Data Handling	Measurement	Shape and Space	Pattern and Function	Number
Data handling allows us	To measure is to attach a	The regions, paths and	To identify pattern is to	Our number system is a
to make a summary of	number to a quantity	boundaries of natural	begin to understand	language for describing
what we know about the	using a chosen unit.	space can be described	how mathematics	quantities and the
world and to make	Since the attributes	by shape. An	applies to the world in	relationships between
inferences about what	being measured are	understanding of the	which we live. The	quantities. For example,
we do not know.	continuous, ways must	interrelationships of	repetitive features of	the value attributed to a
	be found to deal with	shape allows us to	patterns can be	digit depends on its
• Data can be collected,	quantities that fall	interpret, understand	identified and described	place within a base
organized, represented	between numbers. It is	and appreciate our	as generalized rules	system. Numbers are
and summarized in a	important to know how	two-dimensional (2D)	called "functions". This	used to interpret
variety of ways to	accurate a measurement	and three-dimensional	builds a foundation for	information, make
highlight similarities,	needs to be or can ever	(3D) world.	the later study of	decisions and solve
differences and trends;	be.		algebra.	problems. For example,
the chosen format				the operations of
should illustrate the				addition, subtraction,
Information without blas				multiplication and
or distortion.				division are related to
• Drobobility con bo				one another and are
• Probability can be				information in order to
by using torms such as				
"unlikely" "certain" or				degree of precision
"impossible" It can be				needed in calculating
expressed quantitatively				depends on how the
on a numerical scale.				result will be used.
			1	

Grade One

	c	Conceptual Understanding	IS	
We collect information to make sense of the world around us. Organizing objects and events helps us to solve problems. Events in daily life involve chance.	Measurement involves comparing objects and events. Objects have attributes that can be measured using non-standard units. Events can be ordered and sequenced.	Shapes can be described and organized according to their properties. Objects in our immediate environment have a position in space that can be described according to a point of reference.	Patterns and sequences occur in everyday situations. Patterns repeat and grow.	Numbers are a naming system. Numbers can be used in many ways for different purposes in the real world. Numbers are connected to each other through a variety of relationships. Making connections between our experiences with number can help us to develop number sense.
		Application of Concepts		
Represent information through pictographs and tally marks, sort and label real objects by attributes. Students will create pictographs and tally marks. Create living graphs using real objects and people.	Estimate and measure objects using standard units of measurement: length, mass, capacity, money and temperature. Read and write the time to the hour, half hour and quarter hour. Estimate and compare lengths of time: second,	Sort, describe and compare 3D shapes. Describe position and direction, for example, inside, outside, above, below, next to, behind, in front of, up, down. Explore and describe the paths, regions and boundaries of their	Describe patterns in various ways, for example, using words, drawings, symbols, materials, actions, numbers. Extend and create patterns.	Connect number names and numerals to the quantities they represent. Count to determine the number of objects in a set. Use number words and numerals to represent quantities in real-life Situations.

Describe real objects and events by attributes.	minute, hour, day, week and month. Use standard units of measurement to solve problems in real-life situations involving length, mass, capacity, money and temperature. Use measures of time to assist with problem solving in real-life situations.	immediate environment (inside, outside, above, below) and their position (next to, behind, in front of, up, down).		Use the language of mathematics to compare quantities in real-life situations, for example, more, less, first, second. Subitize in real-life situations. Use simple fraction names in real-life situations.
		Learning outcomes		
When constructing meaning learners: understand that sets can be organized by different attributes. Understand that information about themselves and their surroundings can be obtained in different ways.	Understand the use of standard units to measure, for example, length, mass, money, time, temperature. Understand that tools can be used to measure. Understand that calendars can be used to determine the date, and to identify and sequence days of the	Understand that 2D and 3D shapes have characteristics that can be described and compared. Understand that common language can be used to describe position and direction, for example, inside, outside, above, below, next to, behind, in front of, up, down.	Understand that patterns can be found in everyday situations, for example, sounds, actions, objects, nature.	Understand one-to-one Correspondence. Understand that, for a set of objects, the number name of the last object counted describes the quantity of the whole set. Understand that numbers can be constructed in multiple ways, for

