

Fractions, Decimals and Percentages Prior Assessment Question 6 and 7:

Objective: I can add fractions including ones with different denominators.

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

Teacher Input Ideas:

If children made errors in Q6, you may want to lead a separate input until they are ready to look at adding fractions with different denominators.

Introduce today's learning objective by looking at a need and real life examples of when fractions may be added. This could be introduced through making a juice drink. I need to use $\frac{1}{8}$ of a jug of orange juice and add $\frac{1}{4}$ of a jug of cranberry juice to this. Use only one jug with sections marked out with eighths on. Discuss with the children how can we add $\frac{1}{4}$ to this. Discuss suggestions and model using the same denominator 8. Children should be able to see the link from previous lessons and equivalent fractions should be discussed. How does it make it easier to measure out the juice drink now? What sum have we done ($\frac{1}{8} + \frac{1}{4}$ we turned this into $\frac{1}{8}$ add $\frac{2}{8}$ to make it easier. The answer is $\frac{3}{8}$)

This could also be done with cake. Show 2 cakes that are the same size (may need to be quite large as you are going to cut them into 15 pieces). One cake showing $\frac{4}{5}$ and the other cake showing $\frac{2}{3}$. How much cake do I have left altogether? I need to make all the pieces the same size so that I can compare them and add them together.

Model the whole cake/ paper image and show $\frac{4}{5}$. What multiple do they both have in common? What could I have split both cakes into initially to make it easier now? Encourage children to identify that both cakes could be cut into 15 pieces (whole cake).

Model practically splitting the whole cakes into 15 and then showing how much is left in each cake ($\frac{4}{5}$ and $\frac{2}{3}$). What mathematical calculation have I done there? Establish that we have done 5×3 and then 4×3 . why? Then repeat with the $\frac{2}{3}$. Why is each section being split into 5? Discuss and then add the 2 lots of cake together.

Show this alongside the calculations you are doing so that children can see how you are working it out and recording it. Encourage the children to try $\frac{5}{6} + \frac{3}{4}$. Discuss how this has been worked out. Some children may need objects or images to help see the link visually.

Practice Activities

Purple Practice: This activity is most suited for children who **made errors in Question 6** and would benefit from securing adding fractions with the same denominator before moving on to adding fractions with different denominators.

Children should use their knowledge from previous learning to find equivalent fractions and the children should now be less reliant on using resources for this activity. However, if the children are having difficulty explaining their working out or require further support, fraction towers or fraction templates may be useful. You may also want to pose the challenge that one of the answers can be simplified and see if the children spot that it is Q4.

Green Practice: This activity is most suited for children who **made errors in Question 7** and would also benefit from further opportunity to apply previous learnt skills of simplifying fractions and converting improper fractions to mixed numbers.

This activity requires the children to add fractions with different denominators by finding equivalent fractions. It also presents a problem in a different format. Some children may need some support with understanding the task, as they are asked to add the same amount to each brick. After the children have completed the task, encourage them to work out improper fractions as mixed numbers and there is also a fluency opportunity of simplifying some of the fractions.

Yellow Practice: This activity is for children who demonstrated **good understanding in Question 7** of the prior assessment and would benefit from adding mixed numbers and improper fractions with different denominators.

This activity is presented in an unfamiliar format and requires the children to add the fraction in the blue box to their answer each time. There are 2 sides to each diagram and the final answer should be the same once all the calculations have been completed.

This activity also provides opportunities to apply mental multiplication and addition.

Mastery Encourage the children to read the problem and suggest a starting point. What knowledge do they need to use? Where will you start? Which piece of information is most useful?

Allow the children to talk about and plan ideas. They may even start and explore trial and improvement. If needed, prompt the children to use $\frac{3}{4}$ as a starting point. What other fractions are equivalent to $\frac{3}{4}$? Children could work systematically here : $\frac{6}{8}$, $\frac{9}{12}$, $\frac{12}{16}$, $\frac{15}{20}$ etc.

