Maths Place Value Progression Pathway Y1-Y6

Year 1

a. Can read numbers to 10 and extend to 20 in numerals
b. Can count accurately objects up to 20
c. Can count independently numbers up to 20 forwards and backwards
d. Can count out a given number of objects up to 10 from a larger group
e. Can say 1 more than a number up to 10 and extend to 20
f. Can say 1 less than a number up to 10 and extend to 20
g. Can say 1 more than a number up to 100
h. Can say 1 less than a number up to 100
i. Can represent a number up to 10 using practical equipment such as multi link cubes
j. Can identify and represent a number using practical objects and pictorial representations including a number line
k. Can solve simple problems involving place value

Year 2

a. Can understand the value of 1s and 10s in any two - digit number
b. Can say 1 more and 1 less than a number up to 100
c. Can partition one-digit numbers e.g. 7 = 4 + 3 or 5 + 2 or 6 + 1
d. Can partition two-digit numbers in different combinations of 10s and 1s e.g. 43 = 40 + 3 or 30 + 13 or 20 + 23 or 10 + 33
e. Can identify and represent two-digit numbers using different representations such as number lines or base ten apparatus etc.
f. Can estimate where a two-digit number would be placed on a 0 - 100 number line where tens divisions are marked
g. Can read and write numbers to at least 100 in numerals including using 0 as a place holder e.g. 109
h. Can order more than two numbers using a blank number line
i. Can solve problems using place value and number facts

Year 3

a. Can read and write numbers to at least 100 and extend to 1000 in numerals and words
b. Can find 10 more or 10 less than a given number up to 100 and extend to 1000
c. Can find 100 more or 100 less than a given number up to 1000
d. Can understand the place value of each digit in a two-digit and three-digit number
e. Can represent two-digit and three-digit numbers using different representations including the number line, base 10 apparatus etc
f. Can compare and order numbers up to 100 and extend to 1000 sometimes using the <, > and = signs correctly
g. Can solve problems using place value and number facts

Year 4

a. Can find 1000 more or 1000 less than a given number
b. Can count backwards through zero in steps that are familiar from the previous year e.g.1, 2, 5, 10, 3
c. Can understand the place value of each digit in a three-digit and four-digit number
d. Can compare and order numbers beyond 1000
e. Can represent numbers up to and beyond 1000 using different representations, including measuring equipment
f. Can round any number to the nearest 10, 100 or 1000, using the context of measures
g. Can solve problems using place value and number facts

Year 5

a. Can read and write numbers up to 1 000 000
b. Can order and compare numbers up to 1 000 000
c. Can understand the place value of each digit in numbers up to 1 000 000
d. Can interpret negative numbers in context, such as temperature
e. Can round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 or 100 000
f. Can solve problems using place value and number facts

Year 6

a. Can read, write and order whole numbers up to 10 000 000
b. Can read, write and order numbers up to 3 decimal places
c. Can round any whole number to the nearest 10, 100, 1000 etc
d. Can round decimals to the nearest whole number and to one or two decimal places
e. Can use place value to multiply whole numbers by 10, 100 or 1000
f. Can use place value to multiply decimal numbers by 10, 100 or 1000
g. Can use place value to divide whole numbers by 10, 100 or 1000
h. Can use place value to divide decimal numbers by 10, 100 or 1000
i. Can use negative numbers in context and calculate intervals across zero

Maths Addition and Subtraction Progression Pathway Y1-Y6

Year 1

a. Can use number bonds to 10 and all the numbers in between e.g. 5 + 2 = 7
b. Can use subtraction facts to 10 and all the numbers in between e.g. 4 - 3 = 1
c. Can use addition number bonds within 20
d. Can use subtraction facts within 20
e. Can read and understand mathematical statements that include +, - and = signs
f. Can add two one-digit numbers using concrete objects or pictorial representations
g. Can subtract two one-digit numbers using concrete objects or pictorial representations e.g. 7 - 3 = 4
h. Can add a two-digit number and a one-digit number within 20
i. Can subtract a one-digit number from a two-digit numbers using concrete objects or pictorial representations e.g. 13 - 6 = 7
j. Can solve simple problems involving addition using concrete objects
k. Can solve simple problems involving subtraction using concrete objects

