***Initial expectations:*** Understands the language of 'in' and is able to place things inside containers Enjoys filling and emptying containers Is able to independently pour water in and out of containers I can identify big and small ***Developing expectations:*** Is able to estimate what may hold the most/least Starts to measure with support, capacity / volume using non standard units and to use these to describe, compare and solve practical problems e.g. which jug contains more? Starting to develop use of language such as full / empty / more than / less than / half / half full. ***Mastering expectations:*** Starts to find equivalent masses e.g 1L =1000ml Compares and orders measures Capacities e.g. 1L / 200ml .Records results of comparisons using appropriate comparative language. Measures and records capacity (L/ml) to nearest appropriate unit using standard units and uses these to describe, compare and solve practical problems e.g. Which holds more? Compare and order lengths, mass, volume/capacity using appropriate comparative language.	• Ask the children to find a container that hold more than a specified container from a small selection. Alternatively ask them to find a container that holds the same amount. To make it easier, ensure there is a marked difference between the choices of container • Popcorn – measure out a quantity of microwave popcorn in a cup. Put it in the microwave to pop then try to fit it back in the original measuring cup. What has happened • Give the children a range of containers which are full, partially full or empty and ask them to sort them into three hoops. Ask them to say why they have chosen to put it in a particular hoop to encourage them to use the vocabulary of capacity • Make cakes using cup measurements, then pour different amounts of cake mixture into muffin tins (tiny bit, half full, full up). Explore what happens when they cook.

Measurement: Length and Height

UNIT INFORMATION:

This unit explores Length and Height. Children will be working on developing perception skills, exploring objects of different lengths/heights and sizes in lots of different contexts, before making comparisons between objects of different lengths/heights and starting to measure them using non standard and standard units.

COVERAGE:

Measuring Length, Measuring Height

VOCABULARY:

- Words related to terms for measuring, such as: measure, size, compare, guess, estimate, about, roughly, enough, not enough, too much, too few, too little, too many, nearly, close to, about the same as, just over, just under
- Words to describe length and size, such as: big, little, length, width, height, depth Words related to comparative terms, such as: long / short, longer / shorter, longest / shortest, tall, taller, tallest, narrow / wide, high / low, higher / lower, highest / lowest, deep / shallow, deeper / shallower, deepest / shallowest, thick / thin / thicker / thinner, thickest / thinnest
- Words related to distances, such as: close, near, far, further, furthest, distance between / apart, distance to / from
- Words related to units of measurement, such as: metre (m), centimetre (cm), kilometre (km), mile, millimetre (mm)
- Words related to the equipment of measuring length, such as: ruler, metre stick, tape measure

Measurement: Length and Height

STEPS OF PROGRESSION
⇒ Show understanding of big/small
⇒ Compare lengths and heights where there is a marked difference
⇒ Find big and small objects on request
⇒ Find long/short objects on request
⇒ Compare lengths and heights
⇒ Compare height
⇒ Compare length
⇒ Measure height
⇒ Measure length
⇒ Order lengths
⇒ Order heights
⇒ Measure length and height in cm
⇒ Measure length and height in m
⇒ Comparing equivalent lengths in m and cm
⇒ Comparing equivalent lengths mm and cm
⇒ Add lengths
⇒ Subtract lengths
⇒ Measure perimeter
⇒ Calculate perimeter

Area of learning	I Can Statements	Initial, Developing & Mastering Expectations	Possible Activities
Measuring Length	I am beginning to recognise the difference between the sizes of two objects I am beginning to stack objects I am beginning to join objects together i.e. cubes I can compare the difference between large and small objects within a range of contexts. I can recognise big and small objects in meaningful contexts I can order items by length I can understand and use terms such as longer than, longest. Shortest and shorter than I can suggest suitable units to measure an object I am becoming aware of standard measuring tools i.e. rulers, scales, thermometers and measuring vessels I can record length using standard measurements	***Initial expectations:*** Beginning to understand big/small Can group items together that are big/small Starts to measure with support ***Developing expectations:*** Starts to measure length using non standard units and to use these to describe, compare and solve practical problems e.g. which is longer/shorter Starting to develop of use language such as longer/ shorter ***Mastering expectations:*** Starts to find equivalent lengths e.g. 1m = 100cm Compares and orders Lengths. 1m / 200cm.Records results of comparisons using appropriate comparative language. Measures and records length (m/cm) to nearest appropriate unit using standard units and uses these to describe, compare and solve practical problems e.g. Which is longer Compare and order lengths, mass, volume/capacity using appropriate comparative language such as longer/shorter	• Problem solving activities related to size, such as choose an appropriate sized tablecloth to put on the table / find a cloth to hide this toy / find a sheet of paper large enough to wrap up a box • Fit lids to various sizes of saucepans / jars / pots • Find the “big” and “small” object from pairs (e.g. Can you find the big ball? Can you find the small plate? Can you find the big spoon? Can you find the small chair? etc.) • Shoe sort – have a variety of shoes: baby, child, women’s and men’s. Can you pair the shoes? How can you tell which go together? Who would each pair fit? • Find the “long” and “short” object from pairs (e.g. Which pencil is the long one? Which ribbon is the short one? Which tube is the long one? etc.) • Make tall and short towers with construction toys. Who has made the tallest / shortest? Order the towers according to size. • Put ribbons / pencils / scarves in order of length • Make a long / fat / wide worm with play dough. Can you make one that is longer / shorter / wider than this one? Make snakes out of clay and paint and display them • Try timing building a tower with bricks – whose is the tallest / shortest? • Long jump – Stand on a start line and jump as far as you can. Mark where you land with tape or chalk. Who can jump the furthest? • Longer than a straw – give each child a straw and ask them to find things that are longer than a straw in the classroom. Repeat finding things that are shorter than the straw.