Discuss chance in daily events (impossible, maybe, certain).	week and months of the year. Understand that time is measured using universal units of measure, for example, years, months, days, hours, minutes and seconds.			example, by combining and partitioning. Understand conservation of number. Understand the relative magnitude of whole numbers. Recognize groups of zero to five objects without counting (subitizing). Understand whole-part relationships. Use the language of mathematics to compare quantities, for example, more, less, first, second.
	C	OMMON CORE STANDARD	)S	
The appropriate	The appropriate		The appropriate	The appropriate
standards you want to address can be placed here	standards you want to address can be placed here	standards you want to address can be placed here	standards you want to address can be placed here	standards you want to address can be placed here

## Grade Two

Data Handling	Measurement	Shape and Space	Pattern and Function	Number	
Data handling allows us to make a summary of what we know about the world and to make inferences about what we do not know. • Data can be collected, organized, represented and summarized in a variety of ways to highlight similarities, differences and trends; the chosen format should illustrate the information without bias or distortion. • Probability can be expressed qualitatively by using terms such as "unlikely", "certain" or "impossible". It can be expressed quantitatively on a numerical scale.	To measure is to attach a number to a quantity using a chosen unit. Since the attributes being measured are continuous, ways must be found to deal with quantities that fall between numbers. It is important to know how accurate a measurement needs to be or can ever be.	The regions, paths and boundaries of natural space can be described by shape. An understanding of the interrelationships of shape allows us to interpret, understand and appreciate our two-dimensional (2D) and three-dimensional (3D) world.	To identify pattern is to begin to understand how math ematics applies to the world in which we live. The repetitive features of patterns can be identified and described as generalized rules called "functions". This builds a foundation for the later study of algebra.	Our number system is a language for describing quantities and the relationships between quantities. For example, the value attributed to a digit depends on its place within a base system. Numbers are used to interpret information, make decisions and solve problems. For example, the operations of addition, subtraction, multiplication and division are related to one another and are used to process information in order to solve problems. The degree of precision needed in calculating depends on how the result will be used.	
Conceptual Understandings					
Information can be expressed as	Language to identify, compare, order and	Shapes are classified and named	Whole numbers exhibit patterns and	The base 10 place value system is used	

PYP Math Scope and Sequence

organized and structured data. Objects and events can be organized in different ways. Some events in daily life are more likely to happen than others.	sequence objects and events. We use tools to measure the attributes of objects and events. Estimation allows us to measure with different levels of accuracy.	according to their properties. Some shapes are made up of parts that repeat in some way. Specific vocabulary can be used to describe an object's position in space.	relationships that can be observed and described. Patterns can be represented using numbers and other symbols.	to represent numbers and number relationships. Fractions are ways of representing whole part relationships. The operations of addition, subtraction, multiplication and division are related to each other and are used to process information to solve problems. Number operations can be modelled in a variety of ways. There are many mental methods that can be applied for exact and approximate computations.
		Application of Concepts		
collect and represent data in different types of graphs, for example, tally marks, bar graphs represent the relationship between	estimate and measure objects using standard units of measurement: length, mass, capacity, money and temperature	sort, describe and label 2D and 3D shapes analyse and describe the relationships between 2D and 3D shapes	represent patterns in a variety of ways, for example, using words, drawings, symbols, materials, actions, numbers describe number patterns, for	read and write whole numbers up to hundreds or beyond read, write, compare and order cardinal and ordinal numbers