Year 2

a. Can recall addition facts to 10 and 20 and all the numbers in between fluently e.g. 15 + 2 = 17
b. Can recall subtraction facts to 10 and 20 and all the numbers in between fluently e.g. 14 - 3 = 11
c. Can use addition number bonds to 10 and 20 to derive related facts to 100 using multiples of 10 e.g. 70 + 30 = 100
d. Can use subtraction facts to 10 and 20 to derive related facts to 100 using multiples of 10 e.g. 100 - 30 = 70
e. Can add a two-digit number and 1s using concrete objects or pictorial representations
f. Can subtract a two-digit number and 1s using concrete objects or pictorial representations
g. Can add a two-digit number and 10s using concrete objects or pictorial representations
h. Can subtract a two-digit number and 10s using concrete objects or pictorial representations
i. Can add 2 two-digit numbers using concrete objects or pictorial representations
j. Can subtract 2 two-digit numbers using concrete objects or pictorial representations where no regrouping is required e.g. 74 - 32
k. Can subtract 2 two-digit numbers using concrete objects or pictorial representations where regrouping is required e.g. 63 - 36 =
l. Can solve problems involving addition using concrete objects and pictorial representations involving numbers, quantities and measures
m. Can solve problems involving subtraction using concrete objects and pictorial representations involving numbers, quantities and measures

Year 3

a. Can fluently recall all addition and subtraction facts within 20
b. Can add three single digit numbers mentally
c. Can add a two-digit and extend to three-digit number and ones mentally
d. Can add a two digit and extend to three-digit number and tens mentally
e. Can subtract three single digit numbers mentally
f. Can subtract a two digit and extend to three-digit number and ones mentally
g. Can subtract a two digit and extend to three-digit number and tens mentally
h. Can add two-digit and extend to three-digit numbers using the expanded column method (not bridging ten)
i. Can add two-digit and extend to three-digit numbers using the expanded column method (bridging ten)
j. Can subtract two-digit numbers using the expanded column method (not bridging ten)
k. Can subtract two-digit numbers using the expanded column method (bridging ten)
l. Can use knowledge of inverse operations to check answers to addition and subtraction calculations.
m. Can solve problems including missing number problems involving addition
n. Can solve problems including missing number problems involving subtraction

Year 4

a. Can add two digit and extend to three digit numbers using the formal column method
b. Can subtract two digit and extend to three-digit numbers using the formal column method
c. Can choose whether to add or subtract mentally or using a formal method
d. Can use knowledge of inverse operations to check answers to addition and subtraction calculations.
e. Can solve two-step problems involving addition and subtraction, deciding which operation to use

Year 5

a. Can add three digit and extend to four-digit numbers using the formal column method
b. Can subtract three digit and extend to four-digit numbers using the formal column method
c. Can add and subtract increasingly large numbers mentally e.g. 12 462 - 2300 = 10 162
d. Can use rounding to check answers to addition and subtraction calculations.
e. Can solve mulit-problems involving addition and subtraction, deciding which operation and which method to use

Year 6

a. Can use mental methods of computation for addition
b. Can use mental methods of computation for subtraction
c. Can use efficient written methods of addition including column addition
d. Can use efficient written methods of subtraction including column subtraction
e. Can add decimal numbers up to 3 dp (including money)
f. Can subtract decimal numbers up to 3 dp (including money)

THORNTREE PRIMARY SCHOOL

Maths Multiplication and Division Progression Pathway Y1-Y6

Year 1

a. Can double numbers up to 10 using practical objects and extend to 20
b. Can halve numbers up to 10 using practical objects and extend to 20
c. Can count in 2s to find out how many dots/cubes etc there are in an array or pattern
d. Can count in 10s to find out how many dots/cubes etc there are in an array or pattern
e. Can count in 5s to find out how many dots/cubes etc there are in an array or pattern
f. Can solve simple problems involving doubling and halving/sharing using concrete objects

