Milestones for when children are expected to attain declarative knowledge

Year 1 – Fractions and decimals				
Declarative knowledge	Procedural knowledge	Conditional knowledge	Vocabulary	Stem sentences
I know that halves are two equal parts of a whole. I know that quarters are 4 equal parts of a whole. I know that I can find half/quarter of counted objects and whole objects or shapes.	I know how to recognise, find and name a half as one of two equal parts of an object, shape or quantity I know how to recognise, find and name a quarter as one of four equal parts of an object, shape or quantity	I know when finding halves which resources can help me. I know when finding quarter which resource can help me.	Numbers to 100; place value; digit, integer; symbol; compare; equal to, more, less, greater than, fewer, less than, greatest, smallest; first, second, third…last; ones, tens, partition, exchange; order, largest, smallest, Number bonds, part, whole; plus; fact family, addition sentence, number sentence; how many more; number line; commutative; addition, more, make, sum, total, add together, altogether; calculation; Inverse equals, is the same as How many altogether? How may are there?; groups, groups of, equal groups, unequal groups; row, column, array; number sentence; double, doubles; equal groups of 2, equal groups of 5, equal groups of 10; share, sharing, equally, odd, even, Whole, parts, equal parts, the same; split; groups; share; equally; quarter; four equal parts One half, two halves A quarter, two quarters	I know that ___ are ____ equal parts of a whole. There are ____ beads. Half of ____ is ____ There are ____ marbles. Half of ____ is ____ There are ___ sweets. There are ___ sweets in each quarter. A quarter of ___ is ___ A quarter of ____ is ____ A half of ____ is _____ ____ is one quarter of ____

Milestones for when children are expected to attain declarative knowledge

Year 2 – Fractions and decimals				
Declarative knowledge	Procedural knowledge	Conditional knowledge	Vocabulary	Stem sentences
I know that fractions are relative to the whole. I know that fractions are equal parts to the whole. I know that I can explain simple equivalence in halves and quarters. I know that thirds are three equal parts of a whole. I know that fractions of amounts can be calculated using multiplication and division facts	.I know how to recognise, find, name and write fractions 1/3, ¼, 2/4 and ¾ of a length, shape, set of objects or quantity I know how to write simple fractions e.g., ½ of 6 = 3 and recognise the equivalence of 2/4 and ½.	I know when finding fractions, which resources will help me. I know when comparing fractions the bigger the denominator, the smaller the fraction.	2-digit; base 10; pattern; sequence; Numbers to one hundred Hundreds Partition, recombine Hundred more/less Bar model; operation, inverse operation; column; exchange; bridge; method; Times-table; facts; multiples; repeated addition; lots of; of; multiply; multiplied by; times; commutative; twos, fives, tens, threes; array; go into; divide, divide between, division, dividing; grouping, sharing; Two quarters, three quarters, one third, two thirds; unit fraction, numerator, denominator, vinculum; equivalence, equivalent	Half of ___ is ____ The whole is split into ____ equal parts. Each equal part is worth ____. This can be written as – The whole is ___. Half of this is ____. I know that ___ are ____ equal parts of a whole When adding and subtraction with the same denominator I only need to add the _____ together, the _____ will stay the same. One quarter of ___ is ____. One third of ____ is ____ The ___ the denominator the ___ the fraction.

