Aims and Intention:

The national curriculum for maths aims to ensure that all pupils:

- Become fluent in the foundations of mathematics, through varied and frequent practice with an introduction to complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge
- Follow a line of enquiry, understand relationships and can make generalisations, justify their work and prove using maths language
- Can break down problems into a series of simpler steps and persist in seeking answers

Pupils who grasp concepts quickly should be challenged through problem solving before moving onto new content. Those who are not sufficiently fluent with earlier materials should consolidate their understanding, through additional practice, before moving on.

Please contact the school to find out which colour your child is working on.

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

Place Value
- Counting forward and backwards
- Read and write numbers in numerals and words
- Identify more and less
- Represent numbers by objects/ pictures
- Language: equal, fewer, most, least

Number

Multiplication and Division
- Read, write and understand symbols x ÷ =
- Solve one step problems involving multiplication and division using concrete objects
- Double and half numbers
- Group and share objects
- Identify number patterns

Addition and Subtraction
- Read, write and understand symbols + - =
- Recall and use number bonds
- Add and subtract one digit and two digit numbers
- Solve one step addition and subtraction problems including missing numbers e.g. 5-☐ = 2

Geometry - properties of shapes
- Recognise and name common 2d and 3d shapes
- Name 2d and 3d shapes related to everyday objects

Geometry - position and direction
- Describe position, direction and movement
- Language:
    - Left, right, top, middle, bottom, on top of, in front of, above, between, around, near, close, far, up, down, forward, backward, inside, outside, whole, half, quarter, three quarter, clockwise, anticlockwise

Measurement & Geometry

Measurement
- Understand and problem solve, measure and record for:
    - Length and height, mass and weight, capacity and volume
- Recognise and know the value of coins and notes
- Sequence events using language:
    - Before, after, next, first, today, yesterday, tomorrow, morning, afternoon, evening
- Recognise and use language relating to days, weeks, months and years
- Tell the time to the hour, half past, draw hands on a clock

Things to try with your child:

1. Talk together

Talk with your child about maths to build their confidence and help them see how maths is used in everyday life. Try following a recipe together, talking about the numbers in the recipe and counting ingredients: 'We need 2 scoops of flour. We need 1 cherry for each cake.' Set the table together, and ask: 'Who will be eating dinner today? How many forks do we need?'

2. Play together

Play games that involve number and counting, like bingo, dice, dominoes and card games. Play around with magnetic numbers to help your child's number recognition. Board games like Snakes and Ladders are great for practising counting forwards and backwards.

3. Explore shape

Point out different shapes around you whenever possible. Ask your child how many objects in the kitchen are square or triangular, and look for shapes in the world around you. Choose a 'Shape of the Week' and then see how many times you can spot this shape around you. Ask your child to describe the shape to you. Play 'Shape Tickle'. Draw shapes on your child's back and ask if they can guess what shape it is by feel. Ask: 'How many sides has it got? How many sides do you think are the same length?' Cut out a picture from a magazine and cut it into pieces to make a jigsaw. Use building blocks or construction kits to make shapes.

4. Spot patterns

Look for repeating patterns on curtains, wallpaper, or clothing. Ask your child: 'Can you see a pattern? Tell me about it. What will come next?' Make patterns with blocks, beads, playing cards or toys and encourage your child to build on the pattern to make it longer. Look for patterns in time together (e.g. seasons, months or daily routines) and talk about what you notice: 'We always go to the supermarket on a Monday. We go swimming on a Tuesday.' Listen for patterns in songs and clap or dance the rhythm.

5. Practise forming numerals

Help your child to learn the numerals by exploring their shapes. Have fun forming numbers in sand with a stick. Make numbers out of modelling clay. Write numbers for your child to copy. Hold your hand over theirs as they write the number so they can feel how to write it. Try holding their finger and forming the number in the air. Begin to encourage your child to write numbers on their own.

6. Practise position words

Practise position words with your child by having a treasure hunt. Follow clues like 'over the bench', 'under the tree', 'next to the bush'. Draw a map to show the route you took.

