Comparing and Ordering Numbers: Maths : Year 6 : Summer Term

PlanBee

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To write and identify positive numbers to 10,000,000	Children will recap what an eight-digit number is. The children's ability to write numbers as numerals and words will be challenged through a variety of activities. They will also practise identifying the value of each digit in a number.	• Can they identify whole numbers to 10,000,000? • Can they write whole numbers to 10,000,000? • Do they understand the place value of each digit?	• Slides • Worksheet 1A/1B/1C • Place Value Poster • Matching Cards (FSD? activity only) • Question Cards A/B (FSD? activity only)
Lesson 2	To order positive numbers to 10,000,000	Children will order positive numbers with up to two decimal places to 10,000,000. They will order groups of four numbers. During the plenary they will order race times from the Olympics and find the difference between different competitors' times	• Can they identify numbers to 10,000,000? • Can they order numbers to 10,000,000? • Do they understand the place value of each digit?	• Slides • Worksheet 2A/2B/2C • Challenge Cards A/B (FSD? activity only)
Lesson 3	To compare positive numbers to 10,000,000	Children will find the difference between larger positive numbers. They will complete subtraction calculations to find the difference, checking their answers using the inverse. They can also time their own sporting events and calculate the difference between race times.	• Can they identify and order numbers to 10,000,000? • Can they compare numbers to 10,000,000? • Can they find the difference between two numbers?	• Slides • Worksheet 3A/3B/3C
Lesson 4	To use negative numbers in context and calculate intervals across zero.	Children will apply their knowledge of finding the difference between two numbers when calculating intervals across zero. They will be introduced to negative numbers through temperatures, including temperatures with decimal places. They will find the difference using a number line to support them as they calculate intervals across zero, expressing their answers using an appropriate statement, such as 5.5 - (-1) = 5.6.	• Can they identify and name positive and negative numbers? • Can they compare positive and negative numbers? • Can they find the difference between two positive and negative numbers?	• Slides • Worksheet 4A/4B/4C • Above Sea Level Cards (FSD? activity only) • Below Sea Level Cards (FSD? activity only)
Lesson 5	To solve problems involving writing, ordering and comparing positive and negative numbers.	Children will apply the skills they have used throughout the week to solve practical problems. They will need to work out what the question is asking them to find out and choose an appropriate method to solve the problems, which include ordering high scores, ordering javelin throws, finding the difference between temperatures and creating their own word problems.	• Can they write and name positive and negative numbers? • Can they identify and compare positive and negative numbers? • Can they decide what a question is asking them to do?	• Slides • Question Cards A/B/C • Number Cards A/B (FSD? activity only) • Challenge Cards (FSD? activity only) • Worksheet (FSD? activity only) • Answer Sheet (FSD? activity only)

NB: 'FSD? Activity only' refers to the alternative 'Fancy Something Different...?' activity within the lesson plan