Milestones for when children are expected to attain declarative knowledge

Year 3 – Fractions and decimals				
Declarative knowledge	Procedural knowledge	Conditional knowledge	Vocabulary	Stem sentences
I know that I understand the rules when adding and subtracting with the same denominator. I know that I understand the rules of how to connect tenths to place value, decimal measures and to division by 10. I know that I understand unit and non-unit fractions as numbers on the number line and how to represent equivalents. I know that when comparing fractions, with the same denominator, the smaller the numerator, the smaller the fraction. I know that when comparing fractions with the same numerator, the smaller the denominator, the bigger the fraction.	I know how to count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10 I know how to recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators I know how to recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators I know how to recognise and show, using diagrams, equivalent fractions with small denominators. I know how to add and subtract fractions with the same denominator within one whole. I know how to add and subtract fractions with the same denominator. I know how to compare and order unit fractions, and fractions with the same denominators	I know when solving problems with fractions which resources and rules can help me. I know when solving problems involving fractions and decimals which strategy to use.	Denominator, numerator, Shaded, split, equal, whole, parts Numbers to one thousand; 3-digit; thousand; ascending, descending; Column, column addition and subtraction; regroup; efficient; estimate. Fours, eights; remainder; divisor, dividend, quotient. Non-unit fraction; tenths, two tenths, three tenths etc; two thirds; fifth, sixth, ninth; decimal, decimal point;	The shape is split into ___ equal parts. The denominator is ___. The fraction that is shaded is $\frac{1}{\_\_\_}$ The denominator is ___ because ___ The numerator is ____ because ___ When the numerators are the same, then the ___ the denominator, the ___ the fraction. When the denominators are the same, the _____ the numerator, the _____ the fraction. There are ____ equal parts so the denominator is ___ . ___ of the equal parts are shaded. So the numerator is ___. The fraction shaded is — When the numerator is equal to the denominator, the fraction is equal to ____. ___ is greater than ___ because ____ ___ is less than ___ because ____ The number line has been split into ___ equal parts – each interval is worth — When I am writing tenths the _____ is always 10 If I start counting up at ___ tenths, I will say ___ tenths next. I have divided ____ into equal groups. There are ____ in each group.

Milestones for when children are expected to attain declarative knowledge

Year 4 – Fractions and decimals				
Declarative knowledge	Procedural knowledge	Conditional knowledge	Vocabulary	Stem sentences
I know that I can convert hundreds to tenths and place value and decimal measure. I know that I understand how to add and subtract fractions with the same denominator. I know that I can connect times tables knowledge to families of common equivalents. I know that when using diagrams to recognise fractions, the shaded part is the numerator and the amount the whole is split into is the denominator. I know that a mixed number can be partitioned into its whole and its fractional part. I know that an improper fraction is where the numerator is larger than the denominator. I know that I can write decimal equivalents of any number of tenths or hundredths. I know that I can make connections between fractions of a length, of a shape and as a representation of one whole or set of quantities. I know that I can use factors and multiples to recognise equivalent	I know how to recognise and show, using diagrams, families of common equivalent fractions I know how to count up and down in hundredths; recognising that hundredths arise when dividing an object by a hundred and dividing tenths by ten I know how to recognise and write decimal equivalents to ¼, ½, ¾ I know how to recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators I know how to recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators I know how to recognise and show, using diagrams, equivalent fractions with small denominators I know how to add and subtract fractions with the same denominator. I know how to solve simple measure and money problems involving fractions and decimals to two d.p.	I know when solving simple measure and money problems involving fractions and decimals to two decimal places which strategy to use. I know when rounding any decimal to 1 decimal place how to use the high 5 rule to determine if the number rounds up or down. I know when solving problems which resources will help me and why. I know when solving problems involving increasingly harder fractions to calculate quantities, including non-unit fractions where the answer is a whole number which strategy to use.	Numbers to ten thousand; round, nearest; approximately; negative, minus, count through zero; tenths, hundredths, 0.25, 0.5, 0.75. Formal method. Sixes, sevens, nines; produce, product; associative law; commutativity; factor, factor pair; formal method; Proper fraction, improper fraction, mixed number; hundredths; denominator, numerator, vinculum, whole, integer,	The whole has been divided into ___ equal parts. I know that ___ is equivalent to ___ because _____. — is the same as ___ whole and — I can partition ___ into _____ and _____ 1 whole is equal to — so ___ wholes are equal to — ___ — is closer to ___ than ____ First, I will compare the _____ If they are the same, I will compare the _____ If the denominator is the same, the ____ the numerator, the ____ the fraction.

Milestones for when children are expected to attain declarative knowledge

fractions and simplify where appropriate.	I know how to round decimals with one decimal place to the nearest whole number.			