Fractions
- Recognise, find, name, write fractions ⅓ ¼ ½ and ¾ of a length, shape, objects or quantity
- Write simple fractions, ½ of 6 = 3 and recognise equivalence of 2/4 and ½

Place Value
- Counting in 2s, 3s, 5s and 10s, forward and backward
- Recognising place value e.g. HTO
- Estimating numbers
- Compare and order numbers
- Use signs < and >
- Read write numbers in numerals and words

Number

Multiplication and Division
- Recall and use facts from the 2, 5 and 10 times tables
- Recognise odd and even numbers
- Use number sentences for calculations using the symbols x ÷ =
- Understand multiplication can be done in any order but division cannot
- Solve problems using objects, repeated addition and mental maths

Addition and Subtraction
- Solve problems using objects and pictures
- Apply knowledge of mental and written methods
- Recall and use calculation facts
- Understand addition of two numbers can be done in any order but subtraction cannot
- Recognise and use inverse in sums

Geometry - properties of shape
- Identify and describe properties of 2d shapes, including sides and lines of symmetry
- Identify and describe the properties of 3d shapes including number of edges, vertices and faces
- Identify 2d shapes on the surface of 3d shapes e.g. a circle on a cylinder
- Compare and sort common 2d and 3d shapes and everyday objects

Measurement/Geometry/Statistics

Measurement
- use appropriate units to estimate and measure
- Length/ height (mm/cm/m), mass (mg/g/kg) , temperature (celsius) , capcity (ml/l/cl)
- Compare and order measurements and record results
- Recognise and use symbols for £, p and combine amounts to make a value
- Find a combination of coins that equal the same amount
- Solve simple addition and subtraction of money including giving change
- Compare and sequence intervals of time
- Tell and write the time to 5 minutes, including quarter past/ to the hour
- To know the number of minutes in an hour and the number of hours in a day

Statistics
- Interpret and construct pictograms, tally charts, block diagrams and tables
- Ask and answer simple questions by counting the number of objects in each category and sorting them by quantity
- Ask and answer questions about totalling and comparing data

Geometry - position and direction
- Order combinations of patterns and sequences
- Use vocabulary to describe position, direction, movement
- Language - quarter, half, and three quarter, clockwise and anticlockwise

Things to try with your child:

1. Have fun with maths

Play games that involve numbers, such as bingo, dice, card games and board games. Play 'Guess My Shape' – you think of a shape, and your child asks you questions in order to guess the shape. You can only answer 'yes' or 'no'. Whatever your age, songs can be an enjoyable way of practising number skills.

2. Read together

Reading a book together is a great chance for your child to talk about the maths they can see on the page when reading. Lots of traditional tales and rhymes lend themselves to activities beyond the book. You could use modelling dough to make models of the animals and put them in order by size. Use building blocks to build a house and focus on the use of first, second, third etc. Or you could make a tower and talk about how many bricks and which colour(s) you used.

3. Talk about maths

Talking with your child about maths is important for building confidence. Whenever you can, try to talk about how you use maths in everyday life. Talking about recipes is a great way of doing this – you can count and measure ingredients, or, for example, share out banana slices equally between cakes and tomatoes equally between kebab sticks. You can also help your child to follow instructions, understanding first, second, third etc, or you could set a timer and talk about the amount of time needed to complete a recipe.
When you do the washing, separate items of clothing: all the socks in one pile, shirts in another, and trousers in another. Divide the socks by colour and count the number of each. Ask your child to sort their toys into groups, then ask them to tell you how they sorted them.

4. Practise number skills

As your child's understanding and knowledge of number develops, ask them to count in 2s, 5s and 10s. Ask them to sort objects, making groups of 3, 4, 5 or 6 things. Then ask them to make '8' in as many ways as they can (e.g. 4 and 4; 5 and 3; 2 and 6). Play matching games with number fridge magnets and objects. Match the fridge magnet to the correct number of things (e.g., the '8' magnet with 8 objects). Ask your child to look at dominoes and find all the ones that have a certain total: 'Find all the dominoes that have 10 dots altogether.' Then ask them to find a domino with more or less than that number of dots.

