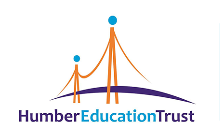
**HET Fractions Policy**

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**A document to support the teaching and learning of fractions in Years 1-6**

**The relationship between part and whole**

When beginning the teaching of fractions, each year group will teach the relationship between part and whole.

The progression of this concept across year groups will be evident by: the pace and confidence in which pupils can move between concrete, pictorial and abstract representations, reasoning depth and the complexity of examples used.

**Sentence stem:** If \_\_\_\_\_\_\_\_\_\_\_ is the whole, then \_\_\_\_\_\_\_\_\_\_\_ is a part of the whole.

**Conclusion:** A whole can be divided into many parts. Many parts can make one whole.

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| **Exploring part and whole**  **Story**  The elephant story allows pupils to recognise the relationship between the whole and part for themselves.    Story message:  The blind man cannot identify the object because he only touched a part of the elephant, not the whole. | | **One object as the whole**  **Concrete**  Pupils can see and hold the object.    If the teddy bear is the whole,  then his nose is a part of the whole. | | **One object as the whole**  **Pictorial**  The object is a picture on the board or on a piece of paper.      If the duck is the whole,  then the beak is a part of the whole. | | **Several objects as one whole group**  **Pictorial**  The object is a picture on the board or on a piece of paper.      If 8 oranges are the whole,  then two oranges are a part of the whole. | | **Number in a range of contexts**  **Abstract**  The parts and wholes are represented by numbers and measures.      If 30 is the whole,  then 20 is a part of the whole. |
| $~(0UA`I0Y`%6STG%IE`S2Y)$L8KW3G}5M{L3R@JSQ51)Y**Reasoning**  Who is correct?  **Explain how you know** | | | | | | | | |
| **Y1 NC Objective:** **To be able to recognise, find and name a half as one of two equal parts of an object, shape or quantity**  Small steps:   * Making halves of an object or shape * Making halves of a quantity | | | | | | | **Previous year group objective/s (FS):**   * Help children understand one thing can be shared by a number of pieces e.g. pizza. * Separate as a group of 3 or 4 objects in different ways and recognise that the total is the same | | |
| **Next year group objective/s (Y2)**:   * Recognise, find, name and write fractions 1/3, ¼, 2/4, ¾ of a shape/length/objects * Write simple fractions for example ½ of 6 = 3 | | |
| **Sentence stems** | **Key vocabulary** | | **Conclusion/Rule** | | **What it’s not/possible misconceptions** | | **Representations (CPA)** | | |
| My object is split into \_\_\_\_\_ equal parts.  I know that \_\_\_\_ equal parts make 1 whole.  I know \_\_\_\_\_ is a half because \_\_\_\_\_\_\_\_\_  I have \_\_\_\_\_ equal parts when an *object* is split in half | * Fraction * ½ * Count * Shade * Represent * Find * Half * Whole * Complete * share * Shape * Equal * Non equal * Parts * Split * Object * Quantity * Amount * Total | | When a shape is split into two equal parts one part is a ½.  Two halves are the same as one whole. | | When a shape is split into two unequal parts it is not a half.  When a quantity is shared into two equal parts one part is a half.  It doesn’t matter how a shape is split as long as both parts are equal (horizontal, vertical, diagonal split). | |  | | |

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| **Y1 NC Objective:** **To be able to recognise, find and name a quarter as one of four equal parts of an object, shape or quantity**  Small steps:   * Making quarters of an object or a shape * Making quarters of a quantity * Recognising halves and quarters as equal parts of the whole | | | | **Previous year group objective/s (FS):**   * Help children understand one thing can be shared by a number of pieces e.g. pizza. * Separate as a group of 3 or 4 objects in different ways and recognise that the total is the same |
| **Next year group objective/s (Y2)**:   * Recognise, find, name and write fractions 1/3, ¼, 2/4, ¾ of a shape/length/objects * Write simple fractions for example ½ of 6 = 3 |
| **Sentence stems** | **Key vocabulary** | **Conclusion/Rule** | **What it’s not/possible misconceptions** | **Representations (CPA)** |
| My whole has \_\_\_ equal parts  I can see \_\_\_\_\_ equal parts  I can count \_\_\_\_\_ equal parts  There are \_\_\_\_ cakes. There is \_\_\_\_ cake in each quarter, a quarter of ­­\_\_\_\_ is \_\_\_\_\_ | * Fraction * ½, ¼ * Count * Shade * Represent * Find * Half, quarter * Whole * Complete * Shape * Equal parts * Split * Object * Quantity * Amount * Total * Square * Circular * Rectangular * A quarter full * Same * Different | When a shape/object is split into four equal parts one part is a ¼  When an amount is shared into four equal parts one part is a ¼  Four quarters are equal to one whole.  I know when finding a quarter full I split the container into 4 equal parts. | When a shape is split into four unequal parts it is not a quarter  When a quantity is shared into four equal parts one part is a quarter.  It doesn’t matter how a shape is split as long as all parts are equal (horizontal, vertical, diagonal split). |  |

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| **Y2 NC Objective:** **Recognise, find, name and write fractions 1/3,1/4, 2/4 and 3/4 of a shape.**  Small steps:   * Investigate and understand that fractions are equal parts of a whole. * Investigating and recognising 1/2 and 1/4 as parts of a whole. * Recognising and counting quarters up to 1 whole. Introduce the meaning of numerator and denominator. * Identifying the numerator and denominator in different pictures of fractions (including 1/2, 2/2, 1/3, 2/3, 3/3, 1/4, 2/4, 3/4, 4/4). * Finding the complements to make 1 whole e.g. 1/3 plus another 2/3 makes a whole. | | | | **Previous year group objective/s (Y1):**   * Recognise, find and name a half as one of two equal parts of a shape * Recognise, find and name a quarter as one of four equal parts of shape. |
| **Next year group objective/s (Y3)**:   * Recognise, find, name and write fractions 1/3,1/4, 2/4 and 3/4 of a set of objects or quantity. |
| **Sentence stems** | **Key vocabulary** | **Conclusion/Rule** | **What it’s not/possible misconceptions** | **Representations (CPA)** |
| If \_\_\_\_\_\_\_\_ is the whole. \_\_\_\_\_\_\_\_ is part of the whole.  There are \_\_\_\_ halves in one whole.  There are \_\_\_\_ thirds in one whole.  There are \_\_\_\_ quarters in one whole. | * Part / Whole * ½ * ¼ * Equal parts * Unequal parts * Fraction * Fraction bar * Half * Quarter * Third * Two quarters * Three quarters * Numerator * Denominator * Part, part, whole * Square * Rectangle * Circle * Triangle | A whole can be divided into many equal parts. Many parts can make one whole.  When we split a whole into two equal parts, one part is a half.  When we split a whole into three equal parts, one part is a third.  When we split a whole into four equal parts, one part is a quarter.  The denominator is how many parts the whole is equally divided into.  The numerator is how many parts of the whole are shaded in/I have. | A shape split into unequal parts to represent the fraction. |  |

