Appendix 2
Case studies of focus pupils

Pupil A Case Study

Pre test score: 8/39	**Post test score:19/39**

How has this child made progress?
(attitude towards fractions, understanding of fractions, application of fractions, misconceptions overcome)
Pupil A approaches fractions enthusiastically and is happy to attempt problems involving fractions involving whereas previously they would have left them unattempted. Initially they recorded the fraction incorrectly (denominator mixed up with the numerator), this has now been rectified. They are able to show a full understanding of part whole fractions and is beginning to simplify fractions to their lowest form. They are able to find fractions of numbers and confidently draw their own visual representations to support understanding and solving of problems. They are able to relate some fractions to decimals and percentages.

What has been the biggest influence on this child's progress?
(tasks, resources, representations, intervention)
The rich task widely influenced this child's progress as they were able to discover and learn fraction skills for themselves, allowing the time to explore fractions. Using visual representations in different formats and showing how fractions can be represented in different ways has given them a new way to represent these and a deeper understanding of what this means / looks like.
Having lots of smaller group sessions with a teacher has helped identify misconceptions for this child and target intervention as well as spending more time on fractions than you would usually.

What improvements have they shown in use of visual representations?
(pick out examples from the test paper)
Pupil A is able to identify where the same fraction can be visually represented in different ways and is beginning to make links with this to equivalent fractions. (question 14)
They use visual representations to help further understand problems – e.g. question 17 / 19
Pupil A is able to draw visual representations to help support their learning of mixed numbers – e.g. question 30 and 22 and now shows a firm understanding of how to represent this visually.

They use visual representations to help solve quotient questions (question 25).

What improvements have you seen in their fluent use of fractions?
(What evidence have you got to support this?)
Pupil A is able to make further links between different areas of fractions – e.g. using part whole visual representations to solve equivalent fraction problems.
Pupil A uses visual representations to solve linear problems – e.g. 8 / 4 – they drew this visually and this helped them to understand where it would be placed on the number line.

Pupil B Case Study

Pre test score: 18/39	**Post test score: 27/39**

How has this child made progress? (attitude towards fractions, understanding of fractions, application of fractions, misconceptions overcome) Pupil B has shown increased confidence when handling fractions. Pupil B was quieter than some during the 'Fair Feast' task but did contribute.
What has been the biggest influence on this child's progress? (tasks, resources, representations, intervention) Fair Feast was a non-threatening way in. Involvement in a group and not just one child. Visual representations of one fifth of a set helped to find two fifths of a set. Intervention opportunity meant that we stopped when unsure of non-unit fractions and when back to simple fractions of a set.
What improvements have they shown in use of visual representations? (pick out examples from the test paper) Pupil B has not particularly used own visual representations in either test but does use them in class more. In the second test did attempt using own visual representation to solve $\frac{1}{5} + \frac{2}{5}$ but still came up with $\frac{3}{10}$ as the answer. But this is progress from the pre-test.
What improvements have you seen in their fluent use of fractions? (What evidence have you got to support this?) Part-whole – visual and quantity is well developed and more fluent – evidence from work in books. Need to further develop linear representations. Can attempt with simple fractions and mixed numbers but not improper fractions Improved with the use of quotient but not fluent.

Pupil C Case Study

Pre test score: 7/39	**Post test score:14/39**
How has this child made progress? (attitude towards fractions, understanding of fractions, application of fractions, misconceptions overcome) Pupil C has got a more positive attitude towards fractions and is more confident. They have developed a really good understanding of quotient fractions. Their understanding (according to the questionnaire) has moved from 4 to 9 (out of 10).	
What has been the biggest influence on this child's progress? (tasks, resources, representations, intervention) The use physical things (cups, food etc) It has helped that a lot of the activities were based on real life context to apply learning to. Also during focused group time they were able to discuss ideas, calculations and worries one-to-one. Having one-to-one meant that there was more time to focus on any issues and talk through them to find the correct answers.	

What improvements have they shown in use of visual representations?
(pick out examples from the test paper)
In the first test they drew circles and it seemed they didn't know why (e.g. How many thirds in a whole? – drew a circle and drew three lines to split the circle into sixths).
In the second test they logically used drawings to help (e.g. 4 cakes shared between 5 friends – drew 4 cakes, shared them into fifths and then draw the people to share out the fifths.)

What improvements have you seen in their fluent use of fractions?
(What evidence have you got to support this?)
They have a much better understanding of quotient and can explain where their ideas are coming from (this is due to the rich task and putting the context of fractions into a real life scenario). At the beginning of the project they had no idea how to calculate with fractions and they seemed to frighten them. After the fractions day they will now have a go at any fractions activity.

Pupil D Case Study

Pre test score: 12/39	**Post test score:17/39**

How has this child made progress?
(attitude towards fractions, understanding of fractions, application of fractions, misconceptions overcome)
Improved confidence towards fractions – able to see link between equivalent fractions - $\frac{2}{4}$ and $\frac{1}{2}$ are the same because 2 ÷ 1 = 2 and 4 ÷ 2 = 2.

What has been the biggest influence on this child's progress?
(tasks, resources, representations, intervention)
Representations - to begin with only confident with part-whole (e.g. )
Now able to use part-whole quantity (e.g. 

What improvements have they shown in use of visual representations?
(pick out examples from the test paper)
Opportunity for reasoning about what they see.
 in the pre-test this would have been $\frac{1}{3}$ but in the second test it was answered as $\frac{3}{4}$.
Now I know its $\frac{3}{4}$ because 3 are shaded out of a total of 4.

What improvements have you seen in their fluent use of fractions?
(What evidence have you got to support this?)
Able relate to multiplication and division. I know $\frac{3}{6}$ is the same as $\frac{1}{2}$ because 3 is half of 6.

Pupil E Case Study

Pre test score: 7/39	Post test score:20/39

How has this child made progress?
(attitude towards fractions, understanding of fractions, application of fractions, misconceptions overcome)
More willing to attempt fractions questions.
Much more able to find a fraction of an amount
Part-whole used in different ways
Quotient - thinking about $\frac{3}{4}$ as 3 pizzas shared between 4 people and so how much of the total amount they would have. Most of these questions are now answered correctly.

What has been the biggest influence on this child's progress?
(tasks, resources, representations, intervention)
Intervention group allow explanation of thinking and sharing of ideas.
Discussion in groups of how others have represented questions helps them to explain what resources and drawings they have used.
Small group work allowed more focus on the task.

What improvements have they shown in use of visual representations?
(pick out examples from the test paper)
Question 25 (quotient) – drew the chocolate bars and divided one bar in twelves and worked out all would get $\frac{8}{12}$.
Question 21 (quotient) – draw pictures and solved similar to above
Chocolate drawn as rectangles. Others drawn in different ways.
Images were also drawn for other questions to show thinking of what the fraction looks like.

What improvements have you seen in their fluent use of fractions?
(What evidence have you got to support this?)
More evidence of using multiplication and division. Initial group ideas were to cut each cake into sevenths to work out how many sevenths each would get. This has moved away from finding half, quarter, eighths as a default way to find a fraction of a shape.