objects in sets using tree,	read and write the time	create and describe	example, odd and even	describe mental and
Venn and	to the hour,	symmetrical and	numbers, skip	written
Carroll diagrams express	half hour and quarter	tessellating patterns	counting.	strategies for adding
the chance of an event	hour estimate and	identify lines of reflective	extend and create	and subtracting
happening using words	compare lengths of time:	symmetry	patterns in	two-digit numbers.
or phrases	second, minute, hour,	represent ideas about	numbers, for example,	use whole numbers up
(impossible, less likely,	day, week and	the real world	odd and even	to hundreds or
maybe, most	month.	using geometric	numbers, skip counting	beyond in real-life
likely, certain).	use standard units of	vocabulary and	use number patterns to	situations
	measurement to	symbols, for example,	represent and	use cardinal and
Students will collect,	solve problems in	through oral	understand real-life	ordinal numbers in
display and interpret	real-life situations	description, drawing,	situations	real-life situations
data for	involving length, mass,	modelling,	use the properties and	use fast recall of addition
the purpose of	capacity,	labelling	relationships	and
answering questions	money and temperature	interpret and create	of addition and	subtraction number
create a pictograph	use measures of time	simple directions,	subtraction to solve	facts in real-life
and sample bar	to assist with	describing paths,	problems.	situations
graph of real objects and	problem solving in	regions, positions		use fractions in real-life
interpret	real-life situations.	and boundaries of their		situations
data by comparing		immediate		use mental and written
quantities (for		environment.		strategies for
example, more, fewer,		bout 3D shapes to		addition and subtraction
less than,		describe and work		of two digit
greater than)		with 2D shapes		numbers or beyond in
use tree, Venn and		recognize and explain		real-life
Carroll diagrams to		simple		situations
explore relationships		symmetrical designs in		select an appropriate
between data		the		method for
identify and describe		environment		solving a problem, for
chance in daily		apply knowledge of		example,
events (impossible, less		symmetry to		mental estimation,
likely, maybe,		problem-solving		mental or written
most likely, certain).		situations		strategies, or by using a
				calculator

		interpret and use simple directions, describing paths, regions, positions and boundaries of their immediate environment.		use strategies to evaluate the reasonableness of answers.
		Learning outcomes		
When constructing meaning learners: understand that sets can be organized by one or more attributes understand that information about themselves and their surroundings can be collected and recorded in different ways understand the concept of chance in daily events (impossible, less likely, maybe, most likely, certain).	understand the use of standard units to measure, for example, length, mass, money, time, temperature understand that tools can be used to measure understand that calendars can be used to determine the date, and to identify and sequence days of the week and months of the year understand that time is measured using universal units of measure, for	understand that there are relationships among and between 2D and 3D shapes understand that 2D and 3D shapes can be created by putting together and/or taking apart other shapes understand that examples of symmetry and transformations can be found in their immediate environment understand that geometric shapes are useful for representing real-world	understand that patterns can be found in numbers, for example, odd and even numbers, skip counting understand the inverse relationship between addition and subtraction understand the associative and commutative properties of addition.	model numbers to hundreds or beyond using the base 10 place value system** estimate quantities to 100 or beyond model simple fraction relationships use the language of addition and subtraction, for example, add, take away, plus, minus, sum, difference model addition and subtraction of whole numbers develop strategies for memorizing addition and subtraction
	example, years, months, days, hours,	situations		number facts

	minutes and seconds.	understand that directions can be used to describe pathways, regions, positions and boundaries of their immediate environment.		estimate sums and differences understand situations that involve multiplication and division model addition and subtraction of fractions with the same denominator.	
	COMMON CORE STANDARDS				
The appropriate standards you want to address can be placed here	The appropriate standards you want to address can be placed here	The appropriate standards you want to address can be placed here	The appropriate standards you want to address can be placed here	The appropriate standards you want to address can be placed here	