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| **Y2 NC Objective:** **Recognise, find, name and write fractions 1/3,1/4, 2/4 and 3/4 of a set of objects or quantity**  Small steps:   * Investigate and understand that fractions are equal parts of a whole. * Investigating and recognising 1/2 and 1/4 as parts of a whole. * Recognising and counting quarters up to 1 whole. Introduce the meaning of numerator and denominator. * Identifying the numerator and denominator in different pictures of fractions (including 1/2, 2/2, 1/3, 2/3, 3/3, 1/4, 2/4, 3/4, 4/4). * Finding the complements to make 1 whole e.g. 1/3 plus another 2/3 makes a whole. | | | | **Previous year group objectives (Y1):**   * Recognise, find and name a half as one of two equal partsof a quantity or set of objects. * Recognise, find and name a quarter as one of four equal parts of a quantity or set of objects. |
| **Next year group objective/s (Y3)**:   * Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators. |
| **Sentence stems** | **Key vocabulary** | **Conclusion/Rule** | **What it’s not/possible misconceptions** | **Representations (CPA)** |
| If \_\_\_\_\_\_\_\_ is the whole. \_\_\_\_\_\_\_\_ is part of the whole.  There are \_\_\_\_ halves in one whole.  There are \_\_\_\_ thirds in one whole.  There are \_\_\_\_ quarters in one whole. | * Part / Whole * ½ * ¼ * Equal parts * Unequal parts * Fraction * Fraction bar * Half * Quarter * Third * Two quarters * Three quarters * Numerator * Denominator * Part, part, whole * Quantity * Set * Objects * Items | A whole can be made up of many equal parts (display set of objects/map of the world etc). Many parts can make one whole.  When we split a whole into two equal parts, one part is a half.  When we split a whole into three equal parts, one part is a third.  When we split a whole into four equal parts, one part is a quarter.  The denominator is how many parts the whole is made up of (show set of objects)  The numerator is how many parts of the whole I have (take some of the objects). | A set of objects/quantity split into unequal parts to represent the fraction. |  |

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| **Y2 NC Objective:** **Recognise, find, name and write fractions 1/3,1/4, 2/4 and 3/4 of a length.**  Small steps:   * Investigate and understand that fractions are equal parts of a whole. * Investigating and recognising 1/2 and 1/4 as parts of a whole. * Recognising and counting quarters up to 1 whole. Introduce the meaning of numerator and denominator. * Identifying the numerator and denominator in different pictures of fractions (including 1/2, 2/2, 1/3, 2/3, 3/3, 1/4, 2/4, 3/4, 4/4). * Finding the complements to make 1 whole e.g. 1/3 plus another 2/3 makes a whole. | | | | **Previous year group objective/s (Y1):**   * Recognise, find and name a half as one of two equal parts of a length * Recognise, find and name a quarter as one of four equal parts of a length |
| **Next year group objective/s (Y3)**:   * Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators. |
| **Sentence stems** | **Key vocabulary** | **Conclusion/Rule** | **What it’s not/possible misconceptions** | **Representations (CPA)** |
| If \_\_\_\_\_\_\_\_ is the whole. \_\_\_\_\_\_\_\_ is part of the whole.  There are \_\_\_\_ halves in one whole.  There are \_\_\_\_ thirds in one whole.  There are \_\_\_\_ quarters in one whole. | * Part / Whole * ½ ¼ * Equal parts * Unequal parts * Fraction * Fraction bar * Half * Quarter * Third * Two quarters * Three quarters * Numerator * Denominator * Part, part, whole * Length * Ribbon * Centimetres * Millimetres * Piece | A whole can be divided into many equal parts. Many parts can make one whole.  When we split a whole into two equal parts, one part is a half.  When we split a whole into three equal parts, one part is a third.  When we split a whole into four equal parts, one part is a quarter.  The denominator is how many parts the whole is equally divided into.  The numerator is how many parts of the whole are shaded in/I have. | A length split into unequal parts to represent the fraction. |  |

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| **Y2 NC Objective:** **Recognise the equivalence of 2/4 and 1/2.**  Small steps:   * Recognising and equivalence of 2/2, 3/3 and 4/4. * Recognising and investigating the equivalence of 1/2 and 2/4. | | | | **Previous year group objective/s (Y1):**   * Recognise, find and name a half as one of two equal parts of an object, shape or quantity. |
| **Next year group objective/s (Y3)**:   * Recognise and show, using diagrams, equivalent fractions with small denominators. |
| **Sentence stems** | **Key vocabulary** | **Conclusion/Rule** | **What it’s not/possible misconceptions** | **Representations (CPA)** |
| There are \_\_\_\_ halves in one whole.  There are \_\_\_\_\_ quarters in one whole.  There are \_\_\_\_\_ quarters in one half.  \_\_\_\_ halves make one whole.  \_\_\_\_\_\_ quarters make one whole.  \_\_\_\_\_\_ quarters make one half. | * Part * Whole * ½ * ¼ * 2/4 * Equal parts * Unequal parts * Fraction * Fraction bar * Half * Quarter * Two quarters * Numerator * Denominator * Part, part, whole * Equal * Equivalent * Equivalence | A whole can be divided into many equal parts. Many parts can make one whole.  When we split a whole into two equal parts, one part is a half.  When we split a whole into four equal parts, one part is a quarter.  When we split a whole into four equal parts, two parts are the same as a half.  The denominator is how many parts the whole is equally divided into.  The numerator is how many parts of the whole are shaded in/I have. | A shape split into unequal parts to represent the fraction of ½ and 2/4.  A set of objects/quantity split into unequal parts to represent the fraction of ½ and 2/4. |  |