Year 2

a. Can use the x, ÷ and = signs to write mathematical statements
b. Can recall and use multiplication facts for the 2 times table
c. Can recall and use division facts for the 2 times table
d. Can recall and use multiplication facts for the 5 times table
e. Can recall and use division facts for the 5 times table
f. Can recall and use multiplication facts for the 10 times table
g. Can recall and use division facts for the 10 times table
h. Can recognise and explain odd & even numbers within the context of the patterns in the 2, 5 and 10 multiplication tables
i. Can calculate mathematical statements for multiplication using the 2, 5 and 10 times tables
j. Can calculate mathematical statements for division using the 2, 5 and 10 times tables
k. Can solve problems involving multiplication using concrete objects or pictorial representations
l. Can solve problems involving division using concrete objects and pictorial representations

Year 3

a. Can recall and use multiplication and division facts for the 2, 5 and 10 times tables
b. Can recall and use multiplication and division facts for the 3 times table
c. Can write mathematical statements for known multiplication and division facts using x, ÷ and =
d. Can multiply two-digit by one-digit numbers using informal methods such as arrays, base 10 apparatus etc
e. Can multiply two digit by one digit numbers using partitioning and known facts (e.g. 24 x 3 = 3 x 4 = 12 and 3 x 20 = 60. 60 + 12 = 72)
f. Can divide two-digit by one-digit numbers using informal methods such as known facts, arrays and number lines (repeated subtraction)
g. Can solve missing number problems involving multiplication and division
h. Can solve problems involving multiplication and division

Year 4

a. Can recall and use multiplication and division facts for the 3, 4 & 8 times tables
b. Can recall and use multiplication and division facts for all the times table (learning 6, 12, 9, 11 and 7)
c. Can multiply and divide mentally using derived facts such as 600 ÷ 3 = 200 because 2 x 3 = 6 or the associative law (2 x 6 x 5 = 10 x 6 = 60)
d. Can multiply two digit and three digit by one digit numbers using short multiplication
e. Can divide two-digit by one-digit numbers using informal methods such as known facts, arrays and number lines (repeated subtraction)
f. Can begin to divide three digit by one digit numbers with exact answers using short division
g. Can solve problems involving multiplication and division

Year 5

a. Can recall and use multiplication and division facts for all the times tables
b. Can multiply and divide mentally using known facts
c. Can multiply and divide whole numbers and decimals by 10, 100 and 1000
d. Can multiply up to four-digit numbers by one-digit numbers using short multiplication
e. Can multiply up to four-digit numbers by two-digit numbers using long multiplication
f. Can divide up to four-digit numbers by one-digit using short division
g. Can interpret remainders in context as fractions, decimals or by rounding
h. Can identify multiples and factors
i. Can establish whether a number up to 100 is prime
j. Can recall prime numbers up to 19
k. Can recognise and use square numbers and cube numbers
l. Can solve problems using multiples, factors, square numbers and cube numbers
m. Can solve problems using simple scaling such as kilometres to metres
n. Can solve problems using a mixture of all four operations, including missing number problems

Year 6

a. Can recall multiplication facts up to 12x12 and quickly derive corresponding division facts
b. Can use tables and place value calculations with multiples of 10
c. Can use mental methods of computation for multiplication
d. Can use mental methods of computation for division
e. Can use efficient written methods of multiplication including short and long multiplication
f. Can use efficient written methods of division including short and long division
g. Can multiply a simple decimal by a single digit
h. Can identify multiples and common multiples
i. Can identify factors and common factors
j. Can recognise and describe square numbers
k. Can recognise and identify prime numbers

THORNTREE PRIMARY SCHOOL

Maths Fractions Progression Pathway Y1-Y6

Year 1

a. Can understand that two halves make one whole in a practical context
b. Can find 1/2 of a shape, object or group of objects in a practical context
c. Can find 1/2 of a quantity
d. Can understand that 1/4 represents one of four equal parts of a whole
e. Can find 1/4 of a shape or object
f. Can find 1/4 of a quantity