5. Measure up

Help your child to practise using a ruler for drawing straight lines and measuring. Make a picture using straight lines. Help your child to hold the ruler carefully as they draw. Play 'How Long?' or 'How wide?'. Work together to measure the length or height of everyday objects in the house (in metres or centimetres). Point out the starting and finishing number on the ruler and read the measurement together. Help your child line the object up with the 0 on the ruler or tape when they measure.
Order objects by height or length and use the words 'longer/taller than', 'shorter than', 'longest/tallest' and 'shortest'. Choose some items from your kitchen cupboard. Weigh them together and put them in order. Use the words 'heavier than', 'lighter than', 'heaviest' and 'lightest'.

Fractions
- Count up and down in tenths
- Recognise, find and write fractions of objects and numbers with small denominators
- Recognise and use equivalent fractions with small denominators
- Add and subtract fractions with the same denominator within a whole
- Compare and order fractions with the same denominator

Place Value
- Count in multiples of 4, 8, 50 and 100
- Fine 10 or 100 more or less
- Recognise place value of a three digit number (HTO)
- Compare and order numbers to 1000
- Identify and estimate numbers using
- Read and write numbers to 1000 in numerals and words

Number

Multiplication and Division
- Use multiplication and division facts for 3, 4 and 8 times tables
- Write and calculate mathematical statements using mental and formal written methods
- Solve number problems including missing numbers

Addition and Subtraction
- Add and subtract three digit numbers mentally and using formal written methods
- Estimate answers to a calculation using inverse operations
- Solve number problems including missing numbers

Geometry - properties of shape
- Draw 2d shapes and make 3d shapes
- Recognise 3d shapes in different orientations and describe them
- Recognise angles as properties of shapes or description of turns
- Identify right angles and how these relate to turns
- Identify horizontal and vertical lines and pairs of perpendicular and parallel lines

Measurement/Geometry/Statistics

Measurement
- Measure, compare, add and subtract length, mass, volume and capacity
- Measure perimeter of 2d shapes
- Add and subtract amounts of money to give change using £ and p
- Tell and write time from an analogue clock, including Roman numerals, 12 and 24 hour clock
- Estimate, read, record and compare time
- Vocabulary o'clock, am/pm, morning, afternoon, noon and midnight
- Know the number of seconds in a minute, days in a week, week in a month and month in a year

Statistics
- Interpret and present data using bar charts, pictograms and tables
- Solve one step and two step questions using information presented in scaled bar charts and pictograms and tables

Things to try with your child:

1. Use maths in everyday life
Build your child's confidence in mathematics by talking about and using maths together. You could measure ingredients for recipes together, using scales to do so. You could look at the clock together: 'If the party is at 5 o'clock we need to leave in half an hour. That'll be half past 4.' You could talk about how much things cost, paying and getting change when you go shopping. If you are making a picnic or snack together, you could talk about how many people are eating and how food items can be shared out equally. Make fruit drinks and talk about how much fruit juice there is compared to water: 'We put in a little bit of juice. Then we topped up with water. We put in about 10 times more water than juice.'

2. Think about maths
As well as encouraging your child to see how maths is used in everyday life, encourage them to think about how they are using number. Ask your child to explain their thinking when they work out an answer: 'How did you know that? What did you do?' When you are out and about, at home, or playing a maths game with your child, ask questions that encourage them to sequence and plan their calculations: 'What will you do first? What will you do next?'

3. Practise times tables
Most schools will start with the 2, 5 and 10 times tables and then move to more difficult ones. You can help your child by showing them real-life examples of a times table. For example, a muffin tin will normally have four rows of three muffin cups each, showing the multiplication 4 × 3. Find opportunities to sing and chant times tables together, for example, in the car or on the walk to school.

4. Estimate and measure
Use a stopwatch to time how long it takes to do everyday tasks like getting dressed. Encourage your child to estimate first: 'How long do you think it will take us to walk to the shop?' Other things you could estimate and then find are: something that is longer, shorter, lighter or heavier, than a chosen object, how many crayons end-to-end would go from the sofa to the door, which will take longer – to walk to the door or write your name, how many pennies it will take to cover a book cover.