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| **Y2 NC Objective:** **Write simple fractions for example 1/2 of 6 = 3.**  Small steps:   * Comparing the value of fractions with the same denominator but different numerators. * Comparing and ordering fractions with different denominators using images. * Counting in halves/quarters/thirds over the value of 1 (counting wholes and parts). * Finding half/third/quarter of a quantity. * Sharing 1 whole between 2, 3 or 4 then moving on to sharing multiple objects to represent "the whole," between 2, 3 or 4. | | | | **Previous year group objective/s (Y1):**   * Recognise, find and name a half as one of two equal parts of an object, shape or quantity. |
| **Next year group objective/s (Y3)**: |
| **Sentence stems** | **Key vocabulary** | **Conclusion/Rule** | **What it’s not/possible misconceptions** | **Representations (CPA)** |
| If \_\_\_\_\_\_\_\_ is the whole. \_\_\_\_\_\_\_\_ is part of the whole.  There are \_\_\_\_ halves in one whole.  There are \_\_\_\_ thirds in one whole.  There are \_\_\_\_ quarters in one whole.  When the numerator and denominator are the \_\_\_\_\_\_\_\_\_\_, the fraction represents one whole. | * Part * Whole * ½ * ¼ * Equal parts * Unequal parts * Fraction * Fraction bar * Half * Quarter * Third * Three quarters * Numerator * Denominator * Part, whole * Quantity * Amount * Objects | When we split a whole into two equal parts, one part is a half.  When we split a whole into three equal parts, one part is a third.  When we split a whole into four equal parts, one part is a quarter.  The denominator is how many parts the whole is equally divided into.  The numerator is how many parts of the whole are shaded in.  Unit fractions always have a numerator of 1.  Non-unit fractions have a numerator worth more than 1.  When the numerator and denominator are the same number, the fraction represents one whole. | Children do not recognise when counting in fractions 2/2, 3/3, 4/4 can also be said as ‘one whole’.  When finding ½, 1/3, ¼ children do not recognise each group needs to be made of equal parts. |  |

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| **Y3 NC Objective:** **Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators. (WRMH Spring Block 5 2018)**  Small steps:   * Investigating different parts and wholes. * Fractions as equal parts of a whole. * Recognising and writing unit fractions using the fraction bar. * Recognising and writing non-unit fractions using the fraction bar. | | | | **Previous year group objective/s (Y2):**   * Recognise, find, name and write fractions (1/3, ¼, 2/4) and ¾ of a length, shape, set of objects or quantity. |
| **Next year group objective/s (Y4)**:   * Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number. |
| **Sentence stems** | **Key vocabulary** | **Conclusion/Rule** | **What it’s not/possible misconceptions** | **Representations (CPA)** |
| If \_\_\_\_\_ is the whole, then \_\_\_\_\_ is part of the whole.  There are \_\_\_\_ equal parts.  The fraction shown is \_\_\_\_\_\_\_\_\_\_. | Whole  Part  Numerator  Denominator  Fraction bar  Fraction  Representation  Equal  Half  Third  Quarter  Fifth  Unit fraction  Non-unit fraction | A whole can be divided into many parts.  Many parts can make a whole.  When we have a fraction the parts are equal sizes. | Thinking that just splitting into 2 parts makes 1/2 ; the parts MUST be the same size.  Halves can be different sizes IF the wholes are different sizes (Eg. Half of a large cake would look different to half of a small biscuit but they would both be one half.) |  |

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| **Y3 NC Objective:** **Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators. (WRMH Spring Block 5 2018)**  Small steps:   * Find 1/2, 1/4 and 1/3 of objects. * Find 1/2, 1/4 and 1/3 of amounts. * Finding non unit fractions of amounts. (2/4, 3/4, 2/3) * Compare the relative size of non-unit fractions. * Compare the relative size of non-unit fractions of amounts * Begin to understand that the fraction line represents division. | | | | **Previous year group objective/s (Y2):**   * Recognise, find, name and write fractions (1/3, ¼, 2/4) and ¾ of a length, shape, set of objects or quantity. * Write simple fractions for example, ½ of 6 = 3 |
| **Next year group objective/s (Y4)**:   * Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number. |
| **Sentence stems** | **Key vocabulary** | **Conclusion/Rule** | **What it’s not/possible misconceptions** | **Representations (CPA)** |
| The whole is \_\_\_\_\_.  There are \_\_\_\_\_ equal parts in the whole.  We are finding \_\_ equal parts of the whole. | Whole  Part  Numerator  Denominator  Fraction bar  Fraction  Representation  Equal  Half  Third  Quarter  Fifth  Sixth  Unit fraction  Non-unit fraction | The denominator tells us how many equal parts a whole has been split into  The numerator tells us how many equal parts of the whole there are.  The parts must be equal. | A shape split into unequal parts is not a fraction.  A set of objects/quantity split into unequal parts will not represent a fraction. |  |

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| **Y3 NC Objective:** **Recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10. (WRMH Spring Block 5 2018)**  **Small steps:**   * Identify and find 1/10 of an object by dividing it into 10 equal parts. * Identify non unit fraction tenths of objects. * Identify non unit fraction tenths of amounts. * Find the complement of tenths to make | | | | **Previous year group objective/s (Y2):**   * Recognise, find, name and write fractions (1/3, ¼, 2/4) and ¾ of a length, shape, set of objects or quantity. * Write simple fractions for example, ½ of 6 = 3 |
| **Next year group objective/s (Y4)**:   * Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. |
| **Sentence stems** | **Key vocabulary** | **Conclusion/Rule** | **What it’s not/possible misconceptions** | **Representations (CPA)** |
| There are \_\_ equal parts in the whole.  \_\_\_\_ equal parts are shaded. | Whole  Part  Numerator  Denominator  Fraction bar  Fraction  Representation  Equal  Divide  Tenth | When one is divided into ten equal parts, each part is a tenth. | It doesn’t matter how the parts are shaded.  It doesn’t matter if is it is a column or row on the 100 square.  If the 10 parts are not equal, then each part is not a tenth. |  |

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| **Y3 NC Objective:** **Count up and down in tenths. WRMH Spring Block 5 2018)**  Small steps:   * Count up in tenths * Count back in tenths | | | | **Previous year group objective/s (Y2):**   * NEW LEARNING |
| **Next year group objective/s (Y4)**:   * Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. |
| **Sentence stems** | **Key vocabulary** | **Conclusion/Rule** | **What it’s not/possible misconceptions** | **Representations (CPA)** |
| 1/10, 2/10, 3/10 …  The next tenth is \_\_\_\_.  The tenth before \_\_\_\_ is \_\_\_\_.  There are \_\_\_\_ tenths in one whole. | Whole  Part  Numerator  Denominator  Fraction bar  Fraction  Representation  Equal  Tenth  Forwards  backwards | When we count in tenths, the denominator is always 10.  When we count forwards /backwards in tenths, the numerator increases/ decreased by 1 each time. | When counting on, children might change the denominator Eg the might say 9 tenths, 10 tenths, 11 elevenths, 12 twelfth etc  Children might not recognise when counting in fractions that 10/10 can also be said as ‘one whole’. | Image result for circle in tenths Related image |