Dryden School
Business and Enterprise College

Area of learning	I Can Statements	Initial, Developing & Mastering Expectations	Possible Activities
Measuring Height	I am beginning to stack objects I am beginning to join objects together i.e. cubes I can compare the difference between large and small objects within a range of contexts. I can compare the height of children in my class I can recognise big and small objects in meaningful contexts I can order items by height I can understand and use terms such as longer than, longest. Shortest and shorter than I am becoming aware of standard measuring tools i.e. rulers, scales, thermometers and measuring vessels I can record height using standard measurements	***Initial expectations**:* Beginning to understand big/small Can group items together that are big/small Starts to measure with support ***Developing expectations:*** Starts to measure height using non standard units and to use these to describe, compare and solve practical problems e.g. which is taller/shorter Starting to develop of use language such as taller/shorter ***Mastering expectations:*** Starts to find equivalent heights e.g. 1m = 100cm Compares and orders heights . 1m / 200cm.Records results of comparisons using appropriate comparative language. Measures and records height (m/cm) to nearest appropriate unit using standard units and uses these to describe, compare and solve practical problems e.g. Which is taller? Compare and order lengths, mass, volume/capacity using appropriate comparative language such as longer/shorter	• Find the “big” and “small” object from pairs (e.g. Can you find the big ball? Can you find the small plate? Can you find the big spoon? Can you find the small chair? etc.) • Use a height chart or sugar paper taped to the wall to compare the heights of children in class. • Draw around children on sugar paper, cut out and decorate. Put the children in order of height • Look around school or the classroom, find things that are taller or shorter than a metre (use metre rule) • Collect a variety of objects from the classroom, are students able to put these in order from shortest to tallest? Tallest to shortest? • Ruler challenge. Set children a challenge of items/objects they have to find and measure, they then need to decide which ruler is more appropriate to measure each object 30cm or 1m. • Compare length and height, do we measure the same when we are lying flat as we do when we are standing up?

Measurement: Time

UNIT INFORMATION:

This unit explores Time. Children will be working on the concepts of time, starting with a basic understanding of start and stop, fast and slow, and moving on to more complex concepts such as now and next, before and after, and sequencing before working on more formal aspects of time, such as telling the time with a clock, learning the days of the week, etc. The concept of Time needs to be addressed throughout the school day, in real life contexts as well as in Mathematics lessons.

COVERAGE:

Time

VOCABULARY:

- Words related to lengths of time, such as: year, month, week, fortnight, day, hour, minute, second, o'clock, half past, quarter to, quarter past, five to, five past, etc.
- Words related to days of the week, such as: Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday
- Words related to months of the year, such as: January, February, March, April, May, June, July, August, September, October, November, December
- Words related to the season, such as: spring, summer, autumn, winter Words related to times of the day, such as: morning, afternoon, evening, night, midnight, bedtime, dinnertime, playtime
- Words related to comparing the passing of time, such as; yesterday, today, tomorrow, before, after, next, now, last, soon, later, early, late, old / new, older / newer, oldest / newest, birthday, holiday, weekend
- Words related to the speed of time, such as: quick / slow, quicker / slower, quickest / slowest, quickly / slowly, fast, faster, fastest
- Words related to the equipment of measuring time, such as: clock, watch, hands, digital, analogue, calendar, date, am, pm Words related to frequency, such as: always, never, sometimes, often, usually, frequently, once, twice, how often…?, how long…?

Measurement: Time

STEPS OF PROGRESSION

- ⇒ Showing an awareness of interest in the sequence of daily/routine events
- ⇒ Understanding now/next and sequence two events or symbols
- ⇒ Sequencing daily routines
- ⇒ Distinguish and respond to fast/slow/quick
- ⇒ Before and After
- ⇒ Knowing days of the week
- ⇒ Knowing language related to time such as now, next, soon, later, today, tomorrow, yesterday
- ⇒ Recalling information about their day/weekend
- ⇒ Knowing months of the year
- ⇒ Dates
- ⇒ Understanding the difference between seconds and minutes
- ⇒ Recognising all numbers on the clock
- ⇒ Knowing what the clock hands mean
- ⇒ Reciting time to the hour
- ⇒ Reciting time to the half hour
- ⇒ Ordering time to the hour
- ⇒ Telling time to the hour
- ⇒ Telling time to the half hour
- ⇒ O'clock and half past
- ⇒ Quarter past and quarter to
- ⇒ Telling time to 5 minutes
- ⇒ Writing time
- ⇒ Hours and days
- ⇒ Knowing months and years
- ⇒ Using AM and PM
- ⇒ 24 hour clock
- ⇒ Telling time to the 5 minutes
- ⇒ Telling time to the minute
- ⇒ Finding the duration
- ⇒ Comparing durations
- ⇒ Start and end times
- ⇒ Measuring time in seconds

Area of learning	I Can Statements	Initial, Developing & Mastering Expectations	Possible Activities
Time	I can show an awareness that each day has a name I can use everyday language relating to time e.g. before lunch/after lunch afternoon, evening, night I can associate a sequence of actions with daily routines I can understand some language about immediate, past and future e.g. before later and soon I can answer the question what did you do yesterday? I can answer the question what will you do tomorrow? I can report the events of a specific day I can sequence a series of pictures from my day I can sequence a series of pictures from a familiar story I can use everyday language related to time I can carry out tasks in a given minute and understand the need to complete an activity at a quicker pace when being timed	***Initial expectations:*** Takes part in school daily routines Has awareness if any daily routines may change Understands that each day has a name Can describe and sequence events in their school day i.e. identifying what they did before/after lunch Can share news about their weekend ***Developing expectations:*** Starts to sequence events in chronological order using appropriate language e.g. before / after / next / first / today / yesterday / tomorrow / morning / afternoon / evening. Starts to recognise and use language relating to dates, including days of week, weeks, months and years. ***Mastering expectations:*** Sequences events in chronological order using appropriate language Recognises and uses language relating to dates, including days of week, weeks, months and years. Measures and begins to record time; using hours, minutes and seconds. Reads the time to the hour and half hour and draws hands on a clock face to show these times. Uses the language of o'clock and half past. Continues to be fluent with language relating to dates; days of week, months, years. Starts to use quarter past /to. Draws the hands on a clock face to show these times.	• Follow and comprehend a first…then… schedule • Predict what comes next / recall what they did before • Recall recent events of significance (through sign / symbol / speech) • Look at a calendar / doing the date chart, saying what day it is today, tomorrow, yesterday • Draw circles / lines / dots fast or slowly • Explore how quickly water pours through tubing and finding ways of making it go faster / more slowly • Use bikes / running / jumping / spinning fast and slowly • Associate events with each other and sequence them, such as assembly & going home / dinner & pudding / break & drinks • Associate familiar activities such as school / sleep with day / night. Children could stick these on a chart to show when they occur • Sequence photos of themselves as a baby / when they started school / now • Sequence familiar stories – what happens first / next / last? • Compare sand / rocking timers • Carry out an action for a specified length of time, such as standing on one foot / jumping / singing for the duration of a sand timer (10 second / 30 second / 1 minute) • Explore clocks: moving the hands, looking at different types of clocks / watches (analogue / digital / old / new)