## Grade Three

Data Handling	Measurement	Shape and Space	Pattern and Function	Number
Data handling allows us to make a summary of what we know about the world and to make inferences about what we do not know. • Data can be collected, organized, represented and summarized in a variety of ways to highlight similarities, differences and trends; the chosen format should illustrate the information without bias or distortion. • Probability can be expressed qualitatively by using terms such as "unlikely", "certain" or "impossible". It can be expressed quantitatively on a numerical scale.	To measure is to attach a number to a quantity using a chosen unit. Since the attributes being measured are continuous, ways must be found to deal with quantities that fall between numbers. It is important to know how accurate a measurement needs to be or can ever be.	The regions, paths and boundaries of natural space can be described by shape. An understanding of the interrelationships of shape allows us to interpret, understand and appreciate our two-dimensional (2D) and three-dimensional (3D) world.	To identify patterns is to begin to understand how mathematics applies to the world in which we live. The repetitive features of patterns can be identified and described as generalized rules called "functions". This builds a foundation for the later study of algebra.	Our number system is a language for describing quantities and the relationships between quantities. For example, the value attributed to a digit depends on its place within a base system. Numbers are used to interpret information, make decisions and solve problems. For example, the operations of addition, subtraction, multiplication and division are related to one another and are used to process information in order to solve problems. The degree of precision needed in calculating depends on how the result will be used.
	C	Conceptual Understanding	JS	

Data can be collected, organized, displayed and analysed in different ways. Different graph forms highlight different aspects of data more efficiently. Probability can be based on experimental events in daily life. Probability can be expressed in numerical notations.	Objects and events have attributes that can be measured using appropriate tools. Relationships exist between standard units that measure the same attributes.	Changing the position of a shape does not alter its properties. Shapes can be transformed in different ways. Geometric shapes and vocabulary are useful for representing and describing objects and events in real-world situations.	Functions are relationships or rules that uniquely associate members of one set with members of another set. By analysing patterns and identifying rules for patterns it is possible to make predictions.	The base 10 place value system can be extended to represent magnitude. Fractions and decimals are ways of representing whole-part relationships. The operations of addition, subtraction, multiplication and division are related to each other and are used to process information to solve problems. Even complex operations can be modelled in a variety of ways, for example, an algorithm is a way to represent an operation.
		Application of Concepts		
design a survey and systematically collect, organize and display data in pictographs and bar graphs	estimate and measure using standard units of measurement: perimeter, area and volume describe measures that fall between	sort, describe and model regular and irregular polygons describe and model congruency and similarity in 2D shapes	describe the rule for a pattern in a variety of ways represent rules for patterns using words, symbols and tables	read, write, compare and order whole numbers up to thousands or beyond develop strategies for memorizing

select appropriate graph form(s) to display data interpret range and scale	numbers on a scale read and write digital and analogue time on 12-hour and 24-hour clocks	analyse angles by comparing and describing rotations: whole turn; half	identify a sequence of operations relating one set of numbers to another set	addition, subtraction, multiplication and division number facts read write, compare and
	24 Hour clocks.	couth pact	procenting pattorns for	ordor
determine		and west on a compass	presenting patterns, for	Fractions
mathematically fair and		locate features on a grid	using words symbols	read and write
			and tables	
unfair games	real-life situations	using	and tables	equivalent fractions
and to explain possible	involving perimeter, area	coordinates	use number patterns to	read, write, compare and
outcomes	and volume	describe and/or	make	order
express probability using	select appropriate tools	represent mental	predictions and solve	fractions to hundredths
simple	and units of	images of objects,	problems	or beyond
fractions.	measurement	patterns, and	use the properties and	describe mental and
	use timelines in units of	paths.	relationships of	written
collect, display and	inquiry and	analyse and describe 2D	the four operations to	strategies for
interpret data	other real-life situations.	and 3D	solve problems.	multiplication and
using simple graphs, for		shapes, including regular		division.
example, bar		and		use whole numbers up
graphs, line graphs		irregular polygons, using		to thousands
identify, read and		geometrical		or beyond in real-life
interpret range and		vocabulary		situations
scale on graphs		identify, describe and		use fast recall of
identify the mode of a		model		multiplication and
set of data		congruency and		division number facts in
use tree diagrams to		similarity in 2D		real-life
express		shapes		situations
probability using simple		recognize and explain		tuations
fractions		symmetrical		use mental and written
		patterns including		strategies for
		tessellation in the		multiplication and
		environment		division in real-life
		apply knowledge of		situations
		transformations		