Ratio, Percentages and Proportion: Maths : Year 6 : Summer Term

PlanBee

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To use fractions and percentages to describe parts of a whole.	Children will study a variety of missing number word problems involving calculating parts of a whole expressed as fractions or percentages. They will develop strategies for visualising and solving these problems, as well as learning a method for simplifying fractions.	• Can children solve missing number problems involving fractions? • Can children solve missing number problems involving percentages? • Can children identify when ratios may be more appropriate than fractions or percentages when describing related values?	• Slides • Challenge Rings 1A/1B/1C sheets • Challenge Cards 1A/1B/1C • Calculators • Worksheet 1 (FSD…? activity only) • Pony beads (optional) (FSD…? activity only)
Lesson 2	To find and use ratios when reading maps and plans.	Children will consider why ratios with a '1' are helpful, particularly when reading maps or solving problems involving scale. They will also develop methods for calculating distances using maps, including those where the gridlines are different to the scale given.	• Can children use ratios when reading maps? • Can children use ratios when reading detailed, small-scale maps and plans? • Can some children draw simple plans according to a given scale?	• Slides • Worksheets 2A/2B/2C • Challenge Card 2 (FSD…? activity only) • Big paper, colouring pencils, felts or paints, sticky notes (FSD…? activity only)
Lesson 3	To use ratios and multiplication and division facts to solve proportion problems.	Children will develop strategies for solving ratio problems such as increasing/decreasing the proportions of ingredients in recipes. They will then practise the skills they have learned, either by solving word problems or by calculating ratios during a practical, group activity.	• Can children use their times tables knowledge to recognise relationships between numbers in ratio scaling problems and suggest ways of solving them? • Can children solve one-step scaling problems by finding or recognising common factors? • Can some children solve two-step scaling problems involving both dividing and multiplying?	• Slides • Worksheets 3A/3B/3C • Bunting Challenge 3A/3B (FSD…? activity only) • Bunting Design 3A/3B/3C/3D (FSD…? activity only) • Ribbon/string, scissors, glue (FSD…? activity only)
Lesson 4	To interpret data, and solve problems, by finding percentages.	Children will build on prior learning by comparing, developing and practising strategies for solving tricky percentage problems using mental and written methods. They will apply their knowledge by solving a variety of word problems, or explore ways in which pocket calculators and calculator apps may be used to find 'tricky' percentages of amounts.	• Can children use a mathematical model to solve missing number problems, including those involving percentages? • Can children interpret data given as percentages? • Can children interpret percentage readouts on a calculator by rounding and/or approximating?	• Slides • Percentage Problem cards 4A/4B/4C • Challenge Cards 4A/4B/4C • Calculating Percentages Fact Sheet (FSD…? activity only) • A variety of calculators and calculator apps on desktops, tablets and other devices (FSD…? activity only)
Lesson 5	To solve problems involving fractions, percentages and ratios.	Children will recap various methods for solving missing number problems involving fractions, ratios and percentages. They will then solve a variety of word problems, choosing methods to solve them.	• Can children select and use an appropriate model to help them visualise and solve a missing number problem? • Can children solve trickier missing number problems involving two or more steps to solve them? • Can children identify when it may be more appropriate to use a calculator to solve a missing number problem?	• Slides • Worksheets 5A/5B/5C • Calculators • Treasure Hunt Cards 5A-5F (FSD…? activity only) • Ratio...Master! Certificates (FSD…? activity only) • Treasure Hunt Challenge 5 sheet (FSD…? activity only)

NB: 'FSD? Activity only' refers to the alternative 'Fancy Something Different…?' activity within the lesson plan