Year 2

a. Can understand that the bottom number (denominator) denotes the number of equal parts the whole is divided into
b. Can understand that the top number in a fraction (numerator) denotes the number of equal parts represented
c. Can understand 1/2 represents one of two equal parts of a whole
d. Can find 1/2 of a shape or set of objects
e. Can understand that 1/4 represents one of four equal parts of a whole
f. Can find 1/4 of a shape or set of objects
g. Can understand 1/3 represents one of three equal parts of one whole
h. Can find 1/3 of a shape and set of objects
i. Can understand 2/4 represents two of four equal parts of a whole
j. Can find 2/4 of a shape or set of objects
k. Can recognise the equivalence between 2/4 and 1/2
l. Can understand that 3/4 represents three of four equal parts of a whole
m. Can find 3/4 of a shape or set of objects
n. Can write a fraction represented in a shape or set of objects (1/2, 1/3, 1/4, 2/4, 3/4)
o. Can solve and write simple fractions such as 1/2 of 6 = 3

Year 3

a. Can understand the relationship between fractions, division and multiplication facts
b. Can understand that the denominator denotes the number of equal parts the whole is divided into
c. Can understand that the numerator denotes the number of equal parts represented
d. Can place 1/4, 1/2, 3/4 1 1/4, 1 1/2, 1 3/4 etc on a number line
e. Can find 1/2, 1/4 or 3/4 of a shape or set of objects
f. Can place 1/3, 1 1/3, 1 2/3 , 2, 21/3 etc on a number line
g. Can understand 1/3 represents one of three equal parts of one whole
h. Can find 1/3 of a shape and set of objects
i. Can recognise that tenths arise from dividing an object into ten equal parts
j. Can find one tenth of a shape or set of objects by dividing by 10
k. Can recognise and show using diagrams, counters or paper folding equivalent fractions with small denominators e.g 1/3 and 2/6
l. Can solve problems involving fractions

Year 4

a. Can order fractions, numbers and measures on a number line and recognise simple equivalence
b. Can show equivalent fractions using diagrams such as a fraction wall or a grid of squares
c. Can count in hundredths
d. Can place common fractions on a number line e.g. 1/4s, 1/2s, 1/3s,1/10s, 1/5s
e. Can find increasingly harder fractions of a set of objects e.g. 1/3, 1/6, 1/8 and non-unit fractions where the answer is a whole number
f. Can add fractions with the same denonimator
g. Can subtract fractions with the same denominator
h. Can recognise and write the decimal equivalent of any number of tenths or hundredths
i. Can recognise and write the decimal equivalent to 1/4, 1/2 and 3/4, showing it on a number line
j. Can find the effect of dividing one and two digit numbers by 10 and 100, giving the answer in ones, tenths and hundredths
k. Can round numbers with one decimal place to the nearest whole number, using a number line
l. Can compare numbers with the same number of decimal places, up to two decimal places
m. Can solve simple money/fraction problems up to two decimal places

Year 5

a. Can compare and order fractions whose denominators are multiples of the same number
b. Can identify, name and write equivalent fractions of a given fraction, represented visually
c. Can recognise mixed numbers and improper fractions
d. Can convert from mixed numbers to improper fractions and from improper fractions to mixed numbers
e. Can add fractions with the same denonimator and denominators that are multiples of the same number
f. Can subtract fractions with the same denonimator and denominators that are multiples of the same number
g. Can multiply proper fractions and mixed numbers by whole numbers using diagrams, bar models and/or fraction pieces
h. Can read and write decimal numbers as fractions e.g. 0.71 = 71/100
i. Can recognise and use hundredths
j. Can round decimals with 2 decimal places to the nearest whole number and to one decimal place
k. Can read, write,order and compare numbers with up to three decimal places
l. Can solve problems involving numbers up to three decimal places
m. Can recognise the % symbol and understand that it relates to the number of parts per hundred
n. Can write percentages as fractions with denominator 100 as part of a decimal
o. Can understand that percentages, decimals and fractions are different ways of expressing proportion
p. Can solve problems which require knowing percentage, decimal and fraction equivalence for 1/2, 1/4, fifths and multiples of 10 or 25