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| **Y3 NC Objective:** **Recognise and show, using diagrams, equivalent fractions with small denominators. (WRMH Summer Block 1 2018)**  Small steps:   * Using diagrams to show equivalence * Finding equivalent fractions | | | | **Previous year group objective/s (Y2):**   * Recognise the equivalence of 2/4 and ½. |
| **Next year group objective/s (Y4)**:   * Recognise and show, using diagrams, families of common equivalent fractions. |
| **Sentence stems** | **Key vocabulary** | **Conclusion/Rule** | **What it’s not/possible misconceptions** | **Representations (CPA)** |
| \_\_\_\_\_ is the same as/equal to/equivalent to \_\_\_\_\_\_\_.  \_\_\_\_ is equivalent to \_\_\_\_ because …  There are \_\_\_halves in 1 whole.  There are \_\_\_\_ thirds/ quarters / fifths / sixths / tenths in one whole. | Whole  Part  Numerator  Denominator  Fraction bar  Fraction  Representation  Equal  Half  Third  Quarter  Fifth  Sixth  Tenth  Equivalent to  The same as  Pattern | When fractions are equivalent, the denominators are in the same times table. | The numerators are the same so the fraction must be equivalent.  You can add the numerator and denominator to find equivalent fractions.  Children might not realise that we can say 3/3 or 2/2 or 4/4 is the same as one whole. |  |

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| **Y3 NC Objective:** **Add and subtract fractions with the same denominator within one whole. (WRMH Summer Block 1 2018)**  Small steps:   * Understanding adding fractions * Applying understanding of adding fractions * Understanding subtracting fractions * Applying understanding of subtracting fractions * Real life scenarios with addition and subtraction of fractions | | | | **Previous year group objective/s (Y2):**   * NEW LEARNING |
| **Next year group objective/s (Y4)**:   * Add and subtract fractions with the same denominator. |
| **Sentence stems** | **Key vocabulary** | **Conclusion/Rule** | **What it’s not/possible misconceptions** | **Representations (CPA)** |
| The whole is split into \_\_\_equal parts.  I have added/subtracted \_\_\_ equal parts. I have \_\_\_\_ equal parts in total. | Whole  Part  Numerator  Denominator  Fraction bar  Fraction  Representation  Equal  Half  Third  Quarter  Fifth  Sixth  Tenth  Equivalent to  The same as  Pattern  Add  Subtract | When we add/ subtract fractions with the same denominator, the denominator stays the same and the numerators are added/ subtracted.  The denominators must be the same if we want to add or subtract fractions. | Adding and subtracting both the numerator and denominators.  Trying to add/subtract fractions with different denominators. |  |

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| **Y3 NC Objective:** **Compare and order unit fractions, and fractions with the same denominators. (WRMH Summer Block 1 2018)**  Small steps:   * Understanding fractions (parts and wholes) * Comparing and ordering unit fractions * Applying understanding of unit fractions * Comparing proper fractions with the same denominators | | | | **Previous year group objective/s (Y2):**   * Recognise, find, name and write fractions (1/3, ¼, 2/4) * Write simple fractions for example, ½ of 6 = 3 |
| **Next year group objective/s (Y4)**:   * Recognise and show, using diagrams, families of common equivalent fractions. |
| **Sentence stems** | **Key vocabulary** | **Conclusion/Rule** | **What it’s not/possible misconceptions** | **Representations (CPA)** |
| The whole has been divided into \_\_\_ equal parts.  \_\_\_\_ is greater/less than \_\_\_\_\_\_.  The whole has been split into more/less equal parts so that means each fraction is smaller/larger. | Whole  Part  Numerator  Denominator  Fraction bar  Fraction  Representation  Equal  Half Third  Quarter Fifth  Sixth Tenth  Equivalent to  The same as  Pattern  Order  Compare  Greater/less than  Bigger/smaller | We can only compare/order fractions when the denominators are the same.  The bigger the denominator, the smaller the part of the whole. | Trying to compare and order fractions based on the size of the whole rather that the fraction of the whole.  Thinking that ¼ is bigger than ½ because it has 4 parts and 4 is greater than 2. |  |

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| **Y4 NC Objective:** **Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten (WRMH Spring Block 4 2018)**  Small steps:   * To understand what 1/100 (and then non unit hundredths) of an object are. * To understand what 1/100 (and then non unit hundredths) of a quantity are. * To count up and down in hundredths and complete and create sequences of hundredths. | | | | **Previous year group objective/s (Y3):**   * Recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10. |
| **Next year group objective/s (Y5)**:   * Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents. |
| **Sentence stems** | **Key vocabulary** | **Conclusion/Rule** | **What it’s not/possible misconceptions** | **Representations (CPA)** |
| **Hundreds square/grid representation**  \_\_\_\_\_\_\_\_ row on the 100 square is shaded. The fraction is \_\_\_\_\_\_\_\_\_\_.  **General**  \_\_\_\_\_\_\_\_ equal parts are shaded. The fraction is \_\_\_\_\_\_\_\_\_\_. | * Row * Square * Tenth * Hundredth * Hundred square * Fraction * Representation * Equal * Whole part * Part, part whole * Numerator * Denominator | When one is divided into ten equal parts each part is a tenth.  When one tenth is divided into ten equal parts each part is one hundredth.  One tenth is larger than one hundredth/One hundredth is smaller than one tenth. | It doesn’t matter how they are shaded.  It doesn’t matter is it is a column or row on the 100 square.  Tenths are smaller than hundredths because 10 is smaller than 100. |  |

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| **Y4 NC Objective:** **Recognise and show, using diagrams, families of common equivalent fractions. (WRMH Spring Block 4 2018)**  Small steps:   * investigate and understand the concept of equivalent fractions (supported by a fraction wall). * investigate equality and inequality statements using fractions of different denominators. * find equivalent fractions of a given fraction. * To find equivalent fractions of a "string" of fractions with missing numerators or denominators. * To prove whether certain fractions are equal to others. * consider how fractions could be simplified by applying understanding of equivalence. | | | | **Previous year group objective/s (Y3):**   * Explain the difference between a unit and non- unit fraction and know the unit fraction represented. |
| **Next year group objective/s (Y5)**:   * Identify, name and write equivalent fractions of a given fraction, represented visually including tenths and hundredths. |
| **Sentence stems** | **Key vocabulary** | **Conclusion/Rule** | **What it’s not/possible misconceptions** | **Representations (CPA)** |
| \_\_\_\_ is the same as/ equal to/ equivalent to \_\_\_.  \_\_\_ is equivalent to \_\_ because the \_\_\_ are the same.  Whatever you do to the \_\_\_ you do to the \_\_\_  There are \_halves in 1 whole. There are \_ quarters in 1 whole. There are \_\_\_ eighths in 1 whole. | * Fraction * Representation * Equivalent * Equivalence * Fraction wall * Diagram * Numerator * Denominator * Unit fraction * Non-unit fraction * Equal * Simplified * Multiply * Pattern * Relationship * Compare | When you multiply the numerator by a number you must multiply the denominator by the same the number.  When you divide the numerator by a number you must divide the denominator by the same the number. | The numerators are the same so the fraction must be equivalent  You can add to the numerator and denominator to find equivalent fractions. |  |