Fractions, Decimals and Percentages: Maths : Year 6 : Summer Term, Week 3

PlanBee

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To develop and improve fluency when finding equivalent fractions, including simplifying fractions.	Children will learn, practise and develop a variety of strategies for finding equivalent fractions, simplifying fractions and converting percentages to fractions. They may then either undertake a variety of challenges which test their skills, or apply their learning to a 'real world' context where data must be made more meaningful.	• Can children recognise some common fraction/percentage/decimal equivalents? • Can children convert percentages to fractions? • Can children use a variety of methods to find equivalent fractions, including simplifying fractions?	• Slides • Task Table 1 • Activity 1 Cards • Supporting Resources Poster • Challenge Card 1 (FSD…? activity only)
Lesson 2	To associate a fraction with division and calculate decimal fraction equivalents.	Children will learn a short division method for converting fractions to decimal numbers, including how, and when, to 'stop' and either round the calculated amount to three or fewer decimal places, or show that it is a recurring number using the correct symbol. They may then either solve a number of conversion calculations or play a fractions to decimals game.	• Can children use place value knowledge to calculate decimal fraction equivalents of tenths and hundredths unit fractions? • Can children then multiply decimal fraction equivalents of unit fractions to find other decimal fraction equivalents? • Can children use short division to calculate decimal fractions?	• Slides • Dividing Fractions Poster/Table Mat • Worksheets 2A/2B/2C • Fractions to Decimals Estimating game board and cards, plus counters and one calculator per group (FSD…? activity only)
Lesson 3	To convert decimals to fractions, simplifying them when it is appropriate, or helpful, to do so.	Children will learn and practise a method for converting decimal numbers (less than one) to fractions and percentages, simplifying them where possible. They may then either solve a variety of conversion calculations or devise and test their own decimal conversion game.	• Can children multiply both parts of a division calculation by 10, 100, 1000 etc.? • Can children recognise that multiplying a decimal number and its divisor of 1 in this way converts it to a fraction? • Can children simplify fractions by finding their lowest common multiple?	• Slides • Worksheets 3A/3B/3C • Challenge Card 3 (FSD…? activity only) • Counters and dice (FSD…? activity only)
Lesson 4	To use a variety of methods for comparing and converting fractions, decimals and percentages.	Children will recap the skills they have learnt and developed in previous lessons, then undertake tasks designed to help them consolidate their learning regarding comparing and converting fractions, decimals and percentages.	• Can children recall a variety of strategies for comparing and converting fractions, decimals and percentages? • Can children identify areas of their learning which are more, and less, secure? • Can children select appropriately challenging questions when practising comparing and converting fractions, decimals and percentages?	• Slides • Quiz Cards 4A/4B/4C • Worksheet 4 • Carroll Diagrams 4A–4F (FSD…? activity only)
Lesson 5	To multiply one-digit numbers with up to two decimal places by whole numbers.	Children will learn a three-step method for multiplying numbers with two decimal places which incorporates their previously learnt skills of using place value knowledge, times tables knowledge and formal written multiplication. They may then either solve a variety of multiplication calculations or apply what they have learnt during a practical Maths challenge.	• Can children use times tables knowledge, and knowledge of common decimal/fraction equivalents, to multiply some numbers with two decimal places mentally? • Can children use place value knowledge to simplify multiplication of numbers with up to two decimal places? • Can children use written multiplication methods to multiply three-, four- or five-digit numbers?	• Slides • Worksheets 5A/5B/5C • Car Park Challenge (FSD…? activity only) • Tape measures or trundle wheels (FSD…? activity only)

NB: 'FSD? activity only' refers to the alternative 'Fancy Something Different…?' activity within the lesson plan

Algebra: Maths : Year 6 : Summer Term

PlanBee

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To use simple formulae involving addition and subtraction.	Children will learn what algebra is and why it is used. They will find the value of a variable using simple formulae and will move on to substituting values into formulae. Where necessary, they will use the method of finding the difference, rather than rearranging the formula, to find missing variables.	• Do they understand that the value of 'x' can change? • Can they use their mathematical knowledge to find the value of 'x'? • Do they understand that any letters can be used in algebraic formulae?	• Slides • Worksheet 1A/1B/1C • Instruction Sheet (FSD? activity only) • Formula Flip Book Template (FSD? activity only) • Sticky notes, scissors (FSD? activity only)
Lesson 2	To express missing number problems algebraically.	Children will express a variety of problems algebraically, exploring the different ways a problem can be written. They will be challenged to read word problems and express them algebraically before solving them.	• Can they express number problems algebraically? • Can they apply their mathematical knowledge to solve questions involving algebra? • Do they understand equations can be expressed in different ways?	• Slides • Worksheet 2A/2B/2C/2D • Number Cards X/Y/Z (FSD? activity only)
Lesson 3	To use simple formulae involving multiplication.	Children will discover the difference between an equation and a formula. They will be introduced to the formula they need to use to find the area of square and rectangular quadrilaterals. They will find out how multiplication is expressed in a formula and apply this knowledge when finding the area of the quadrilaterals.	• Can they use a formula in context? • Can they check their answer is correct? • Do they understand how to rearrange the formula to find a missing value?	• Slides • Worksheet 3A/3B/3C • Challenge Cards A/B (FSD? activity only) • Squared paper and rulers (FSD? activity only)
Lesson 4	To generate and describe linear number sequences.	Children will explore simple linear equations. After using the equation to find values of 'y', they will plot the points on a graph and discuss the shape of line they form. They will then use their graph and the equation to work out and check the values of different variables.	• Do they understand when a formula is asking them to multiply? • Can they use the formula in context? • Can they use their mathematical knowledge to create formulae?	• Slides • Worksheet 4A/4B/4C • Graph and Table Sheet A/B/C (FSD? activity only)
Lesson 5	To use simple formulae involving multiplication and division.	Children will be introduced to division in algebra. They will find the area of right-angled triangles using a formula and be challenged to find the area of a square that has had a triangular shape removed from its corner.	• Do they understand the letters in the formula can be any number? • Can they apply their maths skills to answer questions involving algebra? • Do they understand the order they need to use the numbers in this equation?	• Slides • Worksheet 5A/5B/5C • Area Cards (FSD? activity only)