Milestones for when children are expected to attain declarative knowledge

Year 5 – Fractions and decimals				
Declarative knowledge	Procedural knowledge	Conditional knowledge	Vocabulary	Stem sentences
I know that when the numerator is larger than the denominator it is an improper fraction. I know that an improper fraction can be converted to a mixed number fraction. I know that I understand decimal notation and the language associated with it for up to three decimal places. I know that I need to convert fractions to a common denominator for addition and subtraction. I know that percentages, decimals and fractions are different ways of expressing proportions. I know that I understand how to multiply proper fractions and mixed numbers using the rule of dividing by 1 to represent the whole number as a fraction. I know that I can describe linear number sequences, including those involving fractions and decimals, and find the term-to-term rule. I know that to find 10% and 1% of an amount I must use division by 10 and 100	I know how to compare and order fractions whose denominators are multiples of the same number I know how to identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths I know how to recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements as mixed numbers e.g. 2/5 + 4/5 = 6/5 = 1 1/5 I know how to add and subtract fractions with the same denominator and multiplies of the same number I know how to multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams. I know how to read and write decimal numbers as fractions I know how to recognise the percent symbol (%) and understand percent means number of parts per hundred and write percentages as a fraction with a denominator 100 and as a decimal	I know when solving problems involving numbers up to three decimal places which calculations to perform. I know when solving problems with fractions and decimals which resources will help me and why. I know when converting fractions to the same denominator, how my knowledge of common factors will help me. I know when finding 10% and 1% how my place value knowledge will help me. I know when solving problems which require knowing percentage and decimal equivalents of ½, ¼, 1/5, 2/5, 4/5 and those with a denominator of a multiple of 10 or 25 which calculation to perform.	round up/down. common denominator; thousandth; simplify, simplified; convert; per cent, percentage; per hundred, numerator, denominator, vinculum, factor, multiples, tenths, hundredths	I know that ___ is equivalent to ____ because _____ The numerator has been multiplied/ divided by _____ so if I multiply/ divide the denominator by ____ it will be equivalent. ___ is a common factor of the numerator and the denominator, so I can divide the numerator and denominator by both of these to find an equivalent fraction. Both the numerator and the denominator can be divided by _____ When two fractions have the same denominator, the one with the ___ numerator is the greater fraction. ____ can be written as ___ wholes and _____ A fraction is an improper fraction when the ___ is greater than the _____ When the denominators are the same, the ____ the numerator the greater the fraction.

Milestones for when children are expected to attain declarative knowledge

Year 6 – Fractions and decimals				
Declarative knowledge	Procedural knowledge	Conditional knowledge	Vocabulary	Stem sentences
I know that to add and subtract fractions with different denominators I must identify equivalent fractions with the same denominator. I know that when simplifying a fraction, I must divide the numerator and denominator by the same. I know that I can convert improper fractions and mixed numbers I know that to round decimals and use the correct notation for recurring decimal places I must look to the decider. I know that when calculating with fractions that dividing by 2 is the same as multiplying by 1/2. I know that I can multiply and divide numbers with up to two decimal places by one-digit and two-digit whole numbers. I know that I can multiply decimals by whole numbers in practical contexts, such as measures and money. I know that I understand how to calculate with FDP with accuracy.	I know how to use common factors to simplify fractions; use common multiples to express fractions in the same denomination. I know how to compare and order fractions, including ≥1. I know how to add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions. I know how to multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. ¼ x ½ = 1/8). I know how to divide proper fractions by whole numbers (e.g. 1/3 ÷2 = 1/6). I know how to associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. 3/8). I know how to identify the value of each digit in a number given to 3 decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to 3 decimal places. I know how to recall and use equivalences between simple fractions, decimals and	I know when solving problems which require answers to be rounded to specified degrees of accuracy which method to use. I know when working on contextual problems which strategies to use and why.	Numbers to ten million. Algebra: Function, input, output; algebra, algebraic, rule; expression; substitute; formula, formulae; equation; value, possible values, enumerate. Order of operations, BIDMAS; common multiple, lowest common multiple. Cancel, highest common factor, common numerator. Ratio, proportion; for every__there are_, :(to); enlargement, scale factor.	Both the numerator and the denominator can be divided by ____ A fraction is equal to one whole when the ___ is equal to the ____ ___ can be written as ___ wholes and ____ A fraction is an improper fraction when the _____ is greater than the _____ Fractions must have the same ____ before they can be added or subtracted. To simplify the fraction I will divide the numerator and the denominator by _____ The lowest common multiple of ___ and ____ is _____

Milestones for when children are expected to attain declarative knowledge

	percentages, including in different contexts.			