**Fractions Policy**

Fraction strips: Blank (bar) rectangles (on plain paper) and get used to dividing the bars into halves, thirds, quarters etc:

**Shading fractions of shapes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| **Concrete**To calculate, concretely, how many parts to shade, use objects to share and find the fraction | **Pictorial**Shade ¾ of this shape

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| --- | --- | --- | --- |
| ¼ | ¼ | ¼ | ¼ |

 Shade ¾ of this shape:

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 Calculate ¾ of 20so, shade 15 parts

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| IIIII | IIIII |
|  IIIII | IIIII |

Shade ¼ of this shape:http://content.doublestruck.eu/getPicture.asp?sub=K2_MATHS&CT=Q&org=669f04a9d1ac6f9dcc766c17d6840db7&folder=Q12A09_files&file=Image_003.png   | **Abstract**20 ÷4 = 55 x 3 = 1512 ÷4 = 3 Shade 3 triangles |

**Fractions of amounts:**

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| **Concrete**To calculate fractions of amounts, concretely, , use objects to share and find the fraction | **Pictorial**Calculate a fraction of a quantity by first drawing the fraction in the bar, showing the length of the bar to be the quantity and then calculating the length of the shaded part:Calculate ½ of 10:

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10Calculate 1/5 of 20 = 4?

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| 4 | 4 | 4 | 4 | 4 |

 20Calculate 3/5 of 20 = 12?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 4 | 4 | 4 | 4 | 4 |

 20Calculate 3/7 of 420 = 180?420 ÷ 7 = 6060 x 3 = 180Once the pupils are calculating with larger numbers, they are likely to be able to work straight in the abstract context**‘divide by denominator, multiply by numerator’**

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| 60 | 60 | 60 | 60 | 60 | 60 | 60 |

 420 | **Abstract**20 ÷ 5 = 44 x 3 = 1220 ÷ 5 = 4½ of 10 = 5 |

**Equivalent fractions**

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| **Concrete**Fraction strips: Blank (bar) rectangles (on plain paper) and get used to dividing the bars into halves, thirds, quarters etc to see equivalences | **Pictorial**Which fraction is equivalent to 2/5?

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2/5 = 4/10 Which fraction is equivalent to 2/6?

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2/6 = 1/3 | **Abstract**Link equivalences to times tables knowledge  |

**Simplifying fractions:**

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| **Concrete** | **Pictorial**Give 4/6 in its simplest form:

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How can we remove some of the vertical lines to make fewer equal sized pieces?**4/6 = 2/3** Give 9/12 in its simplest form:

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**9/12 = ¾**  | **Abstract**9 ÷ 3 = 312 ÷ 3 = 4**Link to times tables knowledge and common factors**Think of a common factor of both 9 and 12? 3 |

**Ordering fractions**

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| **Concrete**Fraction strips: Blank (bar) rectangles (on plain paper) and get used to dividing the bars into halves, thirds, quarters etc to compare size of fractions and order them | **Pictorial**Which is greater 2/3 or ¾?

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 | **Abstract**Find a common denominator: (see equivalent fractions part of this policy)2/3 = 8/12 ¾ = 9/12  |

**Adding fractions (same denominator)**

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| **Concrete**Use half, quarter cups/ thirds, fifths, sevenths cards to add concretely  | **Pictorial**¼ + 2/4 = ¾

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OR¼ +2/4=¾

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Using this model will prepare pupils for working with fractions where the denominators are different | **Abstract**¼ + 2/4 = ¾  |

**Adding fractions (with different denominators)**

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| **Concrete**Use half, quarter cups/ thirds, fifths, sevenths cards to add concretely  | **Pictorial**1/3 + 3/6 =

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We need to turn the thirds into sixths (the common denominator)2/6 +3/6 = 5/6

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So, 1/3 + 2/6 = 5/6  | **Abstract****find the common denominator**1/3 + 2/4 =The common denominator is 124/12 + 6/12 = 10/12\* this can be shown in a bar model too |

**Use the same process for subtraction with fractions**

**Multiplying fractions**

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| **Concrete****Use cups, cards** | **Pictorial**1/3 x 4 == 4/3

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| --- | --- | --- | --- |
| 1/3  | 1/3 | 1/3 | 1/3  |

 1/3 x 3/4= 3/12

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Having shaded in 1/3 in the orange and ¾ in the green, the yellow is the overlap of colours. This indicates the answer. | **Abstract****multiply the numerator and then the denominator** |

**Dividing with fractions**

**Dividing whole numbers by a fraction**

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| **Concrete**3 ÷ 1/2 =Exchange the 3 whole ‘cups’ into half cups and divide into piles of ½  | **Pictorial**3 ÷ 1/2 =

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 (divide each part of the bar, each whole, in half)

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 So, 3 ÷ 1/2 = 6Or represent as:

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 | **Abstract** |

**Dividing fractions by fractions**

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| **Concrete** | **Pictorial**2/3 ÷ 1/6 =

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So, 2/3 ÷ 1/6 = 4 | **Abstract** |