NB: 'FSD? Activity only' refers to the alternative 'Fancy Something Different...?' activity within the lesson plan

Geometric Shapes: Maths : Year 6 : Summer Term

PlanBee

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To illustrate and name parts of circles.	Children will learn how to measure the radius, diameter and circumference of a circle, then practise drawing and measuring diameter and radius lines inside circles.	• Do children know what the circumference, diameter and radius of a circle are? • Do children know that the diameter is twice the radius? • Can children use the radius to draw a circle?	• Slides • Worksheets 1A/1B/1C • Pairs of compasses • Measuring Circles (FSD? activity only) • Tape measures, trundle wheels, chalk, string (FSD? activity only)
Lesson 2	To recognise angles and find missing angles.	Children will build on their prior knowledge of angles by developing and practising strategies for accurately measuring reflex angles. They will then use know facts about angles on a straight line and around a point to derive missing angles.	• Can children explain the differences between acute, obtuse and reflex angles? • Can children recognise angles where they meet at a point and on a straight line? • Can children find missing angles where they meet at a point or on a straight line?	• Slides • Worksheets 2A/2B/2C • Bee-Bots/Turtles/Roamers (FSD? activity only)
Lesson 3	To draw 2-D shapes using given dimensions and angles.	Children will practise drawing irregular and regular polygons accurately using rulers, protractors and/or set squares. They will also practise drawing circles accurately using rulers and pairs of compasses.	• Can children use rulers to accurately draw the sides of 2-D shapes? • Can children use protractors to accurately draw the angles of 2-D shapes? • Can children use pairs of compasses to accurately draw circles (and segments of circles)?	• Slides • Worksheet 3A/3B/3C • Challenge Card 3A
Lesson 4	To recognise and describe simple 3-D shapes.	Children will build on their understanding of the properties of 3-D shapes, using mathematical vocabulary to describe them. They will also draw isometric 3-D shapes based on given descriptions.	• Can children describe some common properties of 3-D shapes? • Can children identify specific 3-D shapes according to their properties? • Can children match and draw 3-D shapes according to descriptions of their properties?	• Slides • Worksheets 4A/4B/4C • Isometric paper • Describing Shapes (FSD? activity only) • Wooden/plastic 3-D shapes (FSD? activity only) • A bag (must be opaque) (FSD? activity only)
Lesson 5	To recognise, describe and build simple 3-D shapes, including making nets.	Children will study exploded diagrams of polyhedrons and identify their plane surfaces. They may then construct 3-D shapes by making wireframes or nets.	• Do children recognise that polyhedrons have faces which are 2-D shapes? • Can children visualise what 3-D shape a net will make? • Can children design and build 3-D wireframes and nets according to descriptions of a shape?	• Slides • Worksheets 5A/5B/5C • 3-D construction toys, e.g. cocktails sticks and marshmallows, K'NEX, Polydron • Cereal Box Challenge (FSD? activity only) • A variety of cardboard packaging (FSD? activity only) • Card, scissors, glue, sticky tape (FSD? activity only)

NB: 'FSD? Activity only' refers to the alternative 'Fancy Something Different...?' activity within the lesson plan