		to problem-solving situations.		select an efficient method for solving a problem, for example, mental estimation, mental or written strategies, or by using a calculator use strategies to evaluate the reasonableness of answers add and subtract fractions with related denominators in real-life situations add and subtract decimals in real-life situations, including money estimate sum, difference, product and quotient in real-life situations, including fractions and decimals.
		Learning outcomes		
understand that data can be	understand the use of standard	understand the common language used to describe shapes understand the properties of regular	understand that patterns can be	model numbers to thousands or

collected, displayed and interpretedunits to measure perimeter, area and youreand irregular polygons understand that can expersent different quantities in graphs understand that the mode can be understand that one of the purposes of a database is to answer questions and derstand that the probability is based on experimental events.units to measure perimeter, area and volume understand that the measures can fall up between numbers on a measurement scale, for example, between understand that one of the purposes of a database is to answer questions and derstand an angle as a measure of motherstand that probability is based on experimental events.units to measure perimeter, area and to any the base of reflective and rotational system scale, for example, for example, metres, centimetres and millimetres understand that probability is based on experimental events.units to measure perimeter, area and to any the base of reflective and rotational systemanalysed and rules inderstand that times analysed and trules inderstand that times and and sec of metres, construction of shapes understand that directions for location can be represented by cordinates on a grid understand that visualization of shapes understand that directions for location can be and space is a strategy for solving problems.analysed and rules analysed and rules inderstand that times analysed and rules inderstand that times and division is represented by cordinates on a grid understand that visualization of shapes and space is a strategy for solving problems.analysed and rules inderstand that times analysed and rules inderstand that understand that
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The appropriate standards you want to	The appropriate standards you want to			
address can be placed	address can be placed	address can be placed	address can be placed	address can be placed
here	here	here	here	here

## **Grade Four**

Data Handling	Measurement	Shape and Space	Pattern and Function	Number
Data handling allows us to make a summary of what we know about the world and to make inferences about what we do not know. • Data can be collected, organized, represented and summarized in a variety of ways to highlight similarities, differences and trends; the chosen format should illustrate the information without bias or distortion. • Probability can be expressed qualitatively by using terms such as "unlikely", "certain" or "impossible". It can be expressed quantitatively on a numerical scale.	To measure is to attach a number to a quantity using a chosen unit. Since the attributes being measured are continuous, ways must be found to deal with quantities that fall between numbers. It is important to know how accurate a measurement needs to be or can ever be.	The regions, paths and boundaries of natural space can be described by shape. An understanding of the interrelationships of shape allows us to interpret, understand and appreciate our two-dimensional (2D) and three-dimensional (3D) world.	To identify pattern is to begin to understand how mathematics applies to the world in which we live. The repetitive features of patterns can be identified and described as generalized rules called "functions". This builds a foundation for the later study of algebra.	Our number system is a language for describing quantities and the relationships between quantities. For example, the value attributed to a digit depends on its place within a base system. Numbers are used to interpret information, make decisions and solve problems. For example, the operations of addition, subtraction, multiplication and division are related to one another and are used to process information in order to solve problems. The degree of precision needed in calculating depends on how the result will be used.

Conceptual Understandings				
Data can be collected, organized, displayed and analysed in different ways. Different graph forms highlight different aspects of data more efficiently. Probability can be based on experimental events in daily life. Probability can be expressed in numerical notations.	Objects and events have attributes that can be measured using appropriate tools. Relationships exist between standard units that measure the same attributes.	Changing the position of a shape does not alter its properties. Shapes can be transformed in different ways. Geometric shapes and vocabulary are useful for representing and describing objects and events in real-world situations.	Functions are relationships or rules that uniquely associate members of one set with members of another set. By analysing patterns and identifying rules for patterns it is possible to make predictions.	The base 10 place value system can be extended to represent magnitude. Fractions and decimals are ways of representing whole-part relationships. The operations of addition, subtraction, multiplication and division are related to each other and are used to process information to solve problems. Even complex operations can be modelled in a variety of ways, for example, an algorithm is a way to represent an operation.