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| **Y4 NC Objective:** **Add and subtract fractions with the same denominator (WRMH Spring Block 4 2018)**  Small steps:   * Add fractions with the same denominator * Subtract fractions with the same denominator * Prove why denominators need to be equal to add or subtract | | | | **Previous year group objective/s (Y3):**   * Children begin counting up and down in fractions to make a link with the whole. |
| **Next year group objective/s (Y5)**:   * Add and subtract fractions with the same denominator and denominators that are multiples of the same number. |
| **Sentence stems** | **Key vocabulary** | **Conclusion/Rule** | **What it’s not/possible misconceptions** | **Representations (CPA)** |
| The whole is split into \_\_\_equal parts. I have added/subtracted \_\_\_ equal parts. I have \_\_\_\_ equal parts in total. | * Fraction * Representation * Add * Subtract * Improper fraction * mixed number * Numerator * Denominator * Bar model * Number line * Finding the difference * Whole number * converting | We add the numerators together and the denominators stay the same.  When we subtract fractions with the same denominator, the denominator stays the same and the numerators are subtracted. | Adding and subtracting both the numerator and denominators  Trying to subtract from whole number/mixed number without converting to improper fraction |  |

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| **Y4 NC Objective:** **Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number (WRMH Spring Block 4 2018)**  Small steps:   * To draw unit and non-unit fractions of objects * To calculate unit fractions of amounts * To calculate non-unit fractions of amounts * To compare the relative size of different fractions of amounts in real life contexts. | | | | **Previous year group objective/s (Y3):**   * Recognise, find and write fractions of a discrete set of objects: unit fractions and non- unit fractions with small denominators. |
| **Next year group objective/s (Y5)**:   * Link their understanding of fractions of amounts and multiplying fractions to use fractions as operators. |
| **Sentence stems** | **Key vocabulary** | **Conclusion/Rule** | **What it’s not/possible misconceptions** | **Representations (CPA)** |
| \_\_\_ is the whole  The whole is split into \_\_\_  The fraction of the whole we are finding is \_\_\_\_  If I know \_\_\_ how can I find \_\_\_ of a number | * Fraction * Unit fraction * Non-unit fraction * Whole number * Numerator * Denominator * Bar model * Representation * Equal parts * Amount * Proper fraction * Calculate * Compare * Multiply * Divide | The denominator tells us how many equal parts a whole has been split into.  The numerator tells us how many equal parts of the whole there are.  To find a unit fraction of a quantity divide the amount by the denominator  To find a non- unit fraction of a quantity divide the amount by the denominator and multiply by the numerator. | Not understanding that one third is the same as dividing by 3.  ¾ of 12 is 4 because its quarters. |  |

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| **Y5 NC Objective:** **To identify, name and write equivalent fractions of a given fraction, represented visually including tenths and hundredths.**  Small steps:   * Recognising equivalent fractions using a fraction wall. * Calculating equivalent fractions * Reasoning about equivalent fractions. | | | | **Previous year group objective/s (Y4):**   * Recognise and show, using diagrams, families of common equivalent fractions. |
| **Next year group objective/s (Y6)**:   * Use common factors to simplify fractions; use common multiples to express fractions in the same denomination. |
| **Sentence stems** | **Key vocabulary** | **Conclusion/Rule** | **What it’s not/ possible misconceptions** | **Representations (CPA)** |
| The whole is divided into \_\_\_\_ equal parts, I have/ shaded \_\_\_\_ parts of the whole.  I noticed that…  I have been given both denominators, the relationship between them is\_\_\_\_\_\_\_.  I have been given both numerators, the relationship between them is\_\_\_\_\_\_\_. | * Numerator * Denominator * Fraction bar * Relationship * Multiple * Multiply by * Times * Multiplication * Division * Divide * Inverse * Equal * Equivalent * Part/whole | **Recognising**  When the denominator is \_\_\_\_\_ times the numerator you have the equivalent of \_\_\_\_\_\_.  **Calculating**  If you multiply the denominator by \_\_\_, multiply the numerator by \_\_\_\_\_.  If you divide the denominator by \_\_\_, divide the numerator by \_\_\_\_\_. | Pupils using an unknown (numerator or denominator) as their starting point. Pupils need to work towards the unknown.  Pupils not recognising the inverse. | I need to shade 4 squares out of 12 to have the equivalent of one third. |

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| **Y5 NC Objective:** **To compare and order fractions whose denominators are multiples of the same number.**  Small steps:   * Ordering fractions with similar denominators. * Finding common multiples and the lowest common multiple. * Ordering fractions whose denominators are multiples of the same number * Application of understanding of ordering fractions. | | | | **Previous year group objective/s (Y4):**   * Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number. |
| **Next year group objective/s (Y6)**:   * Compare and order fractions, including fractions > 1 |
| **Sentence stems** | **Key vocabulary** | **Conclusion/Rule** | **What it’s not/ possible misconceptions** | **Representations (CPA)** |
| The whole has been divided into \_\_\_ equal parts.  The wholes have / have not been divided into the same number of equal parts.  Find an equivalent fraction by… | * Numerator * Denominator * Fraction bar * Division * Divide * Equal * Equivalent * Part/whole * Greater than * Less than * Equal/equivalent * Equal parts * Compare * Order * Largest/smallest * Ascending/ descending | We can only compare/order fractions when the denominators are the same.  Make the denominators the same.  Find an equivalent fraction for the fraction (s) with the smallest denominator.  When the denominators are the same, the bigger the numerator the bigger the fraction. | Trying to compare/ order fractions when the denominators are still different and therefore comparing by the numerators.  Trying to find an equivalent fraction by dividing the fraction with the largest denominator and therefore not being able to divide the numerator.  The whole not being the same size for concrete or pictorial representations. | **Comparing**      **Ordering** |

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| **Y5 NC Objective:** **Add and subtract fractions with the same denominator and that are multiples of the same number.**  Small steps:   * Add fractions with the same denominator expressing answers as improper fractions * Subtract fractions with the same denominator expressing answers as improper fractions. * Add fractions with denominators which are multiples of the same number expressing answers as improper fractions. * Subtract fractions with denominators which are multiplies of the same number expressing answers as improper fractions. * Application of understanding of adding and subtracting fractions. | | | | **Previous year group objective/s (Y4):**   * Adding fractions with the same denominator |
| **Next year group objective/s (Y6)**:   * Add and subtract fractions with different denominations and mixed numbers, using the concept of equivalent fractions. |
| **Sentence stems** | **Key vocabulary** | **Conclusion/Rule** | **What it’s not/possible misconceptions** | **Representations (CPA)** |
| If the whole has been divided into 5 equal parts, the unit of measure is fifths.  If the whole has been divided into \_\_\_\_ equal parts, the unit of measure is \_\_\_\_\_\_\_. | * Numerator * Denominator * Fraction bar * Part/whole * Equal parts * Addition * Subtraction * Unit of measure * Equivalent fraction * Multiply * Divide | **Same denominators**  Keep the denominator the same, add the numerators.  Keep the denominator the same, subtract the numerators.  **Different denominators**  Make the denominators the same.  Keep the denominator the same, add the numerators.  Make the denominators the same.  Keep the denominator the same, subtract the numerators. | Adding/ subtracting the denominators.  Not understanding that the denominator is the unit of measure. The unit of measure must be the same in order to add/ subtract them. | **Same denominators**      **Different denominators** |