More Multiplication and Division: Maths : Year 6 : Summer Term

PlanBee

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To be able to choose appropriate multiplication and division methods for solving a variety of calculations.	In preparation for the work in the lessons ahead, children review the methods for formal short and long multiplication and division. They will be reminded of the necessary steps to solve each type of calculation before solving some missing number problems. They will then work independently to consolidate their understanding of these processes.	• Can children use the formal methods of short multiplication and short division? • Can children use the formal methods of long multiplication and long division? • Can children choose which method is most appropriate for solving different calculations?	• Slides • Calculation Cards • Worksheet 1A/1B/1C • Help Sheet • Game Sheet (FSD? activity only) • Dice (FSD? activity only)
Lesson 2	To be able to use multiplication and division to solve problems.	Beginning the holiday theme in this lesson, children are challenged to watch a short animation about a journey on a plane and use the information given to solve a variety of multiplication and division problems. In their independent learning they will then solve similar problems from a description of a plane journey. Alternatively, they can help an airline work out how many seats were sold on their flights and how much money was made from some given information.	• Can children identify important information to work out what the question is asking them to solve? • Can children choose an appropriate operation and method to solve a variety of problems? • Can children check reasonableness of their answers using estimation?	• Slides • Note Sheet (input) • Zoe on a Plane (mp4) • Holiday Comprehension Cards 2A/2B/2C • Holiday Comprehension 2A/2B/2C • Worksheet 2A/2B/2C (FSD? activity only)
Lesson 3	To be able to use multiplication and division to solve problems.	The slides in this lesson introduce your class to a character who needs help choosing a hotel for her holiday. Children must solve various calculations to help her determine which hotel would be most appropriate. They can also help feuding hoteliers determine whose hotel made the most profit. During their independent work, children will solve a variety of similar problems, using long and short multiplication and division.	• Can children use given data to find the solution to a problem? • Can children choose appropriate operations and methods to solve a variety of problems? • Can children use estimation to check the reasonableness of their answers?	• Slides • Hotel Data Card • Worksheet 3A/ • Challenge Card 3A/3B/3C • Sibling Rivalry Card 3A/3B (FSD? activity only)
Lesson 4	To be able to use long division in the context of money, expressing remainders as decimals.	Children help a family allocate their spending money for their holiday in this lesson as they learn how to use decimals to solve long division problems involving remainders. Children are shown how to add zeros after a decimal to the dividend to help express remainders, and how to round a decimal appropriately for the context (in this instance, money). They can then use what they have learnt to work out how much various holiday activities cost, or to complete a tricky decimal division challenge.	• Can children use the long division method appropriately? • Can children solve use interpret remainders as decimals in long division calculations? • Can children use knowledge of long division and other operations to solve problems?	• Slides • Activity Sheet 4A/4B/4C • Price Card 4A/4B • Challenge Cards 4A/4B/4C (FSD? activity only)
Lesson 5	To be able to use a variety of operations and methods to plan a holiday.	Children are challenged to plan their own holiday in this lesson. They can choose who they travel with and are given a set amount of money per person. From three different destinations, they must then choose the best flights, accommodation and activities for their budget and requirements. Alternatively, they can help a family work out these problems based on given criteria.	• Can children solve problems involving all four operations? • Can children identify what they need to do in order to solve a problem and take sensible steps to solve it? • Can children make decisions based on answers to calculations?	• Slides • Holiday Planners • Worksheet 5A/5B/5C/5D • Family Cards (FSD? activity only)

NB: 'FSD? activity only' refers to the alternative 'Fancy Something Different...?' activity within the lesson plan