		Application of Concepts		
design a survey and	estimate and measure	irregular polygons	describe the rule for a	read, write, compare and
systematically	using standard	describe and model	pattern in a	order whole
collect, organize and	units of measurement:	congruency and	variety of ways represent	numbers up to
display data in	perimeter, area	similarity in 2D shapes	rules for patterns using	thousands or beyond
pictographs and bar	and volume	analyse angles by	words, symbols and	develop strategies for
graphs	describe measures that	comparing and	tables	memorizing
select appropriate graph	fall between	describing rotations:	identify a sequence of	addition, subtraction,
form(s) to	numbers on a scale	whole turn; half	operations	multiplication
display data	read and write digital	turn; quarter turn; north,	relating one set of	and division number
interpret range and	and analogue	south, east	numbers to another	facts
scale on graphs	time on 12-hour and	and west on a compass	set.	read, write, compare
use probability to	24-hour clocks.	locate features on a	select appropriate	and order
determine	use standard units of	grid using	methods for	fractions
mathematically fair and	measurement to	coordinates	representing patterns,	read and write
unfair games	solve problems in	describe and/or	for example	equivalent fractions
and to explain possible	real-life situations	represent mental	using words, symbols	read, write, compare
outcomes	involving perimeter, area	images of objects,	and tables	and order
express probability	and volume	patterns, and	use number patterns to	fractions to hundredths
using simple	select appropriate	paths.	make	or beyond
fractions.	tools and units of	analyse and describe 2D	predictions and solve	describe mental and
	measurement	and 3D	problems	written
collect, display and	use timelines in units	shapes, including regular	use the properties and	strategies for
interpret data	of inquiry and	and	relationships of	multiplication and
using simple graphs, for	other real-life situations.	irregular polygons, using	the four operations to	division.
example, bar		geometrical	solve problems.	use whole numbers up
graphs, line graphs		vocabulary		to thousands
identify, read and		identify, describe and		or beyond in real-life
interpret range and		model		situations
scale on graphs identify		congruency and		use fast recall of
the mode of a set of data		similarity in 2D		multiplication and
use tree diagrams to		shapes		division number facts in
express				real-life

PYP Math Scope and Sequence

probability using simple	recognize and explain	situations
fractions.	symmetrical	use decimal fractions in
	patterns, including	real-life
	tessellation, in the	situations
	environment	use mental and
	apply knowledge of	written strategies for
	transformations	multiplication and
	to problem-solving	division in real-life
	situations.	situations
		select an efficient
		method for
		solving a problem, for
		example,
		mental estimation,
		mental or written
		strategies, or by using a
		calculator
		use strategies to
		evaluate the
		reasonableness of
		answers
		add and subtract
		fractions with
		related denominators in
		real-life
		situations
		add and subtract
		decimals in real-life
		situations, including
		money
		estimate sum, difference,
		and quotient in real-life situations,
		including fractions and decimals.

Learning outcomes				
understand that data can be collected, displayed and interpreted using simple graphs, for example, bar graphs, line graphs understand that scale can represent different quantities in graphs understand that the mode can be used to summarize a set of data understand that one of the purposes of a database is to answer questions and solve problems understand that probability is based on experimental events.	understand the use of standard units to measure perimeter, area and volume understand that measures can fall between numbers on a measurement scale, for example, 3ó kg, between 4 cm and 5 cm understand relationships between units, for example, metres, centimetres and millimetres understand an angle as a measure of rotation.	Learning outcomes understand the common language used to describe shapes understand the properties of regular and irregular polygons understand congruent or similar shapes understand that lines and axes of reflective and rotational symmetry assist with the construction of shapes understand an angle as a measure of rotation understand that directions for location can be represented by coordinates on a grid understand that	understand that patterns can be analysed and rules identified understand that multiplication is repeated addition and that division is repeated subtraction understand the inverse relationship between multiplication and division understand the associative and commutative properties of multiplication.	model numbers to thousands or beyond using the base 10 place value system model equivalent fractions use the language of fractions, for example, numerator, denominator model decimal fractions to hundredths or beyond model multiplication and division of whole numbers use the language of multiplication and division, for example, factor, multiple, product, quotient, prime numbers, composite number model addition and subtraction
understand that probability is based on experimental events.		represented by coordinates on a grid understand that visualization of shape and space is a strategy for solving problems.		prime numbers, composite number model addition and subtraction of fractions with related denominators*** model addition and subtraction of decimals.