Fractions (including decimals)
- Recognise and show families of common equivalent fractions
- Count up and down in hundredths
- Add and subtract fractions with the same denominator
- Recognise and write decimal equivalents of any number of tenths or hundredths
- Round decimals with one decimal place to the nearest whole number
- Compare numbers with the same number of decimal places up to two decimal places
- Solve simple measure and money problems involving fractions and decimals to two decimals places

Place Value
- Count in multiples 6, 7, 9, 25 and 100
- Find 1000 more or less than a given number
- Count backwards through 0 including negative numbers
- Recognise place value (th, h, t, on)
- Order and compare numbers beyond 1000
- Round any number to the nearest 10, 100 or 1000
- Read Roman numerals to 100

Number

Multiplication and Division
- Recall multiplication and division facts for up to 12x12
- Use place value to multiply and divide mentally up to three numbers
- Multiply two digit and three digit numbers using a formal method

Addition and Subtraction
- Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction
- Estimate and use inverse operations to check answers to a calculation
- Solve addition and subtraction two step problem

Geometry - properties of shape
- Compare and sort shapes based on their properties
- Identify acute and obtuse angles
- Compare and order angles up to two right angles by size
- identify lines of symmetry in 2d shapes presented in different orientations
- Complete a symmetric figure with specific line of symmetry

Measurement
- Convert between different units of measure
- Measure and calculate the perimeter of rectilinear figure in cm and m
- Find the area of rectilinear shapes by counting squares
- Estimate, compare and calculate different measures
- Read, write and convert time between analogue and digital 12/24 hour clocks
- Solve problems involving converting hours to minutes, minutes to seconds, years to months, weeks to day

Measurement/Geometry/Statistics

Geometry - position and direction
- Describe positions on a 2d grid as coordinates in the first quadrant
- Describe movements between positions as translations of a given unit to the left/right and up/down
- Plot specified points and draw sides to complete a polygon

Statistics
- Interpret and present data using appropriate graphs/charts
- Solve comparisons, sum and difference problems using information presented in bar charts, pictograms, tables etc.

Things to try with your child:

1. Make and do together

Use maths together at home. Most craft and DIY activities involve maths skills like measuring, calculating, understanding shapes and angles, multiplying, dividing, and so on. Model making, sewing and decorating are great for developing your child's understanding and confidence. Perhaps your child would like to try making some simple clothes for a toy, or their own cardboard box mini-theatre? Prepare a meal together and ask your child to multiply or divide the quantities of ingredients in a recipe so it makes the right amount for your family. Can they measure all the ingredients and talk about grams, kilograms etc? Help your child to work out at what time things need to stop cooking.

2. Play games together

When you are out and about together, try playing simple verbal maths games. Spot a number plate and think of a calculation using those numbers. Ask the other person to work it out, or tell them the answer and see if they can work out the calculation. Or, have a quick round of 'One Minute Brain Teasers'. There are also lots of games you can make or adapt at home, like bingo, snap and pairs with numbers, e.g. where you have to match a maths question to an answer. Games that involve racing, throwing, scoring, etc, will all build your child's maths skills, as they often involve measuring, comparing, addition and subtraction.

3. Out and about

There are lot of opportunities to help your child with maths when you are out and about. Ask for your child's help in adding up the shopping bill and working out change. Comparing prices, keeping a record of what you've spent and weighing food are all things that your child may be able to help with. Help your child to look out for and spot different shapes in the world around them. Remind them of the names for 2D and 3D shapes. Do they know that a football is a sphere, or that most tins of food are cylinders?

4. Have fun with fractions

Cake, pizza, or any foods with a regular shape can help children understand what fractions are and how they work. Ask your child questions like, 'If I cut our cake into 8 pieces, what fraction will each piece be?' Foods that people might eat a few of are good for helping your child to understand how to find fractions of amounts: 'We've 12 fish fingers in the packet. There are 4 of us. What fraction of the fish fingers can we each have? How many fish fingers would that be?'
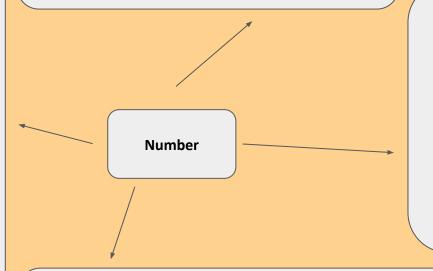
5. Use charts and tables

Using and talking about simple charts and tables, like reward charts, timetables, or calendars, will help your child get used to how they work. Help them to make their own table or chart to gather information, e.g. the performance of a sports team, or the favourite pop groups in their class. Encourage your child to plan or record their own activities, as this will also help them to become familiar with creating and using charts and tables themselves.