Area of learning	I Can Statements	Initial, Developing & Mastering Expectations	Possible Activities
Time (continued) (1)	I can recognise structure in my day and order my daily routine I can order days of the week I recognise there are different months in the year I can rote name months of the year I can name tomorrow I can name yesterday I can recognise o'clock I can recognise half past I can recognise quarter past I can recognise quarter to I can tell the time to the nearest 5 minutes I know the number of minutes in an hour I know the number of hours in a day I can solve simple problems related to ½ hours I know how long a fortnight is	***Initial expectations:*** Takes part in school daily routines Has awareness if any daily routines may change Understands that each day has a name Can describe and sequence events in their school day i.e. identifying what they did before/after lunch Can share news about their weekend ***Developing expectations:*** Starts to sequence events in chronological order using appropriate language e.g. before / after / next / first / today / yesterday / tomorrow / morning / afternoon / evening. Starts to recognise and use language relating to dates, including days of week, weeks, months and years. ***Mastering expectations:*** Sequences events in chronological order using appropriate language Recognises and uses language relating to dates, including days of week, weeks, months and years. Measures and begins to record time; using hours, minutes and seconds. Reads the time to the hour and half hour and draws hands on a clock face to show these times. Uses the language of o'clock and half past. Continues to be fluent with language relating to dates; days of week, months, years. Starts to use quarter past /to. Draws the hands on a clock face to show these times.	• Role play with diaries, calendars, etc. • Use photo sequencing cards. Ask students to sequence cards and describe what happened first / next / last. How do you know? Ask students to match cards to numbers 1,2,3,4 to show the order they happened in (remove one or two cards to simplify the activity) • Copy times modelled on clocks by matching hands to numerals • Talk about what happens on each day / during each month • Match symbols of significant things that happen each day of the week at school • Make a birthday chart and discuss which birthdays fall in each month. Ask questions like Who has their birthday in March? How many people have a birthday in November? Etc. • Make a clock with a face (use photos of children or drawings) and put "hands" on to it. How many hands do we need? If appropriate, add numbers • se wind up toys to compare lengths of time. Ask two children to each wind up a toy and put it in a tray of water or on the table to see which one stops first. Children could repeat this several times and keep a simple tally of which toy finishes first each time • Which takes longer? Have a range of symbol supported "task cards" such as: put on a coat; build a tower of five cubes; put all the pieces in an inset puzzle; pour a cup full of water; put on a hat and scarf; walk to the door and back; cut a piece of paper in half; write their name. Ask a pair of children to pick a card each and compare which task takes longer. The task card could be stuck onto a chart to with the headings "It takes longer to…" and "It takes less time to…". Use comparative and time related vocabulary to discuss.

Area of learning	I Can Statements	Initial, Developing & Mastering Expectations	Possible Activities
Time (continued) (2)	I can solve simple problems related to ¼ hours I can estimate how long a task will take I can estimate which task will take longer I can use a calendar to find a date I can write the date correctly I know all months of the year I know when my birthday is and can find it on a calendar I can order months of the year I can use a variety of timetables. E.g. bus, metro, train timetables I can estimate and read time with increasing accuracy to the nearest minute	***Initial expectations:*** Takes part in school daily routines Has awareness if any daily routines may change Understands that each day has a name Can describe and sequence events in their school day i.e. identifying what they did before/after lunch Can share news about their weekend ***Developing expectations:*** Starts to sequence events in chronological order using appropriate language e.g. before / after / next / first / today / yesterday / tomorrow / morning / afternoon / evening. Starts to recognise and use language relating to dates, including days of week, weeks, months and years. ***Mastering expectations:*** Sequences events in chronological order using appropriate language Recognises and uses language relating to dates, including days of week, weeks, months and years. Measures and begins to record time; using hours, minutes and seconds. Reads the time to the hour and half hour and draws hands on a clock face to show these times. Uses the language of o'clock and half past. Continues to be fluent with language relating to dates; days of week, months, years. Starts to use quarter past /to. Draws the hands on a clock face to show these times.	• Watch a video at normal speed, in slow motion and being fast forwarded. Can children identify whether the speed is "right", "fast" or "slow". They could have symbols to help them indicate this. • Sequence a school day. Give children timetable symbols relating to activities during the day e.g. English, Play, drinks, maths, lunch, art, assembly. Vary the number of symbols according to the child. • Plan travel with class, where do we need to be and how are we going to get there? Looking at timetables of public transport and organizing a trip • Clock activities looking at o'clock, quarter past, half past, quarter to. • Can child recognise digital times and use a digital timer? Use a digital timer at the end of the day all coats need to be on, books in bags, chairs cleaned ad stacked etc. by the time the timer comes to 0. Are children able to watch the timer and realise when 0 is close?

Dryden School
Business and Enterprise College

Measurement: Money

UNIT INFORMATION:

This unit explores money in terms of coin recognition, coin equivalence and the value of money. All work should be practically-based and as much as possible in real life situations such as shopping, café etc. Real money should **only** be used within this topic as opposed to printed money.