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| **Y5 NC Objective:** **Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements >1 as a mixed number.**  Small steps:   * Recognise using diagrams how improper fractions can be expressed as a mixed number * Convert improper fractions to mixed numbers * Convert mixed numbers to improper fractions. | | | | **Previous year group objective/s (Y4):**   * Add and subtract fractions with the same denominator. (When the answer becomes more than 1 whole.) |
| **Next year group objective/s (Y6)**:   * Multiply simple pairs of proper fractions, writing the answer in its simplest form |
| **Sentence stems** | **Key vocabulary** | **Conclusion/Rule** | **What it’s not/possible misconceptions** | **Representations (CPA)** |
| **Mixed number**  I have \_\_\_\_\_ wholes.  Each whole has been divided into \_\_\_\_ equal parts.  I have \_\_\_ equal additional parts.  **Improper Fractions**  Each whole has been divided into \_\_\_\_ equal parts.  I have \_\_\_ equal parts in total.  The \_\_\_\_\_ represents \_\_\_\_\_\_. | * Numerator * Denominator * Fraction bar * Parts * Whole(s) * Equal parts * Mixed Number * Improper Fraction * Multiply * Lots of * Times * Product * Divide * Groups of * Remainder * Recognise * Convert | **Mixed number**  A mixed number is a mixture of a whole number and a fraction.  **Improper Fractions**  When you have more than one whole, an improper fraction is how many parts you have.  **Converting mixed numbers into improper fractions.**  Multiply the whole number by the denominator. Add the numerator.  **Converting improper fractions into mixed numbers.**  Divide the numerator by the denominator. Write the remainder as a fraction. | This is incorrect    Not recognising that another whole can be made when working with concrete or pictoral representations. These pupils do not have a clear understanding of whateach digit represent (wholes and parts). | **Recognising and understanding mixed numbers**    **Converting mixed numbers to improper fractions**    **Converting improper fractions into mixed numbers** |

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| **Y5 NC Objective:** **To be able to multiply proper fractions and mixed numbers by whole numbers supported by materials and diagrams.**  Small steps:   * Multiply unit fractions by one digit numbers using diagrams and recognising multiplication as repeated addition. * Multiply non unit fractions by one digit numbers using diagrams and recognising multiplication as repeated addition. * Multiply mixed numbers by whole numbers. * Application of understanding of multiplying fractions and mixed numbers by whole numbers. | | | | **Previous year group objective/s (Y4):**   * Adding fractions with the same denominator |
| **Next year group objective/s (Y6)**:   * Multiply simple pairs of proper fractions, writing the answer in its simplest form |
| **Sentence stems** | **Key vocabulary** | **Conclusion/Rule** | **What it’s not/possible misconceptions** | **Representations (CPA)** |
| I have ***one-quarter,*** ***three*** times. This makes \_\_\_\_\_\_\_\_\_  I have ***three*** lots of ***one-quarter***. This is the same as \_\_\_\_\_\_\_\_\_\_.  What does the \_\_\_\_ in \_\_\_\_\_\_\_represent? | * Numerator * Denominator * Multiplication * Lots of * Multiply by * Times * Product * Repeated addition * Bar model * Fraction bar * Integer * Number * Digit * Figure * Mixed number * Whole number | When multiplying a fraction by a whole number, write the calculation as repeated addition.  When multiplying a mixed number by a whole number, write the calculation as repeated addition. Add the whole. Add the fractions. |  | **Multiplying proper fractions by whole numbers**.    **Multiplying mixed numbers by whole numbers**. |

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| **Y5 NC Objective:** **Read and write decimal numbers as fractions.**  Small steps:   * Understand the relationship between tenths, hundredths and thousandths and their decimal equivalent. | | | | **Previous year group objective/s (Y4):**   * Recognise and write decimal equivalents to 1/4, 1/2, 3/4. Decimal block objective) |
| **Next year group objective/s (Y6)**:   * Associate a fraction with division and calculate decimal fraction equivalents for a simple fraction * **Year 6:** Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. |
| **Sentence stems** | **Key vocabulary** | **Conclusion/Rule** | **What it’s not/possible misconceptions** | **Representations (CPA)** |
| One whole has been divided into \_\_\_ equal parts. I have/ shaded \_\_\_ parts of the whole.  What does \_ represent?  The whole has / has not been divided by a power of 10. | * Numerator * Denominator * Relationship * Convert * Fraction * Decimal * Whole * Divided * Equal parts * Tenths * Hundredths * Thousandths * Power of 10 * Equivalent fraction * Equivalent / equal to * Multiply * Divide | Make the denominator a power of 10.  Useful previous conclusions:  **Fraction:** A whole is divided into equal parts.  **Decimals:** A whole is divided into equal parts. It will always be divided by a power of 10.  **Equivalent fractions:**  If you *multiply/ divide* the denominator by \_\_\_, *multiply/ divide* the numerator by \_\_\_\_\_. | Pupils may write 62 as  100  0.062.    This misunderstanding arises when pupils have not understood the equivalence between 1 tenth and 10 hundredths.  Pupils may try to write fractions as a decimal without ensuring that their denominator is firstly a power of 10.  Pupils may not choose an appropriate power of 10 to convert to e.g. if they try to make 31/50 into tenths, the numerator would not be able to be divided. |  |

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| **Y5 NC Objective:** **Solve problems involving multiplication and division including scaling by simple fractions and problems involving simple rates.** Please note: This objective appears in the fraction block in ‘White Rose Maths’ and ‘Maths Hub’ materials but is categorised in the ‘number: multiplication and division’ section of the national curriculum.  Small steps:   * Solve division problems where the remainder is expressed as a fraction. * Scaling by simple fractions | | | | **Previous year group objective/s (Y4):**   * Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number. |
| **Next year group objective/s (Y6)**:   * To be able to **associate a fraction with division** and calculate decimal fraction equivalents for a simple fraction. |
| **Sentence stems** | **Key vocabulary** | **Conclusion/Rule** | **What it’s not/possible misconceptions** | **Representations (CPA)** |
| The whole is \_\_\_\_.  The whole has been divided into \_\_\_ equal parts.  Each part is worth \_\_\_.  I have/ shaded \_\_\_ parts of the whole. | * Whole * Value * Divided * Divided by * Divided into * Equal parts * Division * Multiplication * Times more * Times larger * Times smaller * Numerator * Denominator * Fraction Bar * Improper Fraction * Repeated Addition | **Fractions of amounts**  The denominator is how many parts the whole is divided into.  The numerator is how many parts we shade/ have/ take.  **Scaling down**  Divide the whole number by the denominator.  Multiply one part by the numerator.  **Scaling up (if a mixed number)**  When multiplying a mixed number by a whole number, write the calculation as repeated addition. Add the whole. Add the fractions. | Pupils may not define the whole accurately.  Pupils may not make accurate links between fractions and division/ multiplication. | **Fractions of amounts**  **Scaling by simple fractions**  The following recipe makes enough fruit salad for **12 people**.  Scaling down question examples:  Sam adapts this recipie to make fruit salad for **4 people**.  How many bluberries should he use?  Pupils are required to calculate 1/3 of 24 or  Pupils associate fractions with division and calculate 24 ÷3.  Scaling up question example:  Sam adapts this recipie to make fruit salad for **18 people**.  How many banannas should he use?  Pupils are required to calculate 1 ½ x 4. |