Year 6

a. Can identify, name and write equivalent fractions of a given fraction represented visually
b. Can use common factors to simplify fractions
c. Can compare and order fractions
d. Can add and subtract fractions
e. Can multiply fractions by whole numbers
f. Can multiply pairs of fractions, writing the answer in its simplest form
g. Can divide fractions by whole numbers
h. Can convert mixed numbers to improper fractions
i. Can convert improper fractions to mixed numbers
j. Can read and write decimal numbers as fractions
k. Can recognise approximate proportions of a whole number using percentages
l. Can recognise simple equivalence between fractions, decimals and percentages

THORNTREE PRIMARY SCHOOL

Maths Measures Progression Pathway Y1-Y6

Year 1

a. Can use the language related to length and height such as long, short, longer, shorter, tall, short, double, halve
b. Can use the language related to mass and weight such as heavy, light, heavier than, lighter than
c. Can use the language related to capacity and volume e.g. Full, empty, more than, less than, half, half full, quarter
d. Can use the language related to time such as quicker, slower, earlier, later
e. Can solve simple problems involving comparing measures in a practical context
f. Can measure and begin to record length and height using non standard units and extend to standard units
g. Can measure and begin to record mass and weight using non standard units and extend to standard units
h. Can measure and begin to record capacity and volume using non standard units and extend to standard units
i. Can recognise the value of different coins and notes
j. Can tell the time on an analogue clock using o' clock and half past

Year 2

a. Can choose and use appropriate standard units to measure length and height (m/cm using rulers, metre sticks, tape measure etc.)
b. Can choose and use appropriate standard units to measure mass (kg/g using scales, balance scales etc.)
c. Can choose and use appropriate standard units to measure temperature (°C using thermometers.)
d. Can choose and use appropriate standard units to measure capacity (l/ml using different measuring vessels.)
e. Can compare and order two or more different measurements (length, mass, temperature or capacity/volume)
f. Can use the symbol p for pence and £ for pounds when combining amounts to make a particular value e.g. 20p + 5p = 25p, £2 + £1 = £3
g. Can solve simple problems in a practical context involving addition of money of the same unit
h. Can solve simple problems in a practical context involving subtraction of money of the same unit, including giving change including giving change
i. Can tell the time on an analogue clock using o' clock, half past, quarter to and quarter past
j. Can tell the time on an analogue clock to five minutes

Year 3

a. Can understand the relationship between mm, cm, m and g, kg and ml, l.
b. Can compare and order lengths using mm, cm and m
c. Can measure lengths using appropriate measuring equipment and record using the correct unit
d. Can compare and order mass using g and kg
e. Can measure mass using appropriate measuring equipment and record using the correct unit
f. Can compare and order capacity using ml and l
g. Can measure capacities using appropriate measuring equipment and record using the correct unit
h. Can calculate the value of the increment on a simple scale given some information e.g 0 to 100 in four increments equals 25
i. Can add amounts of money within £1 and extend beyond £1
j. Can subtract an amount of money within £1 and extend to beyond £1
k. Can combine amounts and calculate change
l. Can tell the time to the nearest minute
m. Can tell the time on a 24 hour digital clock
n. Can calculate how long an event takes given the start and finish time e.g bus journey
o. Can calculate start/finish time given start/finish time e.g time a film finishes given start time

Year 4

a. Can convert between metric units of length
b. Can convert between metric units of mass
c. Can convert between metric units of capacity
d. Can convert between units of time
e. Can read, write and convert between analogue and digital 12 and 24 hour clocks
f. Can estimate length
g. Can estimate mass
h. Can estimate capacity
i. Can measure and calculate the perimeter of rectangular shapes, including squares
j. Can find the area by counting squares
k. Can solve problems comparing and converting different units of measure, including money and time

Year 5

a. Can convert between different units of metric measures, using place value
b. Can understand and use equivalence between metric and imperial units of measure, such as inches, pounds and pints
c. Can measure and calculate the perimeter of composite rectilinear shapes, including squares
d. Can measure and calculate the area of a rectangle, including a square
e. Can estimate the area of an irregular shape
f. Can estimate volume
g. Can estimate capacity
h. Can solve problems involving converting units of time
i. Can use all four operations to solve problems involving measure