COVERAGE:

Money

VOCABULARY:

- money, coin, note, penny, pence, pound
- price, cost, costs more, costs less, total, amount, value, worth
- buy, bought, sell, sold
- spend, spent, pay, change, how much, how many…,
- more expensive, less expensive, most expensive, least expensive, cheap, cheaper, cheapest
- 1p, 2p, 5p, 10p, 20p, 50p, £1, £2, notes

Dryden School
Business and Enterprise College

Measurement: Money

STEPS OF PROGRESSION

- ⇒ To know money is used to pay for items
- ⇒ To be able to collect money and know where to pay
- ⇒ To name coins/notes by looking at numerals
- ⇒ To know that pence and pound/p or £ is a unit of monetary value
- ⇒ To know that coins and notes come in different colours, shapes and sizes
- ⇒ Recognising coins and notes
- ⇒ Using Vocabulary associated with money
- ⇒ To know that each coin and note has a fixed value
- ⇒ To understand that notes have a greater value than coins
- ⇒ To know that coins and notes can be ordered in terms of their value
- ⇒ Selecting money
- ⇒ Counting in coins
- ⇒ Reading and writing prices
- ⇒ Making the same amount
- ⇒ Identifying what costs the most/least
- ⇒ Finding the total price
- ⇒ Finding the difference in price
- ⇒ Choosing the cheapest/most expensive option from a selection
- ⇒ Covering amounts to £1
- ⇒ Covering amounts to £2
- ⇒ Covering amounts to £5
- ⇒ Finding change fro m £1
- ⇒ Finding change from £2
- ⇒ Finding change from £5
- ⇒ Understanding how a bank balance increased/decreases

Dryden School
Business and Enterprise College

Area of learning	I Can Statements	Initial, Developing & Mastering Expectations	Possible Activities
Money	I understand that money is used to pay for items Without prompting, I am able to collect money when asked to pay for items. I can store money safely when in school I can distinguish between coins and notes I can recognise and use symbols for £ and p I recognise £1 and £2 coins I recognise 50p, 20p and 5p coins I recognise £5, £10 and £20 notes I can find different combinations of coins and notes which equal the same amount of money e.g. 1x £10, 2x £5, 5x £2, 10x £1 I can cover an amount up to £1 I can cover an amount up to £2 I can cover an amount up to £5 I understand that change needs to be given when paying for items less than £1 I understand that change needs to be given when paying for items less than £2	***Initial expectations:*** Understands the purpose of money Is able to hand over money and recognise when items need to be paid for Starts to recognise and know the value of different denominations of coins and notes. ***Developing expectations:*** Recognises the value of different denominations of coins and notes. Begin to recognise and use symbols for pounds (£) and pence (p) Makes connections between values of coins e.g. five 1p coins being of the same value as one 5p coin or two 5p coins being of equal value to one 10p coin. ***Mastering expectations:*** Recognise and use symbols for pounds (£) / pence (p) Combine amounts to make a particular value Use different coins to make the same amount Solve simple problems in a practical context involving addition and subtraction of money of the same unit including giving change Continues to show recognition of all values of coins and notes when using both £ and p in practical situations, showing different ways to create sums of money, including using the fewest coins. Record £ and p separately. Solve simple money problems.	**Only real money to be used in all money activities.** • Match real coins to real coins • Sort coins according to their colour. Look at the sorted piles are all the coins the same? how are they different? • Sort coins the into the different compartments of a cash till • Match shiny and dirty coins that are the same. • Give students a coin each. Ask them to identify when their coin is showing when shouted out. • Exchange a coin for goods in café or a class shop • Correctly sequence the buying of goods in the café or class shop (choose, pay, take it away) • Which coin is worth more / less? • Check prices in catalogues / specifically made price lists. Use representations for items and money, and act out change • Ask questions related to worth (using coin and note representations): what would I need to buy a chocolate bar - 50p or £10? what would I need to buy a pair of shoes - 10p or £20? What would I need to buy a sweet – 1p or £1? • Encourage the children to think about cost and change by discussing and comparing prices, and answering questions: would you get change if you paid £10 for a loaf of bread? would you get change if you paid 30p for a pint of milk? o would you get pounds or pence change if you paid £20 for a bar of chocolate?

Area of learning	I Can Statements	Initial, Developing & Mastering Expectations	Possible Activities
Money (continued)	I understand that change needs to be given when paying for items less than £2 I understand that change needs to be given when paying for items less than £5 I can solve simple problems in a practical context involving addition and subtraction of money of the same unit e.g. I have 3x£1 my sandwich costs £1 how much left? I understand there a different methods to pay for items i.e. card, cash I am able to remember a pin number for a debit card I am able to use chip and pin I can identify if a bank balance would cover a purchase	***Initial expectations:*** Understands the purpose of money Is able to hand over money and recognise when items need to be paid for Starts to recognise and know the value of different denominations of coins and notes. ***Developing expectations:*** Recognises the value of different denominations of coins and notes. Begin to recognise and use symbols for pounds (£) and pence (p) Makes connections between values of coins e.g. five 1p coins being of the same value as one 5p coin or two 5p coins being of equal value to one 10p coin. ***Mastering expectations:*** Recognise and use symbols for pounds (£) / pence (p) Combine amounts to make a particular value Use different coins to make the same amount Solve simple problems in a practical context involving addition and subtraction of money of the same unit including giving change Continues to show recognition of all values of coins and notes when using both £ and p in practical situations, showing different ways to create sums of money, including using the fewest coins. Record £ and p separately. Solve simple money problems.	**Only real money to be used in all money activities.** • Open a "savings account" - give students 2p / 5p /10p per day or week. Encourage them to remember the total of their savings, and add or count out coins each day/week to find new totals. Students could record the amount in their account. At the end of the week/half-term, students can shop for items with their savings, either in the classroom or the community, what can you afford to buy? have you got enough money for xxx? can you afford to buy two things? (Encourage addition) include some items that cost more than the amount saved, and asks students to consider whether they would rather continue saving to buy the item next time. • Find coins to match priced items - encourage focus on numerals on coin and on price tag • Go to the shops and explore different ways in which you can pay, can you use something other than card? • Exploring bank cards and pin numbers and safety around bank cards and money **All classes will visit the café in school every Thursday morning, this is part of the Maths curriculum. Money will be the focus of every Thursday maths session, centred around the café.**

Dryden School
Business and Enterprise College

Geometry: Position, Direction & Movement

UNIT INFORMATION:

This unit explores Position & Direction and Movement & Angle). The children will explore positional and directional language and experiences in a range of everyday contexts as well as specific mathematical activities. The focus on Movement and Angle encourages children to develop a sense of themselves in space and their ability to move within space The children will have opportunities for practical experiences of position, direction, movement and angle and be introduced to relevant vocabulary in a range of contexts.