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| **Y6 NC Objective:** **To generate and describe linear number sequences (with fractions).**  Small steps:   * Understand what a fraction is. * Use double number lines to examine counting in fractions. * Use number sequences to double and half unit fractions. | | | | **Previous year group objective/s (Y5):**   * Compare and order fractions whose denominators are multiples of the same number. |
| **Sentence stems** | **Key vocabulary** | **Conclusion/Rule** | **What it’s not/possible misconceptions** | **Representations (CPA)** |
| The whole is \_\_\_\_\_\_\_\_.  The whole has been divided into \_\_\_\_\_\_ equal parts, each part is \_\_\_\_\_ of the whole.  If the sequence is *decreasing/increasing* by \_\_\_ what numbers will be next in the sequence? | * Whole * Part * Equal parts * Fraction * Numerator * Denominator * Fraction bar * Equivalent * Simplify * Divide * Division * Order * Compare * Number line * Unknown * Find the difference | To find a missing fraction on a number line, identify the whole. Then, find out how many equal parts the whole has been divided into.  When the whole is not defined, find the difference between the given fractions. | Pupils may not define the whole correctly.  Number lines which extend beyond 1 may cause confusion without a secure knowledge of mixed number/improper fractions. | https://www.homeschoolmath.net/teaching/f/images/line-plot-housework.gif |

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| **Y6 NC Objective:** **To use common factors to simplify fractions; use common multiples to express fractions in the same denomination.**  Small steps:   * Identifying the lowest common multiple and the highest common factor * Explain equivalent fractions * Determine when numerators and denominators are co-prime | | | | | **Previous year group objective/s (Y5):**   * To identify, name and write equivalent fractions of a given fraction, represented visually including tenths and hundredths. | |
| **Sentence stems** | **Key vocabulary** | | **Conclusion/Rule** | **What it’s not/possible misconceptions** | **Representations (CPA)** | |
| The numerator and the denominator are both in the \_\_\_\_\_\_ times table.  The highest common factor of \_\_\_ and \_\_\_ is \_\_\_\_. | * Numerator * Denominator * Fraction bar * Equivalent * Equivalent fraction * Simplify * Common factor * Highest common factor * Multiple * Factor * Divide * Division | | To simplify a fraction to its simplest form, find the highest common factor of the numerator and denominator.  If the numerator is a factor of the denominator, we can simplify to a unit fraction.  Sentence stem from Y5  Equivalent fractions:  If you divide the denominator by \_\_\_\_, divide the numerator by \_\_\_. | Pupils may identify incorrect factors.  Pupils may use the lowest common factor instead of the highest common factor.  Pupils may always halve the numerator and denominator. This may not be the fractions simplest form.  Pupils may not understand that simplifying fractions is not any equivalent; it is using the highest common factor. | Use the fraction wall to simplify 3/9.  Which direction did you move in?  What have the numerator and denominator been divided by? | |
| **Y6 NC Objective:** **To compare and order fractions, including fractions > 1**  Small steps:   * Compare and order fractions using denominators * Compare and order fractions using numerators * Compare and order fractions using common denominators * Compare and order fractions using common numerators | | | | | **Previous year group objective/s (Y5):**   * To compare and order fractions whose denominators are multiples of the same number. | |
| **Sentence stems** | **Key vocabulary** | | **Conclusion/Rule** | **What it’s not/possible misconceptions** | **Representations (CPA)** | |
| The whole has been divided into \_\_\_ equal parts.  The wholes have / have not been divided into the same number of equal parts.  Find an equivalent fraction by… | * Numerator * Denominator * Fraction bar * Equivalent * Simplify * Common factor * Highest common factor * Multiple * Factor * Divide * Ascending /descending * Part/whole * Greater than/ less than * Equal parts * Compare * Order * Largest/smallest | | When comparing/ ordering **unit fractions**, the larger the denominator the smaller the unit fraction (part).  When comparing/ ordering fractions with the **same denominators**, compare/order the numerators.  To order/ compare fractions with **different denominators**, convert the denominators the make them the same. Compare/ order the numerators. | Pupils may not be secure with equivalent fractions.  Pupils may compare non-unit fractions which have not been expressed with the same denominator. | **Using denominators (unit-fractions)**  **Common denominators**  **More than 1 whole** | |
| **Y6 NC Objective:** **To add and subtract fractions with different denominations and mixed numbers, using the concept of equivalent fractions**  Small steps:   * Adding proper fractions using common denominators. * Adding mixed number fractions * Subtracting proper fractions using common denominators. * Subtracting mixed number fractions | | | | | **Previous year group objective/s (Y5):**   * Add and subtract fractions with the same denominator and that are multiples of the same number. | |
| **Sentence stems** | **Key vocabulary** | | **Conclusion/Rule** | **What it’s not/possible misconceptions** | **Representations (CPA)** | |
| The wholes have / have not been divided into the **same number** of equal parts.  The unit of measure is \_\_\_\_ *(e.g. sixths, quarters, thirds).* | * Numerator * Denominator * Fraction bar * Equivalent * Simplify * Common factor * Highest common factor * Multiple * Factor * Divide * Part/whole * Equal parts * Addition * Subtraction | | We do not add/subtract the denominators because they are the unit of measure.  **Different denominators**  Applied sentence stem from year 5:  Make the denominators the same.  Keep the denominator the same, add the numerators.  Make the denominators the same.  Keep the denominator the same, subtract the numerators. | Pupils may add/subtract the denominators.  Not understanding that the denominator is the unit of measure. The unit of measure must be the same in order to add/ subtract them. | **Different denominators**  ½ + ¼      **Addition Subtraction**  **Mixed Numbers** | |
| **Y6 NC Objective:** **To multiply simple pairs of proper fractions, writing the answer in its simplest form**  Small steps:   * Use arrays to examine multiplication of numbers less than one. * Multiplying pairs of proper fractions * Investigating equivalence when multiplying with fractions | | | | | **Previous year group objective/s (Y5):**   * To be able to multiply proper fractions and mixed numbers by whole numbers supported by materials and diagrams. | |
| **Sentence stems** | **Key vocabulary** | | **Conclusion/Rule** | **What it’s not/possible misconceptions** | **Representations (CPA)** | |
| Example: ½ x ¼ =  *Half* **of** *one quarter.*  *One quarter* **of** *half.*  Example: ½ x ¼ =  **For every** *half*  **there are** *four quarters.*  **For every** *quarter*  **there are** *two halves.*  Example: 3/4 x 2/3 =  **For every** *quarter*  **there are** three thirds.  General sentence stem:  **For every** \_\_\_\_\_\_\_\_ **there are** \_\_\_\_\_\_ | * Multiplication * Times * Groups * Of * Ratio * Area * Fraction * Numerator * Denominator * Fraction bar * Whole * Equal parts | | To multiply fractions, multiply the denominators together, then multiply the numerators together. | Pupils may not understand the structure of multiplication.  Pupils may only understand multiplication as repeated addition. | ½ x ¼ = ‘half of one quarter’ **or** ‘one quarter of half’  **One quarter of half:**  then  then  then  then  **Half of one quarter:**  then  then  then  then  3/4 x 2/3 = 6/12  For every one quarter, we have 3 thirds so there are now 12 parts in the whole and for each of the 3 quarters there are 2 thirds so there are 6 pieces out of the 12 in the whole.    **Area model** | |
| **Y6 NC Objective:** **To divide proper fractions by whole numbers.**  Small steps:   * Use arrays to examine division * Divide proper fractions by whole numbers * Investigating equivalence when dividing with fractions * Investigating equivalence with fraction division and multiplication | | | | | | **Previous year group objective/s (Y5):**   * Solve problems involving multiplication and division including scaling by simple fractions and problems involving simple rates. * To be able to multiply proper fractions and mixed numbers by whole numbers supported by materials and diagrams. |
| **Sentence stems** | | **Key vocabulary** | **Conclusion/Rule** | **What it’s not/possible misconceptions** | | **Representations (CPA)** |
| One whole has been divided into \_\_\_\_\_ equal parts.  I have/ shaded \_\_\_\_\_\_ part(s) of the whole.  Each \_\_\_\_\_\_ has been divided into \_\_\_\_\_ equal parts.  Example ¼ ÷ 2 =  One whole has been divided into *four* equal parts.  I have/ shaded *one* part(s) of the whole.  Each *quarter* has been divided into *two* equal parts. | | * Whole * Divided * Divided by * Divided into * Equal part(s) * Parts * Fraction * Numerator * Denominator * Fraction Bar * Multiply * Whole number | To divide fractions, multiply the denominator by the whole number. | Pupils may attempt to divide by the numerator and denominator by the whole number. | | ¼ ÷ 2 =  then then  then  then  ¼ ÷ 2 is 1/8  ¼ ÷ 2 is the same as ¼ x ½ |