More about Algebra: Maths : Year 6 : Summer Term

PlanBee

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To use simple equations.	Children will recap what algebra is and why it is used. They will find the value of a variable using simple equations and will move on to rearranging and balancing equations to prove their answers. They will also be encouraged to solve equations where there are several possible answers.	• Can children solve simple equations involving addition or subtraction? • Can children solve simple equations involving multiplication or division? • Do children understand that the letter in an equation is a variable?	• Slides • Worksheet 1A/1B/1C • Equation Cards (FSD? activity only) • Number Cards X/Y (FSD? activity only)
Lesson 2	To use formulae to find the area of a triangle.	Children will explore different formulae to find the area of a triangle and find out why they work. During the plenary they will be challenged to come up with different ways to find the area of a rhombus. This will encourage them to apply their understanding of shape and algebra and gain a deeper understanding.	• Can children use a simple formula to find the area of a triangle? • Do children understand why the formula to find the area of a triangle is divided by two? • Do children understand that the letter in an equation is a variable?	• Slides • Worksheet 2A/2B/2C • Triangle Cards (FSD? activity only) • Instruction Sheet (FSD? activity only) • Squared paper, rulers, scissors (FSD? activity only)
Lesson 3	To use formulae to find the length of the sides of a triangle.	Children will be introduced to Pythagoras' Theorem. They will find out why the formula works and apply it to find the missing lengths of right-angled triangles. They will then be challenged to find the perimeter of the shapes.	• Can children use a formula to find the length of the longest side of a triangle? • Can children use a formula to find the length of the any side of a triangle? • Do children understand that the letter in an equation is a variable?	• Slides • Calculators • Worksheet 3A/3B/3C • Shape Cards A/B (FSD? activity only)
Lesson 4	To use formulae to find the area and the circumference of a circle.	Children will be introduced to pi and the symbol that is used to represent it. They will be encouraged to substitute values into the given formula to find the area or the circumference of a circle. They will become more confident about the relationship between the diameter and radius of a circle and use this knowledge when problem solving.	• Can children use a simple formula to find the area of a circle? • Can children use a simple formula to find the circumference of a circle? • Do children understand that the letter in an equation is a variable?	• Slides • Calculators • Worksheet 4A/4B/4C/4D • Race Track Cards (FSD? activity only)
Lesson 5	To use formulae to convert temperatures from Fahrenheit to Celsius.	Children will explore the relationship between Celsius and Fahrenheit by converting temperatures. They will substitute values into a given formula to find out what different USA temperature records are in degrees Celsius. The plenary consolidates their understanding of algebra and how to use it to solve problems.	• Can children use a formula that involves multiplication? • Can children use a formula that involves division? • Do children understand that the letter in an equation is a variable?	• Slides • Calculators • Worksheet 5A/5B • Graph paper, rulers • Climate Cards (FSD? activity only) • Follow Me Cards (Plenary only)

NB: 'FSD? Activity only' refers to the alternative 'Fancy Something Different...?' activity within the lesson plan

Factors Multiples and Primes : Maths : Year 6 : Summer Term

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To use factors and number facts to solve problems.	Children will use mathematical terms to explain what factors, products, multiples and integers are. They will then find and record factors and multiples of numbers. The lesson concludes by challenging the children to share what they know about a given number.	• Can children explain what factors and products are? • Can children explain what multiples and integers are? • Are children able to explain how they know something?	• Slides • Sieve of Eratosthenes Video (Starter only) • Worksheet 1A/1B/1C • Game Sheet (FSD...? activity only) • Help Sheet (FSD...? activity only)
Lesson 2	To make and use prime factor trees.	Children will explain what prime numbers and composite numbers are, as well as giving examples of them. They will become familiar with and use a prime factors multiplication grid while creating and completing prime factor trees.	• Can children identify prime numbers? • Can children use division to find factors? • Can children apply number facts to find prime factors?	• Slides • Prime Factors Multiplication Grid A/B • Worksheet 2A/2B • Missing Numbers Prime Factors Multiplication Grid • Incomplete Prime Factor Trees A/B (FSD...? activity only)
Lesson 3	To use divisibility tests to find large prime numbers.	Children will explain what prime numbers and composite numbers are, as well as giving examples of them. They will be reminded of divisibility tests and apply them to solve problems and find prime numbers by a process of elimination.	• Can children identify large prime numbers? • Can children use divisibility tests to answer questions? • Can children work methodically?	• Slides • Divisibility Rules (starter only) • Number Cards Set A/B • Worksheet 3A • Challenge Cards (FSD...? activity only)
Lesson 4	To solve problems involving common multiples.	Children will find lowest common multiples of numbers using either a formula or the grid method. They will be challenged to apply their knowledge of factors and multiples in this lesson when finding the highest common factor and the lowest common multiple.	• Can children use multiplication to solve problems? • Can children use division to solve problems? • Can children apply number facts to solve problems?	• Slides • Worksheet 4A/4B/4C • Multiples Grids A/B (FSD...? activity only) • Blank Multiples Grid (FSD...? activity only)
Lesson 5	To show what we know about numbers.	Children will look at a range of numbers and share what they know about them. They will be challenged to apply their knowledge of prime numbers, composite numbers, factors, multiples, multiplication and division.	• Can children identify prime numbers? • Can children use multiplication to solve problems? • Can children use division to solve problems?	• Slides • Number Cards (Starter only) • Worksheet 5A/5B/5C • Worksheet 5D (FSD...? activity only) • Sorting Numbers and Categories (FSD...? activity only) • Factors and Multiplication Game Sheet (Plenary only)