COVERAGE:

Position, Direction & Movement

VOCABULARY:

- Words related to whereabouts, such as position, move, where
- Words related to position, such as in, on, over, under, above, below, first, last, in front, behind, top, bottom, side, middle, edge, corner, inside, outside, around, beside, next to, opposite, apart, between, through, along, underneath, higher, lower
- Words related to direction, such as up, down, forwards, backwards, sideways, left, right, to, from, towards, away from, horizontal, vertical, diagonal
- Words related to distance, such as close, near, far
- Words related to movement, such as move, start, stop, slide, roll, stretch, bend, journey, route, straight line, map, plan
- Words related to angle, such as turn, whole turn, half turn , centre, clockwise, anti-clockwise, right angle

Geometry: Position, Direction & Movement

STEPS OF PROGRESSION

⇒ Searching for objects that have gone out of sight

⇒ Searching intentionally for objects in their usual place

⇒ Manipulate positions e.g. stacking objects, lining up, putting into and out of containers

⇒ Explore different directions by manipulating objects or self

⇒ Begin to understand simple positional vocabulary

⇒ Begin to understand simple directional vocabulary

⇒ Begin to understand simple movement related vocabulary

⇒ Describe movement

⇒ Describe turns

⇒ Describe positions

⇒ Describe movement and turns

⇒ Solve problems involving position and direction

⇒ Recognises angles as turns

⇒ Is able to give directions

⇒ Is able to follow directions

⇒ Identifies position of a square on a grid or map

Area of learning	I Can Statements	Initial, Developing & Mastering Expectations	Possible Activities
Position, Direction & Movement	I am beginning to search for objects that have gone out of sight I am beginning to stack objects I am beginning to join objects together i.e. cubes I can place an object on top I can place an object next to I can place an object on the bottom I can place an object underneath I can place an object on I can move myself/an object forwards on command I can move myself/ an object backwards on command I can move myself/ an object quickly on command I can move myself/ an object slowly on command I can stop myself/ an object on command I can describe the directional movement of myself/ an object.	***Initial expectations:*** Can move self when asked to move Able to find objects kept in familiar places Following basic positional instructions e.g. putting the cup on top of the table Understands the concepts of slowly/quickly ***Developing expectations:*** Starts to use the language of position, direction and motion, including left / right / top / middle / bottom / on top of / in front of / above between / around / near / close / far / up / down / forwards / backwards / inside / outside. May need support. Place items correctly in response to clues about its position and its position relative to other items e.g. it is on the top row, it is next to the green file. Starts to give and follow directions ***Mastering expectations:*** Starts to describe and use through practical activities the language of turning, including half, quarter and three quarter turns Confident in the use of language to describe position, direction and movement, including left / right / top / middle / bottom / on top of / in front of / above between / around / near / close / far / up / down / forwards / backwards / inside / outside. Confidently describes and uses, through practical activities, the language of turning, including half, quarter and three quarter turns. Connects turning clockwise with the movements of hands on a clock face. Start to apply understanding to independently solving problems related to position and direction. Confident giving and following directions Starting to recognise the position of a square on a grid using references.	• React to or look towards a sound that is being played out of sight • Stack a tower of bricks or blocks • Explore PE apparatus – go under / over / in / on / through apparatus. Work in pairs – one student adopts a position and their partner describes it with symbols / signs / words • Move in different ways: forward backward, turning, spin around etc. • Lean or stretch forward, backwards and sideways, turn arms in a circle, etc. • Roll balls of different shapes (rugby, etc) and sizes and watch the way they move • Blow up three balloons and put an object inside one, some water inside another and leave the last one as normal. Watch the way the move. Predict which one will go the furthest or win a race. • Play track and board games – move forward two places, move back one space, etc. • Look at objects from different perspectives: from above, from below, from the side, from the front, from the bottom, upside-down, etc. Can students identify what it is, or say how it looks different? • Follow movement directions, such as “Walk forward five steps” • Build Duplo / Lego / Unifix towers, putting bricks on top of one another, or build walls, placing bricks next to each other.

Area of learning	I Can Statements	Initial, Developing & Mastering Expectations	Possible Activities
Position, Direction & Movement (continued)	I can use everyday language to describe the position of objects I can use everyday language to describe directions I can use mathematical vocabulary to describe position and movement including movement in a straight line and distinguishing between rotations as a turn. I can follow directions I can give directions I can identify a named square on a map I can follow Satellite Navigation	***Initial expectations:*** Can move self when asked to move Able to find objects kept in familiar places Following basic positional instructions e.g. putting the cup on top of the table Understands the concepts of slowly/quickly ***Developing expectations:*** Starts to use the language of position, direction and motion, including left / right / top / middle / bottom / on top of / in front of / above between / around / near / close / far / up / down / forwards / backwards / inside / outside. May need support. Place items correctly in response to clues about its position and its position relative to other items e.g. it is on the top row, it is next to the green file. Starts to give and follow directions ***Mastering expectations:*** Starts to describe and use through practical activities the language of turning, including half, quarter and three quarter turns Confident in the use of language to describe position, direction and movement, including left / right / top / middle / bottom / on top of / in front of / above between / around / near / close / far / up / down / forwards / backwards / inside / outside. Confidently describes and uses, through practical activities, the language of turning, including half, quarter and three quarter turns. Connects turning clockwise with the movements of hands on a clock face. Start to apply understanding to independently solving problems related to position and direction. Confident giving and following directions Starting to recognise the position of a square on a grid using references.	• Treasure hunt – encourage or direct children to look in / on / under / behind objects to find a reward. Give them symbol supported clues to direct them to the next location. Can they recognise positional vocabulary symbols? • Use a range of media (such as chalk, crayons, pens, pencils, paint, charcoal, pastels) to draw lines following verbal or symbol directions to go up, down, forwards backwards, sideways, round and round, as well as straight, curved and zigzag lines • Use remote control cars (available in ICT resource area) – experiment with controls to make the car go forwards / backward / left / right. Can the children follow verbal or symbol-supported instructions? Alternatively use BeeBots • Place children in teams and send them on a hunt for an item around school, one team has to direct the other team. Can students give directions? Can students follow directions? • Use maps in the classroom, can they follow a directed square to find something on the map, can they find something on the map and describes which square this relates to? • Use google maps to walk to the local shops and back, are children able to listen to spoken instructions or follow instructions on screen?

