Fractions, Decimals and Percentages Prior Assessment Question 8, 9 & 10:

Objective: I can subtract fractions with the same and different denominators and fractions with mixed numbers.

NC: NFDP3: add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions

Teacher Input Ideas:

The three assessment questions have been grouped together to cover all aspects of subtracting fractions. There is an activity for each objective below. You may want to split the objectives into different lessons or inputs based on the children's needs individually and as a class.

Same denominator: Model simple subtraction of fractions with the same denominator. This could be modelled with the use of a pizza, fraction tower or cake. Often the biggest misconception is that the denominator is sometimes subtracted as well. Show the children a pizza with 8 slices. Discuss that each is an 1/8. Ask children to take some away to imagine eating. The size of the pieces has stayed the same. Discuss what the role of the denominator is and why it is important. Model that it is only the numerator that changes when subtracting fractions with the same denominator. Record the calculation you are doing alongside the use of the cake/ image/ fraction tower.

Different denominator: Show the children 4/5 – 1/2. Encourage the children to discuss how they would tackle this and where the difficulty is. By now the children should be able to suggest that the denominators are different therefore we need to find equivalent fractions to help us to calculate. Encourage children to model to others how to calculate this sum.

Establish as a class that we could turn 4/5 into 8/10 and ½ into 5/10. Then the sum can be completed. Prompt children to use vocabulary such as common denominator, common multiple, factors, denominator, numerator in their explanations.

Children to try 5/7 – 3/14   and ¾ = 1/3

Mixed numbers: Give the children fraction towers, slices of cake/pizza or images that can be constructed back together to make 1 whole and more than a whole. In groups, encourage the children to explore what mixed numbers and improper fractions are by creating whole pizzas, whole cakes and whole images. Provide enough fractions so that this can be explored with more than one cake (such as 1 1/5 or 2 2/3).

Together look at mixed numbers, taking away fractions with the same denominator such as 3 ¼ - 1 ¾ . Allow children to model how they worked it out and where the difficulty may have been. Some children may find it easier to convert the mixed fraction into an improper fraction first to help subtract.

Look at $2\ 1/5 - 1\frac{1}{2}$. Ask the children for suggestions as to how to work this out. The children should suggest finding equivalent fractions so that they can subtract. Explore calculating as a mixed fraction and compare with calculating as an improper fraction.

Example: $2\ 2/10 - 1\ 5/10$ and compare with $22/10 - 15/10$.
Model using knowledge of multiples to help.

Practice Activities

Purple Practice: **Most suited for children that made errors in Question 8 and demonstrated difficulty subtracting numbers that have the same denominator.**

The activity provided can be presented to the children as a game. The questions can be cut out and placed into a pile. Children then can take it in turns to answer the questions. Some of the questions also challenge the children to use their knowledge of common equivalent fractions (such as $\frac{3}{4} - \frac{1}{2}$).

Green Practice: **This activity is most suitable for children who made errors in Question 9 of the prior assessment task and would benefit from the opportunity to subtract fractions with different denominators.**

This is a practical game for the children to play in pairs. Children can record the sums in their books or on whiteboards to help you to assess their understanding of subtracting fractions with different denominators.

One card at a time is to be turned over and both children must subtract that amount from the first square on their board. Whoever gets the correct answer first then places a counter on the square. The children to continue along their board and the child with the most counters at the end wins.

The game can be repeated as the children could swap playing boards or shuffle the cards to face different problems.

This activity not only encourages the children to use their knowledge of multiples, it also develops their mental methods of multiplication as they will feel under pressure to beat their friend.

Yellow Practice: **This activity is most suitable for children who need to consolidate their understanding of subtraction with mixed numbers.**

This activity sheet provides the children with the opportunity to subtract mixed numbers with the same denominator and mixed numbers with different denominators. Children should also be encouraged to apply their knowledge of equivalent fractions and

be able to simplify their answers too. Also, you want to observe that the children are showing efficiency. In some of the questions (8 for example) the children should be able to work these out mentally using their knowledge of common fraction equivalents.

Mastery: The children are required to generate their own subtraction sums to complete the table. Encourage the children to think of 4 different sums for each box. The children can be challenged by thinking of sums that contain mixed numbers or different denominators. For those children that are requiring more support, encourage the children to think of sums with the same denominator. Such as $4 - 3\frac{1}{4}$ or $2 \ 4/12 - 1 \ 7/12$.