Year 6

a. Can interpret, with appropriate accuracy, numbers on scales and a range of measuring instruments
b. Can measure and calculate the perimeter of compound shapes
c. Can find the area of rectangles
d. Can find the area of parallelograms and triangles
e. Can understand and use volume of cubes and cuboids
f. Can convert between units of metric measure
g. Can understand and use the approximate equivalences between metric units and common imperial units
h. Can solve problems involving conversion between units of time

THORNTREE PRIMARY SCHOOL

Maths Properties of Shape Progression Pathway Y1-Y6

Year 1

a. Can recognise and name 2D shapes such as squares, rectangles, circles and triangles
b. Can recognise and name 3D shapes such as cuboids, cubes and spheres

Year 2

a. Can identify and describe 2D shapes using knowledge of properties including number of sides (including in different orientations)
b. Can identify a line of symmetry in 2D shapes
c. Can identify and describe 3D shapes using knowledge of properties including number of faces, edges and vertices
d. Can compare and sort 2D & 3D shapes including everyday objects using knowledge of properties

Year 3

a. Can recognise and describe the properties of 2D and 3D shapes using appropriate vocabulary (including in different orientations)
b. Can compare and sort 2D and 3D shapes according to their geometric properties
c. Can identify horizontal lines of symmetry in 2D shapes
d. Can identify right angles
e. Can identify whether angles are greater or less than a right angle
f. Can recognise angles as a property of a shape e.g right angles in a square
g. Can solve problems and reason about shape

Year 4

a. Can recognise and describe the properties of 2D and 3D shapes using appropriate vocabulary (including in different orientations)
b. Can compare and sort 2D and 3D shapes according to their geometric properties
c. Can identify horizontal lines of symmetry in 2D shapes
d. Can identify right angles
e. Can identify whether angles are greater or less than a right angle
f. Can recognise angles as a property of a shape e.g right angles in a square
g. Can solve problems and reason about shape