Fractions (including decimals and percentages)
- Compare and order fractions whose denominators are all multiples of the same number
- Identify, name and write equivalent fractions; including tenths and hundredths
- Recognise mixed numbers and improper fractions and convert them between each other
- Add and subtract fractions with the same denominator and ones will multiples of the same number
- Multiply proper fractions and mixed numbers by whole numbers
- Read and write decimals as fractions
- Recognise and use thousandths and relate them to tenths and hundredths
- Round decimals to two decimal places to the nearest whole number and to one decimal place
- Read, write, order and compare numbers with up to 3 decimal places
- Recognise % symbol and understand its relation to 100
- Solve problems with knowledge of percentage and decimal equivalents

Addition and Subtraction
- Add and subtract whole numbers with more than 4 digits using formal written methods
- Add and subtract numbers mentally
- Use rounding to check answers
- Solve addition and subtraction multi step problems

Place Value
- Read, write, order, compare numbers to 1,000,000 and know the value of each digit
- Interpret and count forwards or backwards in steps of 10 for negative numbers up to 1,000,000
- Round numbers to 1,000,000
- Read Roman numerals to 1000 and recognise years written in Roman numerals

Number

Multiplication and Division
- Identify multiples and factors of two numbers
- Know prime numbers and composite (non prime) numbers
- Know whether a number to 100 is prime and recall prime numbers to 19
- Multiply/ divide four digit numbers using a formal method
- Multiply and divide numbers mentally
- Multiply and divide numbers involving decimals

Geometry - properties of shape
- Identify 3d shapes from 2d representations
- Know angles are measures in degrees, estimate and compare acute, obtuse and reflex angles
- Draw given angles, and measure them in degrees
- Identify angles at a point and one whole turn, straight line, ½ a turn and other multiples of 90 degrees
- Use the properties of rectangles and find missing lengths and angles
- Distinguish between regular and irregular polygons based on reasoning about equal sides and angels

Statistics
- Solve comparison, sum and difference problems using information presented in a line graph
- Complete, read and interpret information in tables, including timetables

Measurement
- Convert between different units of metric measure
- Understand equivalences between metric and imperial units
- Measure and calculate the perimeter
- Measure and calculate the perimeter of rectilinear shapes
- Calculate and compare the area of rectangles including cm2/m2 and estimate irregular shapes
- Estimate volume and capacity using cm3
- Solve problems involving converting units of time
- Use all four operations to solve problems involving measure using decimal notation

Measurement/Geometry/Statistics

Geometry - position and direction
- Identify, describe and represent the position of a shape following a reflection or translation, and know the shape has not changed

Things to try with your child:

1. Make and do together

Most DIY and craft activities involve a range of maths skills, from measuring to understanding shapes and angles. While carrying out craft activities you can point out things like the right angles that are made when you fold a piece of card in half. Making paper aeroplanes is a great activity – your child can make small changes here and there and then check whether these changes improve the plane's flight. This will involve measuring, recording and analysing information.

2. Practise managing money

Budgeting with precise amounts of money can involve some great practice for calculating. You could involve your child in some budgeting activities, either for the family or for themselves, e.g. a family day out. Tell them how much they have to spend altogether, and ask them to work out the different costs involved for different options. If there is something your child particularly wants to save for, ask them to think about exactly how much money they would need to save each week or month.

3. Measure and weigh

The more you let your child measure and weigh, the more confident they'll become. Measuring activities can range from measuring the length of a shelf, to work out out how much soil you need to fill a window box, or planning what time to take food out of the oven. On your next trip to the supermarket, ask your child to do any weighing. Can they tell you the weight of some fruit/vegetables in both grams and kilograms? Can your child convert between metric measurements (such as grams) and imperial measurements (such as ounces)? On a car journey, can your child tell you how many miles are in a journey if you tell them the number of kilometres (tell them there are about 1½ kilometres in every mile)?