COMMON CORE STANDARDS				
The appropriate standards you want to address can be placed here	C The appropriate standards you want to address can be placed here	The appropriate standards you want to address can be placed here	The appropriate standards you want to address can be placed here	The appropriate standards you want to address can be placed here

PYP Math Scope and Sequence

## Grade Five

Data Handling	Measurement	Shape and Space	Pattern and Function	Number
Data handling allows us to make a summary of what we know about the world and to make inferences about what we do not know. • Data can be collected, organized, represented and summarized in a variety of ways to highlight similarities, differences and trends; the chosen format should illustrate the information without bias or distortion. • Probability can be expressed qualitatively by using terms such as "unlikely", "certain" or "impossible". It can be expressed quantitatively on a numerical scale.	To measure is to attach a number to a quantity using a chosen unit. Since the attributes being measured are continuous, ways must be found to deal with quantities that fall between numbers. It is important to know how accurate a measurement needs to be or can ever be.	The regions, paths and boundaries of natural space can be described by shape. An understanding of the interrelationships of shape allows us to interpret, understand and appreciate our two-dimensional (2D) and three-dimensional (3D) world.	To identify pattern is to begin to understand how mathematics applies to the world in which we live. The repetitive features of patterns can be identified and described as generalized rules called "functions". This builds a foundation for the later study of algebra.	Our number system is a language for describing quantities and the relationships between quantities. For example, the value attributed to a digit depends on its place within a base system. Numbers are used to interpret information, make decisions and solve problems. For example, the operations of addition, subtraction, multiplication and division are related to one another and are used to process information in order to solve problems. The degree of precision needed in calculating depends on how the result will be used.
	C	Conceptual Understanding	JS	

Data can be presented effectively for valid interpretation and communication. Range, mode, median and mean can be used to analyse statistical data. Probability can be represented on a scale between 0–1 or 0%–100%. The probability of an event can be predicted theoretically.	Accuracy of measurements depends on the situation and the precision of the tool. Conversion of units and measurements allows us to make sense of the world we live in. A range of procedures exists to measure different attributes of objects and events.	Manipulation of shape and space takes place for a particular purpose. Consolidating what we know of geometric concepts allows us to make sense of and interact with our world. Geometric tools and methods can be used to solve problems relating to shape and space.	Patterns can often be generalized using algebraic expressions, equations or functions. Exponential notation is a powerful way to express repeated products of the same number.	infinitely in two directions. Fractions, decimal fractions and percentages are ways of representing whole-part relationships. For fractional and decimal computation, the ideas developed for whole-number computation can apply. Ratios are a comparison of two numbers or quantities.
		Application of Concepts		
collect, display and interpret data in circle graphs (pie charts) and line graphs identify, describe and explain the range, mode, median and mean in a set of data set up a spreadsheet using simple formulas to manipulate data and to create graphs	develop and describe formulas for finding perimeter, area and volume use decimal and fraction notation in measurement, for example, 3.2 cm, 1.47 kg, 16 miles read and interpret scales on a range of measuring instruments measure and construct angles in	analyse, describe, classify and visualize 2D (including circles, triangles and quadrilaterals) and 3D shapes, using geometric vocabulary describe lines and angles using geometric vocabulary identify and use scale (ratios) to enlarge and reduce shapes	represent the rule of a pattern by using a function analyse pattern and function using words, tables and graphs, and, when possible, symbolic rules. select appropriate methods to analyse patterns and identify rules use functions to solve problems.	read, write, compare and order whole numbers up to millions or beyond read and write ratios read and write integers in appropriate contexts read and write exponents and square roots convert improper fractions to mixed numbers and vice versa