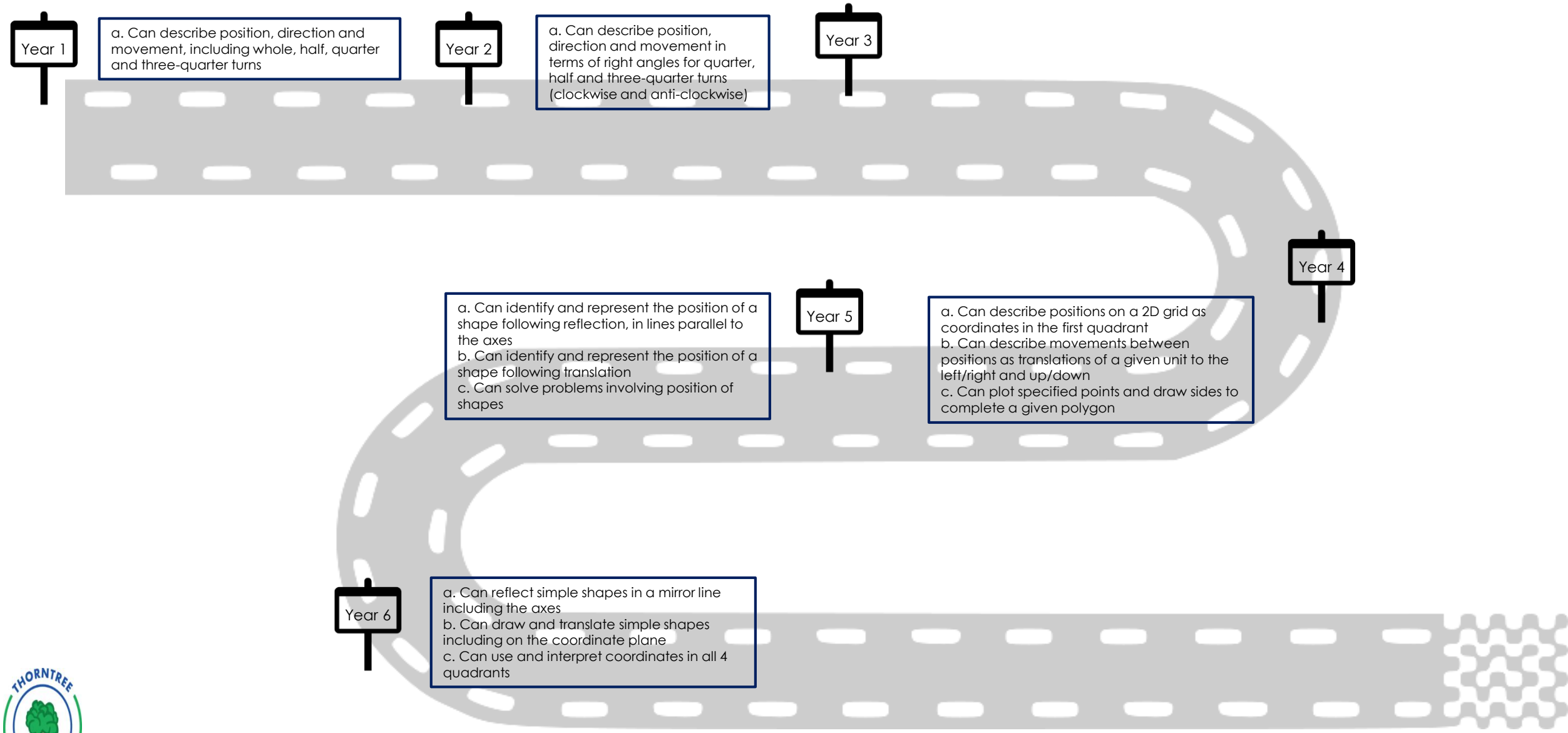
Year 5

a. Can identify 3D shapes from 2D representations
b. Can estimate and compare acute, obtuse and reflex angles
c. Can draw angles
d. Can identify angles at a point and one whole turn (360˚)
e. Can identify angles at a point on a straight line and 1/2 a turn (180˚)
f. Can use properties of rectangles, including diagonals, to deduce related facts and find missing lengths and angles
g. Can distinguish between regular and irregular polygons based on reasoning round equal sies and angles
h. Can solve problems involving angles

Year 6

a. Can name 2D and 3D shapes and describe their properties
b. Can compare and classify shapes according to their properties
c. Draw given angles and measure them in degrees
d. Can recognise nets of familiar 3D shapes
e. Can find missing angles in any triangles and quadrilaterals
f. Can recognise angles where they meet at a point or on a straight line
g. Can recognise angles which are vertically opposite and find missing angles
h. Can identify and name the parts of a circle and know that the diameter is twice the radius

Maths Position and Direction Progression Pathway Y1-Y6



Maths Statistics Progression Pathway Y1-Y6

Year 2

a. Can interpret pictograms where one symbol represents one or more than one (1s, 2s, 5s, 10s)
b. Can interpret a block diagram where the scale goes up in ones, fives or tens
c. Can interpret tally charts
d. Can interpret tables
e. Can solve one step problems such as adding amounts e.g what is the total sum of money collected across a week?
f. Can answer questions about totalling data e.g. How many people were asked altogether?
g. Can answer questions about comparing data e.g. How many more people liked ...than ...?

Year 3

a. Can interpret pictograms where one symbol represents more than one
b. Can interpret bar charts where the scale goes up in twos or fives or tens
c. Can understand how to present data in a simple pictogram, bar chart or table in an appropriate context
d. Can respond to questions such as 'How many more?' and 'How many fewer?'
e. Can solve one step problems such as adding amounts e.g what is the total sum of money collected across a week?
f. Can solve two step problems e.g how much more do the class need to collect to reach their total?