Dryden School
Business and Enterprise College

Geometry: Shape

UNIT INFORMATION:

This unit explores 2D and 3D Shape. The focus on 2D and 3D Shape enables children to have lots of experience of exploring the form, shape and properties of flat and solid shapes and objects. It allows them opportunities to explore and develop an understanding of the ways different shapes interact with one another and introduces the names of common 2D and 3D shapes.

In order to understand the abstract concepts of the properties of shape, such as lines surfaces and solid, children need lots of opportunities for concrete experiences to perceive them. They need opportunities to explore the form and shape of objects using many body parts and in different positions. They also need chances to explore their properties, such as trying to stack cylinders, cups or bricks to develop an understanding of the ways different shapes interact with one another. The scheme of work is split into two sections, the first is 2D Shape, the second is 3D Shape, although there are opportunities for overlap between the two which should be exploited.

COVERAGE:

2D Shape, 3D shape

VOCABULARY:

- Words related to comparison, including: same, different, large, , larger, largest, big, bigger, biggest, small, smaller, smallest
- Words related to 2D shape names, including: shape, circle, square, rectangle, triangle, star, oval, circular, triangular, rectangular, pentagon, hexagon, octagon, quadrilateral
- Words related to 3D shape names, including: cube, cone, cuboid, pyramid, sphere, cylinder, prism Words related to shape properties, including: straight, curved, round, flat, solid, hollow, point, surface, right angle, line, 2D, 3D
- Words related to exploring the properties of shapes, including: pattern, roll, slide, make build, draw
- Words related to shape characteristics, including: sides, corner, edge, end

Dryden School
Business and Enterprise College

Geometry: Shape

STEPS OF PROGRESSION

⇒ Showing interest in shapes

⇒ Recognising circles and squares

⇒ Recognise other 2D shapes

⇒ Match 2D shapes

⇒ Sort 2D shapes by a variety of attributes

⇒ Name 2D shapes

⇒ Pick out named 2D shapes from a collection

⇒ To use 2D shapes to make a picture, model or pattern

⇒ Count sides on 2D shapes

⇒ Draw 2D shapes

⇒ Lines of symmetry in 2D shapes

⇒ Manipulate 3D shapes

⇒ Recognise spheres and cubes

⇒ Match 3D solids

⇒ Group or sort 3D shapes by a variety of attributes

⇒ Pick out names 3D shapes

⇒ Use 3D shapes to make a model or pattern

⇒ Count faces on 3D shapes

⇒ Count edges on 3D shapes

⇒ Recognise and describe 2D and 3D shapes

Dryden School
Business and Enterprise College

Area of learning	I Can Statements	Initial, Developing & Mastering Expectations	Possible Activities
2D shapes	I can roll different shapes and toys I can recognise a square within the classroom I can recognise a circle within the classroom I can recognise a rectangle within the classroom I can sort 2 sets of objects by a classification I can sort two sets of objects I can put objects in order of size I can copy and identify simple patterns I am beginning to talk about the shapes of everyday objects I can identify simple shapes and patterns in pictures I can identify the properties of 2D shapes I can identify 2D shapes on the surface of 3D shapes I can compare and sort 2D shapes and everyday objects I can recognise shapes when represented in different orientations	***Initial expectations:*** I enjoy exploring different 2D shapes I can recognise and match shapes in the classroom and my local environment Starts to recognise and name, 2D shapes e.g. rectangles, (including squares), circles and triangles with support ***Developing expectations:*** Can recognise and name, 2D shapes e.g. rectangles, (including squares), circles and triangles with support Compares and sorts common 2D shapes and related everyday objects with support if needed Recognises shapes in different orientations and sizes and knows that rectangles, triangles, cuboids and pyramids are not always similar to each other ***Mastering expectations:*** Name some common 2D shapes from a group of shapes or from pictures of the shapes and describe some of their properties (e.g. triangles, rectangles, squares, circle) Starts to recognise pentagons and hexagons. Recognises the same shapes in different orientations. Identifies 2-D shapes on the surface of some 3-D shapes (for example the circle on a cylinder and a triangle on a pyramid.) Developing the use of precise mathematical vocabulary to name and describe the properties of a wide variety of 2D shapes, including number of sides, vertices, edges, faces and lines of symmetry	• Print with shapes. Have a range of different sized circles, squares, triangles, etc and ask students to make prints that have all circles, or all three sided shapes, etc. Or print a picture of a house, identifying which shapes are needed for the windows, door, roof, etc. • Draw big shapes on the floor / playground or demarcate them with masking tape. Hold up visual prompts and ask the students to "Stand in the square" or "Sit in the triangle". • Print with 3D shapes. What 2D shape do they make on the paper? • Play with toy cars on a large floor map. Can you make the car go around the roundabout / straight down the road / turn a corner? • Shape Hunt in the classroom or environment • Guess the name of a shape hidden under a cloth or partially hidden by a screen, can do this as a peer mixed ability activity. • Shape game: throw dice with symbols of 2D shapes on it and find the shape thrown from a collection • Make a picture of a body using different 2D shapes to represent each part of the body • Look at shapes in the environment, such as on road signs and signs in shops • Fold or cut a square piece of paper along different axis (these could be drawn on) to create triangles, rectangles and a smaller square. • Manipulating and describing 2D shapes to peers independently,