Answers:

Purple:

1) 3/9 or 1/3   2) 4/12 or 1/3   3) 4/15   4) 2/6 or 1/3

5) 14/21 or 2/3   6) 3/35   7) 4/36 or 1/9   8) 3/5

9) $\frac{1}{4}$ 10) 0

Yellow:

1) $1 \ 2/8$ 2) $1 \ 4/12$ or $1 \ 1/3$ 3) $1 \ 2/6$ or $1 \ 1/3$

4) $7 \ 5/6$ 5) $8 \ \frac{1}{2}$ 6) $1 \ 4/5$

7) $1 \ 2/6$ or $1 \ 1/3$ 8) 3 9) $2 \ 11/12$

10) $1 \ 9/20$ 11) $6 \ 11/20$ 12) $2 \ 1/20$

$\dfrac{5}{9} - \dfrac{2}{9} = $ **?**

$\dfrac{8}{12} - \dfrac{4}{12} = $ **?**

$\dfrac{7}{15} - \dfrac{3}{15} = $ **?**

Subtract $\dfrac{3}{6}$ from $\dfrac{5}{6}$

$\dfrac{19}{21} - \dfrac{5}{21} = $ **?**

$\dfrac{7}{35} - \dfrac{4}{35} = $ **?**

$\dfrac{12}{36} - \dfrac{8}{36} = $ **?**

Subtract $\dfrac{1}{5}$ from $\dfrac{4}{5}$

$\dfrac{3}{4} - \dfrac{1}{2} = $ **?**

$\dfrac{4}{6} - \dfrac{2}{3} = $ **?**

BRICKWORK
Mathematics

How to play the game:

1) With a partner choose who will be Player A and Player B. Cut out your game board.
2) Cut out the fraction blocks and place them into a pile face down.
3) Look at the first fraction on your game board. Together turn over the top card from the pile of blocks.
4) You and your partner have different fractions on your game boards but you must take away the same fraction which is on the block card. For example, Player A may have $\frac{3}{4} - \frac{1}{2}$ and player B will have 9/10 take away $\frac{1}{2}$.
5) Work out the answer as quickly as you can. You may have to subtract a fraction with a different denominator to the one on your board.
6) Check each other's answers to ensure that you are correct and your partner is correct.
7) The first player to get the answer correct places a counter on the question on their board.
8) Move on to the next fraction on your board and turn over a new block card.
9) Continue until the game board has been completed. The player with the most counters wins.

Player A

$\frac{3}{4}$	$\frac{5}{6}$	$\frac{4}{5}$	$\frac{10}{10}$	$\frac{17}{20}$	$\frac{9}{10}$

Player B

$\frac{9}{10}$	$\frac{3}{4}$	$\frac{8}{10}$	$\frac{19}{20}$	$\frac{5}{6}$	1

Fraction blocks

$-\frac{1}{2}$	$-\frac{3}{4}$	$-\frac{3}{5}$	$-\frac{2}{5}$
$-\frac{1}{6}$	$-\frac{5}{8}$	$-\frac{3}{6}$	$-\frac{1}{4}$

Look at the calculations below and work out the answers.

$2\frac{3}{8} - 1\frac{1}{8} = $ ____ $5\frac{11}{12} - 4\frac{7}{12} = $ ____

$4\frac{1}{6} - 2\frac{5}{6} = $ ____ $8\frac{5}{6} - \frac{6}{6} = $ ____

$9\frac{1}{4} - \frac{3}{4} = $ ____ $6\frac{3}{5} - 4\frac{4}{5} = $ ____

$3\frac{4}{6} - 2\frac{1}{3} = $ ____ $5\frac{6}{9} - 2\frac{2}{3} = $ ____

$4\frac{3}{4} - 1\frac{5}{6} = $ ____ $3\frac{7}{10} - 2\frac{1}{4} = $ ____

$6\frac{4}{5} - \frac{1}{4} = $ ____ $3\frac{5}{7} - 1\frac{2}{3} = $ ____

BRICKWORK
Mathematics

Think of 4 subtraction sums to place in each part of the table. Look at the example to help.

Challenge:

Can your sums have different denominators?

Can your sums contain mixed numbers?

Fraction	Fraction	Answer is equivalent to
	$-$	$= \dfrac{1}{2}$
$1\dfrac{2}{6}$	$\dfrac{2}{3}$ $-$	$= \dfrac{2}{3}$
	$-$	$= \dfrac{3}{4}$