Year 4

a. Can present discrete and continuous data using appropriate graphical methods including bar charts and time graphs
b. Can interpret discrete and continuous data using appropriate graphical methods including bar charts and time graphs
c.Can solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs
d. Can solve problems involving statistics

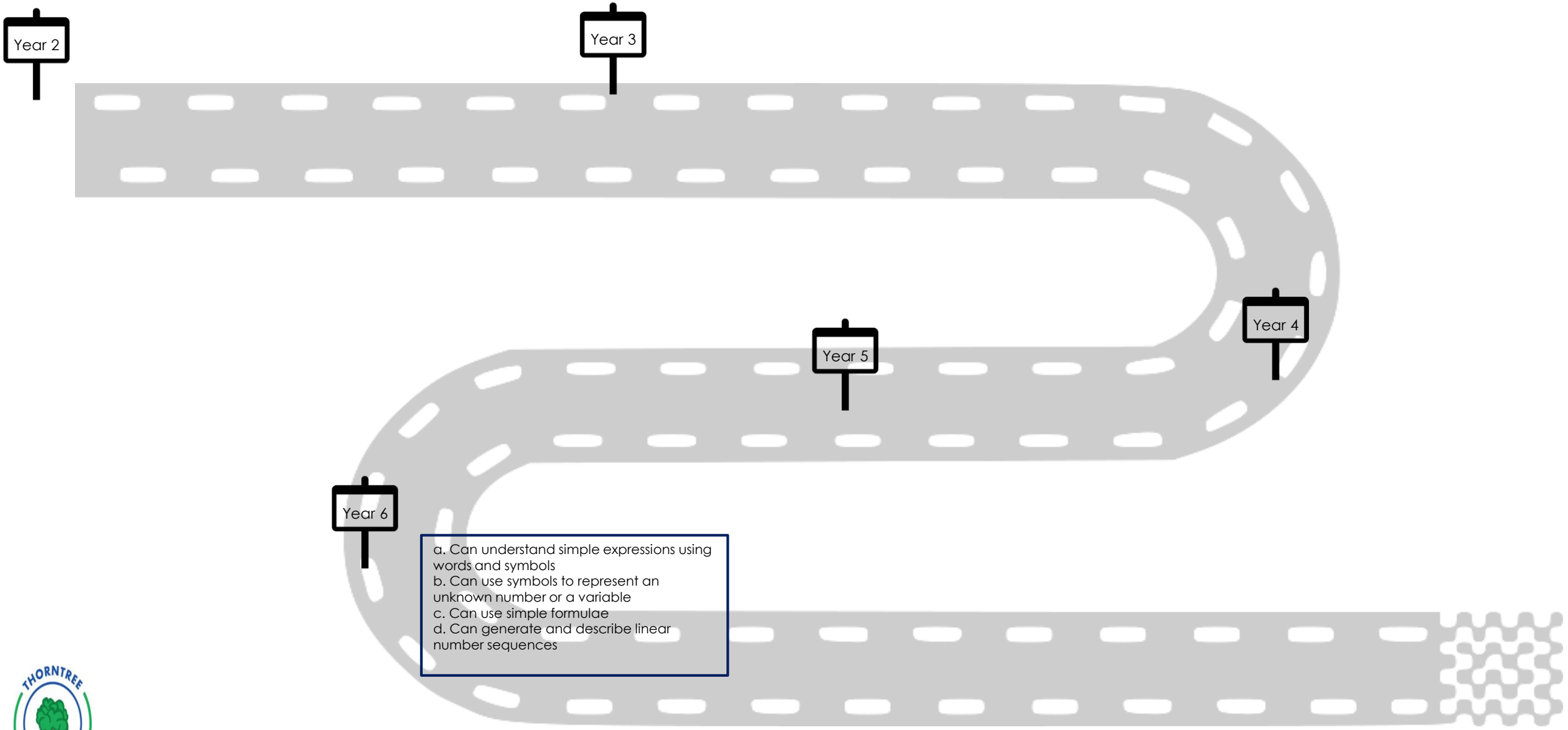
Year 5

a. Can solve comparison, sum and difference problems using information presented in a line graph
b. Can complete, read and interpret information in tables, including timetables

Year 6

a. Can read and interpret timetables and calendars
b. Can construct and interpret line graphs
c. Can construct and interpret pie charts
d. Can calculate and interpret the mean of a data set

Maths Algebra Progression Pathway Y1-Y6



Maths Ratio and Proportion Progression Pathway Y1-Y6