express probabilities	degrees using a	identify and use the		simplify fractions in
using scale (0–1)	protractor	language and		mental and
or per cent (0%–100%).	carry out simple unit	notation of bearing to		written form
design a survey and	conversions	describe		read, write, compare
systematically	within a system of	direction and position		and order
collect, record, organize	measurement	create and model		decimal fractions to
and display	(metric or customary).	how a 2D net		thousandths or
the data in a bar graph,	select and use	converts into a 3D shape		beyond
circle graph,	appropriate units	and vice		read, write, compare
line graph	of measurement and	versa		and order
identify, describe and	tools to solve	explore the use of		percentages
explain the	problems in real-life	geometric ideas		convert between
range, mode, median	situations	and relationships to		fractions, decimals
and mean in a	determine and justify	solve problems in		and percentages.
set of data	the level of	other areas of		use whole numbers up
create and	accuracy required to	mathematics.		to millions or
manipulate an electronic	solve real-life	use geometric		beyond in real-life
database for their own	problems involving	vocabulary when		situations
purposes	measurement	describing shape and		use ratios in real-life
determine the	use decimal and	space in		situations
theoretical probability	fractional notation	mathematical situations		use integers in
of an event and explain	in measurement, for	and beyond		real-life situations
why it might	example, 3.2 cm,	use scale (ratios) to		convert improper
differ from experimental	1.47 kg, 1ó miles	enlarge and		fractions to mixed
probability.	use timetables and	reduce shapes		numbers and vice versa
	schedules (12-	apply the language		in real-life
	hour and 24-hour clocks)	and notation of		situations
	in real-life	bearing to describe		simplify fractions in
	situations	direction and		computation
	determine times	position		answers
	worldwide.	use 2D		use fractions,
		representations of 3D		decimals and
		objects		
	1	1	1	

	to visualize and solve problems, for example using drawings or models.	percentages interchangeably in reallife situations select and use an appropriate sequence of operations to solve word problems select an efficient method for solving a problem: mental estimation, mental computation, written algorithms, by using a calculator use strategies to evaluate the reasonableness of answers use mental and written strategies for adding, subtracting, multiplying and dividing fractions and decimals in real-life situations estimate and make approximations in real-life situations
		estimate and make approximations in real-life situations involving fractions, decimals and percentages.

Learning outcomes							
graphs have special purposes understand that the mode, median, mean and range can summarize a set of data understand that probability can be expressed in scale (0–1) or per cent (0%–100%) understand the difference between experimental	understand procedures for finding area, perimeter and volume understand the relationships between area and perimeter, between area and volume, and between volume and capacity understand unit conversions within measurement systems (metric or customary).	understand the common language used to describe shapes understand the properties of regular and irregular polyhedra understand the properties of circles understand how scale (ratios) is used to enlarge and reduce shapes understand systems for describing position and direction understand that 2D representations of 3D objects can be used to visualize and solve problems understand that geometric ideas and relationships can be used to solve problems in other areas of mathematics and in real life.	understand that patterns can be generalized by a rule understand exponents as repeated multiplication understand the inverse relationship between exponents and roots understand that patterns can be represented, analysed and generalized using tables, graphs, words, and, when possible, symbolic rules.	model numbers to millions or beyond using the base 10 place value system model ratios model integers in appropriate contexts model exponents and square roots model improper fractions and mixed numbers simplify fractions using manipulatives model decimal fractions to thousandths or beyond model percentages understand the relationship between fractions, decimals and percentages model addition, subtraction, multiplication and division of fractions model addition, subtraction, multiplication and division of			

COMMON CORE STANDARDS							