4. Use fractions, decimals and percentages

At home, we use fractions, decimals and percentages a lot in our daily lives. Talk about fractions with your child when you are sharing out food or other items between people. Help them to understand how decimals work by including your child in money calculations that include pounds, pence and a decimal point between them: 'You had £5.50 pocket money and today you spent £1.45. How much should you have left?' At this age, your child is likely to be introduced to percentages for the first time. Remind them that a percentage is simply a fraction with a bottom number of 100. So 17% means 17/100. Help your child to recognise some common fractions, decimals and percentages with the same value (for example, 0.5, ½ and 50%).
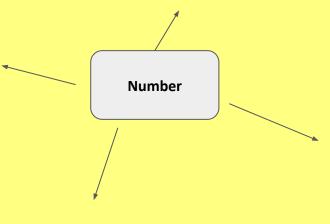
5. Use charts and tables

Using and talking about simple charts and tables, like reward charts, timetables, or calendars, will help your child get used to how they work. Help them to make their own table or chart to gather information, e.g. the performance of a sports team, or the favourite pop groups in their class. Encourage your child to plan or record their own activities, as this will also help them to become familiar with creating and using charts and tables themselves.

Addition, Subtraction, Multiplication and Division

- Multiply multi-digit numbers up to 4 digits by a two digit whole number using the formal written method of long multiplication
- Divide numbers up to 4 digits by a two digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding
- Divide numbers up to 4 digits by a two digit number using the formal written method of short division, interpreting remainders
- Perform mental calculations, including mixed operations and large numbers
- Identify common factors, common multiples and prime numbers
- Use their knowledge of the order of operation to carry out calculations involving the four operations
- Solve addition and subtraction multi step problems, deciding which operations and methods to use and why
- Use estimation to check answers

Place Value

- Read, write , order and compare numbers up to 10,000,000 and determine the value of each digit
- Round any whole number to a required degree of accuracy
- Use negative numbers in context, and calculate intervals across zero
- Solve number and practical problems

Number

Fractions (including decimals and percentages)

- Use common factors to simplify fractions, use common multiples to express fractions in the same denomination
- Add and subtract fractions with different denominators and mixed numbers
- Multiply simple pairs of proper fractions, writing in its simplest form
- Divide proper fractions by whole numbers
- Associate a fraction with division and calculate decimal equivalents
- Identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100, 1000 giving answers up to three decimal places
- Multiply one digit numbers with up to two decimal places by whole numbers
- Use written division methods in cases where the answer has up to two decimal places
- Recall and use equivalences between simple fractions, decimals and percentages

Ratio and proportion
- Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts
- Solve problems involving the calculation of percentages and the use of percentages for comparison
- Solve problems involving similar shapes where the scale factor is known or can be found
- Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples

Number

Algebra
- Use simple formulae
- Generate and describe linear number sequences
- Express missing number problems algebraically
- Find pairs of numbers that satisfy an equation with two unknowns
- Enumerate possibilities of combinations of two variables

Geometry - properties of shape
- Draw 2d shapes using given dimensions and angles
- Recognise, describe and build simple 3d shapes, including making nets
- Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangle, quadrilaterals and regular polygons
- Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
- Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles

Statistics
- Interpret and construct pie charts and line graphs and use these to solve problems
- Calculate and interpret the mean as an average

Measurement
- Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places
- Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a small unit of measure to a larger unit, using decimal notation up to three decimal places
- Convert between miles and kilometers
- Recognize that shapes with the same areas can have different perimeter
- Recognise when it is possible to use formulae for area and volume of shapes
- Calculate the area of parallelograms and triangles
- Calculate, estimate and compare volume of cubes and cuboids using standard units

Measurement/Geometry/Statistics

Geometry - position and direction
- Describe positions on the full coordinate grid (all four quadrants)
- Draw and translate simple shapes on the coordinate plane, and reflect them in the axes.