Area of learning	I Can Statements	Initial, Developing & Mastering Expectations	Possible Activities
3D shapes	I can roll different shapes and toys I can recognise a square within the classroom I can recognise a circle within the classroom I can recognise a rectangle within the classroom I can sort 2 sets of objects by a classification I can sort two sets of objects I can put objects in order of size I can copy and identify simple patterns I am beginning to talk about the shapes of everyday objects I can identify simple shapes and patterns in pictures I can recognise the properties of 3D shapes I can compare and sort 3D shapes and everyday objects I can recognise shapes when represented in different orientations I can regognise edges, vertices and counters I can count edges, vertices and corners	***Initial expectations:*** I enjoy exploring different 3D shapes I can recognise and match shapes in the classroom and my local environment Starts to recognise and name, 3D shapes e.g. cube, sphere with support ***Developing expectations:*** Can recognise and name, 3D shapes with support Compares and sorts common 3D shapes and related everyday objects with support if needed Recognises shapes in different orientations and sizes and knows that rectangles, triangles, cuboids and pyramids are not always similar to each other ***Mastering expectations:*** Name some common 3D shapes from a group of shapes or from pictures of the shapes and describe some of their properties (e.g. cuboids, pyramids and spheres) Recognises the same shapes in different orientations. Identifies 2-D shapes on the surface of some 3-D shapes (for example the circle on a cylinder and a triangle on a pyramid.) Developing the use of precise mathematical vocabulary to name and describe the properties of a wide variety of 3D shapes, including number of sides, vertices, edges, faces and lines of symmetry	• Roll tennis balls down a ramp. Compare rolling balls at different gradients and what happens when a cube, cylinder, cone or pyramid is placed on the ramp. Which one travels faster? • Roll a cylinder in a race with a partner • Explore how a tube fits into a circular hole • Draw around 3D shapes. Match the shapes produced to 2D shapes • Hide shapes in dry sand and ask students to explore or describe them. Can they match the shape they are feeling to one they can see? Try a similar activity with a feely bag • Set challenges with construction toys, such as make a model using all the cuboid bricks • Blow bubbles using different shaped wands (these can easily be made using flexible wire. First use a circular wand and observe and describe the shape of the bubbles produced. Next, try a square, triangle or star shaped wand and predict what shape the bubbles will be. • Find round shapes in the classroom or from a collection. Find all the food that comes in square packets Match lids of different shapes and sizes to the right boxes • Try to tessellate real life objects, such as putting all of the stock-cubes into a box, fitting snooker balls into a triangle, dominoes into a box, etc, • Guess the name (or pick out the symbol) of a 3D solid hidden under a light cloth. What couldn't it be? Why? • Use reclaimed materials to make models from3D solids. Discuss how it is easy to glue flat surfaces together, but more difficult to glue curved

Statistics: Data Handling & Problem Solving

UNIT INFORMATION:

This unit focuses on providing children with opportunities to problem solve through perception (recognising and identifying problems); thinking (breaking problems down, planning how to solve them); action (remembering ways to solve a problem, working through plans); evaluation (evaluating how a plan worked, recognising when existing plans need adapting or changing). Children also work on the five stages of the data-handling cycle which are: specify the problem; plan; collect data; process and represent; interpret and discuss. Work on handling data should focus on solving problems by matching, sorting, classifying and organising objects and information.

Work on this topic is much more valuable if it is set in the context of real life situations – e.g. organising for a party, organising a trip, etc. Because of this, chances for solving problems and handling data exist throughout the day, not just during the mathematics lesson.

- The key skills of problem solving are: perception (recognising and identifying problems); thinking (breaking problems down, planning how to solve them); action (remembering ways to solve a problem, working through plans); evaluation (evaluating how a plan worked, recognising when existing plans need adapting or changing)
- The approaches to problem solving are: practical investigation ("how many…" or "what if…" problems); enquiry (what flavour…" or "which one…" problems); trial and improvement ("how can we find out…" problems)
- The five stages of the data-handling cycle are: specify the problem (formulate questions in terms of data needed and the type of inference to be made from them, e.g. "What type of sandwiches shall we take on our picnic?" could be framed as "What is your favourite sandwich filling?"); plan (decide on what data should be collected, including sample size and data format e.g. all children and staff, favourite from 5 choices, represented as a pictogram) ; collect data (from a variety of sources including surveys, primary and secondary sources, e.g. survey from primary sources); process and represent (reduce raw data into summary information, including lists, tables and charts, e.g. a tally chart showing how many people like each type of sandwich filling); interpret and discuss (to provide insight into the problem by relating data to the initial question, e.g. decide on which two types of sandwich to make for the picnic

Statistics: Data Handling & Problem Solving

COVERAGE:

Data Handling & Problem Solving

VOCABULARY:

- Words relating to matching, e.g. match, same, different
- Words relating to sorting, e.g. sort, which one
- Words relating to classifying, e.g. belong, odd one out, properties, group, set, order
- Words relating to counting, e.g. count, how many, vote, tally
- Words relating to handling data, e.g. table, list, pictogram, pie chart, diagram, chart, Venn diagram, block graph