Charts and Graphs: Maths : Year 6 : Summer Term, Week 9

PlanBee

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To interpret and construct line graphs with two variables.	Children will identify and consider differences between discrete and continuous data, and explore why line graphs are preferable for showing continuous data or discrete time data. They will then conduct simple 'fair tests' or play games enabling them to collect data with two variables which may be presented using line graphs.	• Can children identify which types of data are best presented using line graphs? • Can children accurately plot data points for two variables on a line graph? • Can children make statements about two variables shown on a line graph?	• Slides • Heat Loss Experiment 1A/1B/1C • Hot water (from hot tap, or stored in tea urns), thermometers, stopwatches • 0.5mm squared paper and/or 2mm graph paper • Challenge Card 1 (FSD…? activity only) • Tape measures, chalk, beanbags (FSD…? activity only)
Lesson 2	To interpret and construct pie charts.	Children will consider the uses of pie charts as well as how they are well suited for presenting certain types of data. They will also practise accurately drawing pie charts using given sets of data and their corresponding degrees. Children may then either complete tables of survey data with missing values, presenting them using pie charts, or collect and present their own pie chart data.	• Can children explain how pie charts are helpful/unhelpful for showing different types of data? • Can children interpret data presented in pie charts 'at a glance'? • Can children accurately draw pie charts when given the degrees for each proportion in a set of data?	• Slides • Worksheets 2A/2B/2C • Protractors • Challenge Card 2 (FSD…? activity only)
Lesson 3	To accurately construct pie charts using given sets of data and their corresponding angles.	Children will start to learn how proportions of a set of data may be converted to proportions of 360 degrees, enabling them to plot them on pie charts. The learning in this lesson focusses on converting only proportions which are factors (or multiples of factors) of 360. Children may then make pie charts either by completing given sets of data or by collecting and converting their own sets of data.	• Can children interpret data shown using pie charts? • Can children use a mathematical model to convert proportions of whole amounts which are factors of 360 to proportions of 360°? • Can children draw pie charts to show sets of data?	• Slides • Worksheets 3A/3B/3C • Challenge Card 3 (FSD…? activity only)
Lesson 4	To use a multi-step method for converting proportions of amounts, drawing pie charts to show them.	Children will build on prior learning, practising a method for converting any proportion to a proportion of 360 degrees. Using calculators, they will practise this multi-step method which allows them to draw pie charts accurately showing proportions of any size, from any set of data.	• Can children convert multiples of factors of 360 to proportions of 360° using a written method? • Can children use calculators to convert any proportion into a proportion of 360°? • Can children round proportions to the nearest degree before drawing pie charts?	• Slides • Challenge Cards 4A/4B/4C • Converting to Degrees help sheet • Tiddlywinks Target Sheet • Calculators • Sticky notes (FSD…? activity only; optional)
Lesson 5	To use pie charts and line graphs to present data, solve problems or make predictions.	Children will briefly recap prior learning about reading data and making pie charts and line graphs, then apply their learning either by making fact-filled infographics or by completing a charts and graphs 'quiz'.	• Can children interpret line graphs, spotting patterns and predicting trends? • Can children present data in charts and graphs either by hand or using spreadsheet software? • Can children solve problems using charts and graphs?	• Slides • Challenge Card 5A/5B • Spreadsheet software • Quiz 5 (FSD…? activity only)