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| **Y6 NC Objective:** **To associate a fraction with division and calculate decimal fraction equivalents for a simple fraction**  Small steps:   * Finding equivalence with tenths, hundredths and thousandths * Using short division to find equivalence * Use the relationship between division and fractions to solve problems | | | | **Previous year group objective/s (Y5):**   * Read and write decimal numbers as fractions.   In year 5, pupils convert fractions into decimals by calculating equivalent fractions which have a denominator that is a power of 10. |
| **Sentence stems** | **Key vocabulary** | **Conclusion/Rule** | **What it’s not/possible misconceptions** | **Representations (CPA)** |
| \_\_\_\_ out of \_\_\_\_\_.  \_\_\_\_ divided by \_\_\_\_.  \_\_\_\_ ÷ \_\_\_\_\_ .    Exchange \_\_\_\_\_\_\_  for \_\_\_\_\_\_\_. | * Fraction * Decimal * Equal * Equivalent * Equivalence * Same as * Numerator * Denominator * Fraction Bar * Out of * Divided by * Division * Equal groups * Exchange * Whole * Tenths * Hundredths * Thousandths * Dividend * Divisor * Quotient | Numerator ÷ Denominator  To write a fraction as a decimal, divide the numerator by the denominator. | Pupils may divide the denominator by the numerator.  Pupils may not recognise that the fraction bar represents ‘out of’, which relates to ‘divided by’.  Pupils may not have a secure understanding of dividing decimal numbers. | **Equivalence with tenths and hundredths**  **Using short division to find equivalence**  2/5 = ‘two out of five’  = ‘two divided by 5’  = 2 ÷ 5 |

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| **Y6 NC Objective:** **To recall and use equivalences between simple fractions, decimals and percentages, including in different contexts**  Small steps:   * Associate fractions and decimals with percentages * Compare and order fractions, decimals and percentages * Determining the most appropriate equivalence in different contexts | | | | **Previous year group objective/s (Y5):**   * Read and write decimal numbers as fractions.   From percentages block:   * Write percentages as a fraction with denominator 100, and as a decimal fraction. |
| **Sentence stems** | **Key vocabulary** | **Conclusion/Rule** | **What it’s not/possible misconceptions** | **Representations (CPA)** |
| Equivalent fractions  If you multiply/ divide the numerator by \_\_\_\_, multiply/ divide the denominator by \_\_\_\_.  Fractions to decimals  \_\_\_\_ out of \_\_\_\_\_.  \_\_\_\_ divided by \_\_\_\_.  \_\_\_\_ ÷ \_\_\_\_\_ .  Exchange \_\_\_\_\_\_\_  for \_\_\_\_\_\_\_.  A percentage will always have \_\_\_\_ equal parts.  \_\_\_\_\_ is therefore equivalent to \_\_\_\_\_\_. | * Fraction * Percentage * Decimal * Equal * Equivalent * Same as * Numerator * Denominator * Fraction Bar * Out of * Divided by * Division * Equal groups * Exchange * Whole * Tenths * Hundredths * Thousandths * Dividend * Divisor * Quotient | Fraction to Decimal Divide the numerator by the denominator.  Fraction to a Percentage Find an equivalent fraction, where the denominator is 100.  Percentage to Fraction 100 becomes the denominator and the given percentage becomes the numerator. | Pupils may not convert given fractions to a fraction with a denominator of 100 before using the numerator for the percentage.  Pupils may not recognise that the fraction bar represents ‘out of’, which relates to ‘divided by’.  Pupils may not have a secure understanding of dividing decimal numbers.  Pupils may not convert given mixed FDPs into a common unit of measure before comparing. | **How much of this shape had been shaded?**  Write your answer as a percentage.    Write your answer as a decimal number. |