Statistics: Data Handling & Problem Solving

STEPS OF PROGRESSION

- ⇒ To match pairs of objects
- ⇒ To learn and begin to use the vocabulary match, same, different, sort, which one, count
- ⇒ To use symbols to represent people and items
- ⇒ To begin to sort two sets of objects according to a single attribute
- ⇒ To make sets that have the same amount of number in each
- ⇒ To be able to classify objects
- ⇒ To sort object and materials according to a given criteria
- ⇒ To begin to identify when an object is different and does not belong to a given category
- ⇒ To begin to use own mathematical skills to solve problems in a variety of contexts, with support
- ⇒ Use mathematical skills to complete practical day to say tasks with support
- ⇒ To begin to classify information in simple ways such as a list or table
- ⇒ Making tally charts
- ⇒ Drawing tally charts
- ⇒ Interpreting tally charts
- ⇒ Drawing pictograms
- ⇒ Interpreting pictrograms
- ⇒ Making block graphs
- ⇒ Drawing block graphs
- ⇒ Interpreting block graphs
- ⇒ Making tables
- ⇒ Drawing tables
- ⇒ Interpreting tables
- ⇒ To use own mathematical skills to solve problems in a variety of contexts, with little support
- ⇒ To suggest ways to solve problems using mathematical knowledge
- ⇒ Finds way to overcome problems independently
- ⇒ Use mathematical skills to complete practical day to say tasks independently
- ⇒ To use own mathematical skills to solve problems in a variety of contexts, with no support

Area of learning	I Can Statements	Initial, Developing & Mastering Expectations	Possible Activities
Data Handling & Problem Solving	I can solve simple problems by matching objects to pictures e.g. put the pencil in the tray with the picture of the pencils I can find a similar object with occasional prompts e.g. finding a matching shoe from a pile of shoes I can match 3 objects I can collect 2 related objects when asked i.e. knife and fork I can find correct familiar equipment when asked e.g. file, pencil, glue I can complete a sorting activity with support I can complete a sorting activity independently I can identify the odd one out from a selection of similar objects where only one is different I can identify the odd one out from a selection of similar objects where there are several possible options I can tally to record values to 5 I can tally to record values to 10 I can tally using the gate method	***Initial expectations:*** Matching Sorting into two + groups Searching out equipment in familiar places Identifying the odd one out Basic problem solving e.g. put the pencil in the tray with the picture of the pencils. Beginning to take part in daily repeated events such as making juice, with support. ***Developing expectations:*** Interprets and constructs simple pictograms, tally charts and block diagrams where the picture is worth one unit. Can overcome problems with support. Using mathematical skills to complete practical, functional activities with support ***Mastering expectations:*** Interpret and construct simple pictograms, tally charts, block diagrams and simple tables. including pictograms with many to one correspondence with simple ratios 2, 5 and 10) Checking own work Overcoming problems independently Using mathematical skills to complete practical, functional activities independently.	• Match cups to children, so there is one each • Put all the balls in a basket / all the hoops on a hook / sort plates and cups • Help to tidy up, e.g. put all the footballs in this box, and all the tennis balls in this box, or sort out money, putting the paper money in the wallet and the coins in the purse • Put a number of identical or similar items (e.g. golf balls or a selection of balls) in a feely bag with an object that is significantly different. Challenge the children to find the "odd one out". • Match associated objects, such as toothpaste and toothbrush • Ask the students to match a pile of socks into pairs. How can they tell which ones go together – shape, size, colour, etc. • Sort objects according to their function – give students a selection of plates, bowls, cups etc . and ask them to sort them into things that we eat from and those that we drink from • Sort children. Increase number of differences (girls / boys, eye colour, hair colour). Can the students sort by one attribute? • Keep a tally of number of bean bags thrown in hoop. Increase complexity by recording bean bags thrown inside hoop and those that miss, in a table. • Organise a party and discuss issues and solve problems, such as "How many bottles of drink will we need?" (How many cups are people likely to drink? How many cups are in each bottle?); "What types of drink should we buy?" (What are favourite?; least favourite?; drinks nobody likes? Do a survey); "What food should we buy"; "What time should the party be?" (Will there be enough time before it's time to go home? Is it before dinner? – Will this have an impact on the amount/ type of food?); "What games shall we play?"

Area of learning	I Can Statements	Initial, Developing & Mastering Expectations	Possible Activities
Data Handling & Problem Solving (continued)	I can describe why an object is different using words, symbol or gestures I can estimate the number of objects requested for a familiar activity I can identify how many people are in my class group without counting I can solve problems involving counting e.g. places 'mixed up' numbers in order I can solve problems involving addition I can solve problems involving subtraction I can describe ways of solving puzzles and problems and explain my choices or decisions e.g. ordering unknown pictures and describing reasons for the order I can consider a variety of approaches when problem solving I can check my work I can find ways of overcoming difficulties independently I can use a calculator to assist me with my mathematical problems I can show written working out of my calculator use	***Initial expectations**:* Matching Sorting into two + groups Searching out equipment in familiar places Identifying the odd one out Basic problem solving e.g. put the pencil in the tray with the picture of the pencils. Beginning to take part in daily repeated events such as making juice, with support. ***Developing expectations:*** Interprets and constructs simple pictograms, tally charts and block diagrams where the picture is worth one unit. Can overcome problems with support. Using mathematical skills to complete practical, functional activities with support ***Mastering expectations:*** Interpret and construct simple pictograms, tally charts, block diagrams and simple tables. including pictograms with many to one correspondence with simple ratios 2, 5 and 10) Checking own work Overcoming problems independently Using mathematical skills to complete practical, functional activities independently.	• Organise a trip to the park and discuss issues and solve problems, such as "Which park shall we go to?" (What do we want to see? How long is the journey?); "How shall we get there?" (Is the minibus booked? How long will it take to walk? What if it's raining?); "What do we need to take?" (What will the weather be like – do we need umbrellas, sun cream; which hats would be best to take?) • Ask children to solve problems, such as how many eggs will fill this box? • Ask the children to lay the table for dinner and ensure that there is not enough forks or too many knives, etc • Completing surveys around school such as favourite drink, favourite food, eye colour, hair colour etc. Can this information be recorded by tallies and then data shown in pictograms block graphs and tables? • Collect items for an activity for peers, are children able to collect familiar items and resource, are they able to know automatically how many they will need or do they need to count. • Presenting problems such as we only have 5 bananas left but 10 students would like a banana, what could we do to fix this problem? • ***Data Handling & Problem Solving to be incorporated into sessions throughout the year***