NB: 'FSD? activity only' refers to the alternative 'Fancy Something Different…?' activity within the lesson plan www.planbee.com

The Fibonacci Sequence: Maths : Year 6 : Summer Term

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To investigate the Fibonacci sequence and the patterns it creates.	Children are introduced to Fibonacci and the sequence of numbers he wrote about after theorising about a rabbit population. The children investigate the sequence through the hypothetical situation of Fibonacci's rabbit population before going on to draw a golden spiral using the squared Fibonacci sequence. Alternatively they can investigate the rabbit problem further by manipulating the problem with 'What if…?' questions.	• Can children describe how the Fibonacci sequence is produced? • Are children able to recall or calculate the first ten numbers in the Fibonacci sequence? • Are children able to think of their own What if...? questions based on an investigation?	• Slides • Rabbit Investigation Sheet 1A • Squared Paper, compasses, colouring pencils/felt tip pens, coloured paper. • Pattern Cards 1A • Challenge Card 1A • What If...? Cards 1A (FSD? activity only)
Lesson 2	To further investigate the Fibonacci sequence.	Children investigate deeper within the Fibonacci sequence of numbers to find patterns and comparisons within the sequence which make it special. They experiment with different 'What happens when…?' style questions about consecutive Fibonacci numbers. They must use their understanding of short and long multiplication to find different patterns and are challenged to describe these patterns and try to prove them always or sometimes true.	• Can children use all four operations in a problem solving challenge? • Are children able to use their understanding of number and sequences to justify their findings? • Can children observe and record patterns and similarities in findings?	• Slides • Challenge Cards 2A/2B/2C • Teacher Notes 2A • Plain paper • Challenge Card 2D (FSD? activity only)
Lesson 3	To find the nth term of a linear sequence.	Children are challenged to find the nth term within a sequence by using the acronym DiNO to find a formula for the sequence. They must then use this formula to find the 10th, 20th and 100th term in the sequences. The children work independently to find formulas for sequences or use their problem solving skills to solve the 'Lily Pad Swap' problem and find a formula for the sequence their results show.	• Are children able to describe the rule for a given sequence? • Can children use a method to find the nth term formula? • Can children use a formula to find the nth term in a sequence?	• Slides • Number Sequence Cards • Worksheet 3A/3B • Formula Cards • Sequence Cards • Worksheet 3C (FSD? activity only) • Frog Tokens, Lily Pad Sheet, Teacher Notes (FSD? activity only)
Lesson 4	To investigate the Golden ratio.	Reflecting back on the Fibonacci sequence, the children explore the idea of the golden ratio in rectangles. They look at how their golden spirals from Lesson 1 show multiple golden rectangles within them and are challenged to test, draw or find golden rectangles by dividing the length by the width of different rectangles, showing their remainders to two decimal places and comparing their answer to Phi Φ.	• Can children recall Phi Φ to 2dp? • Can children describe what a golden rectangle is? • Are children able to test a rectangle's measurements to find if it fits with the golden ratio?	• Slides • Worksheet 4A/4B/4C • Calculators • Worksheet 4D/4E (FSD? activity only) • Objects with rectangular faces e.g. books, DVD cases, photos/photo frames, paper, tablets etc.
Lesson 5	To investigate the golden ratio in art, architecture and the human body.	This lesson introduces the children to the idea that the golden ratio has been used in art and architecture to make the product more visually appealing. They will explore how Leonardo da Vinci used the golden ratio in his illustration of the Vitruvian Man and express how the golden ratio is displayed in human features. The children will investigate this by measuring and testing features to see if they have the golden ratio when compared to one another.	• Are children able to describe how to find if two measurements have a golden ratio? • Can children find a mean average? • Are children able to divide a number giving the remainder as a decimal to 2dp?	• Slides • Art and Architecture Cards • Facial Features Sheet 5A • Measuring tapes, calculators, felt tip pens, plain paper • Worksheets 5A/5B/5C • Portrait Cards 5A • Worksheet 5D (FSD? activity only)