Establish that the children then need to think about possible factors to make a denominator of one of these. For example: factors of 8 are 2, 4, 1 and 8. Explore how 8 could be used as the denominator. If the children need an example show them how they could find $4/8 + 2/8 = 6/8 = \frac{3}{4}$ or $\frac{1}{2} + \frac{1}{4} = \frac{3}{4}$. Remember the denominators need to be different. Then encourage children to explore $9/12$.

Some children may benefit from doing this on large pieces of paper or whiteboards so that their ideas can be moved around or altered easily.

Answers:

Purple:

- 1) $9/10$ 2) $11/12$ 3) $1 (14/14)$ 4) $12/9$ or **1** $1/3 (3/9)$
5) $29/13$ or **2** $3/13$ 6) $19/4$ or **4** $\frac{3}{4}$
7) $7/8$ 8) $13/10$ or **1** $3/10$ 9) $9/10$ 10) $17/12$ or **1** $5/12$

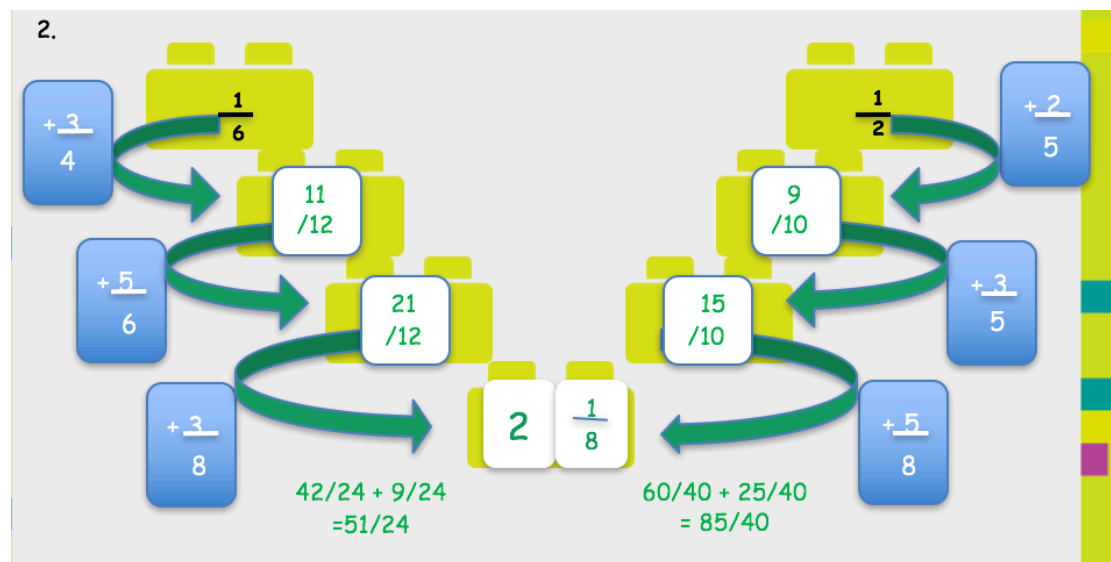
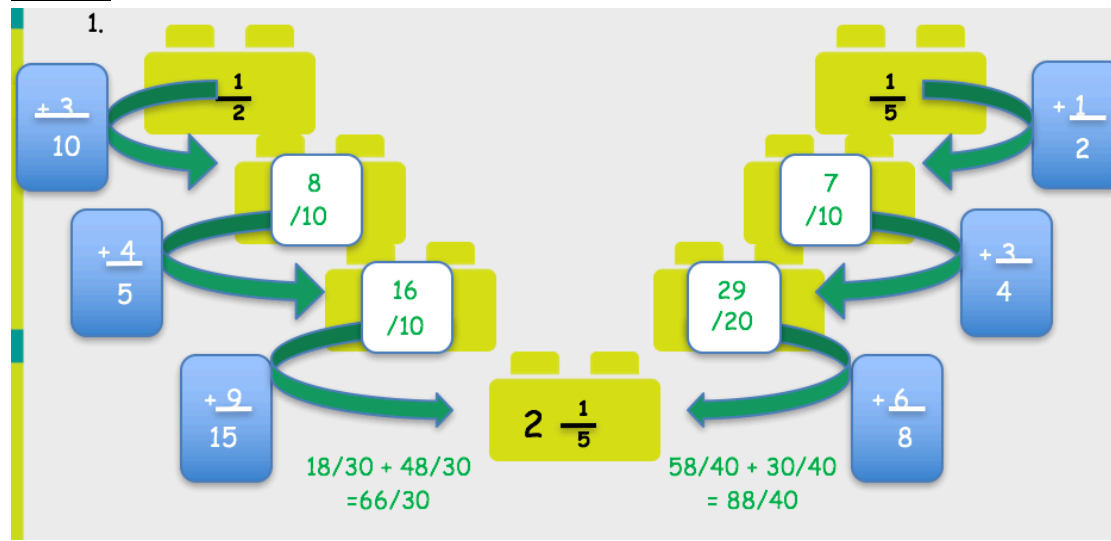
Green:

- 2) $9/10, 14/10$
3) $17/12, 26/12$
4) $23/21, 37/21$
5) $25/18, 35/18$

6) Children should have converted the decimal to a fraction. Some children may have noticed that 0.6 could be $3/5$ therefore kept the $4/5$ the same. Some children may have converted the 0.6 to $6/10$ and then found an equivalent fraction for $4/5$. Encourage the children to share the different methods to discuss which they feel is the most efficient.

$7/5, 10/5$ or $14/10, 20/10$ also discuss the link with simplifying.

Yellow:



Mastery

There are many different options and you need to provide enough time for the children to show you how they have worked this out and prove to you their choices. Here are some examples of answers if children need starting points.

$$\frac{2}{3} + \frac{1}{12} = \frac{8}{12} + \frac{1}{12} (\frac{9}{12})$$

$$\frac{1}{2} + \frac{3}{12} \text{ (discuss that this is also } \frac{1}{2} + \frac{1}{4} \text{)}$$

$$\frac{2}{16} + \frac{5}{8} = \frac{12}{16} (\frac{3}{4})$$

Work out the answers to the sums below. Can you change the improper fractions to mixed numbers?

1) $\frac{3}{10} + \frac{6}{10} =$

4) $\frac{5}{9} + \frac{7}{9} =$

2) $\frac{4}{12} + \frac{7}{12} =$

5) $\frac{9}{13} + \frac{20}{13} =$

3) $\frac{8}{14} + \frac{6}{14} =$

6) $\frac{7}{4} + \frac{3}{4} + \frac{9}{4} =$

7) $\frac{1}{4} +$ $\frac{5}{8} =$

8) $\frac{3}{5} +$ $\frac{7}{10} =$

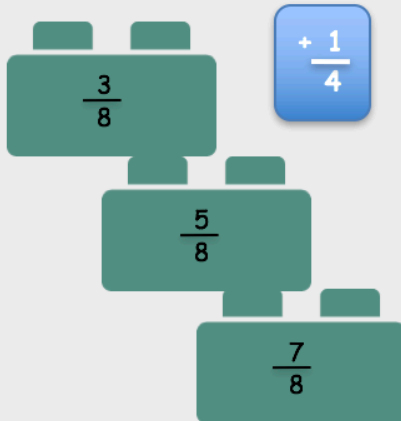
9) $\frac{2}{5} +$ $\frac{1}{2} =$

10) $\frac{3}{4} +$ $\frac{2}{3} =$

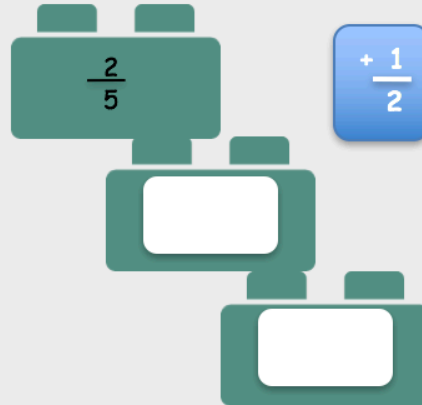
Explain how you worked out each answer to a partner.

Look at the amount you need to add in each set of blocks. Add the same amount each time. The first one has been done to help you.

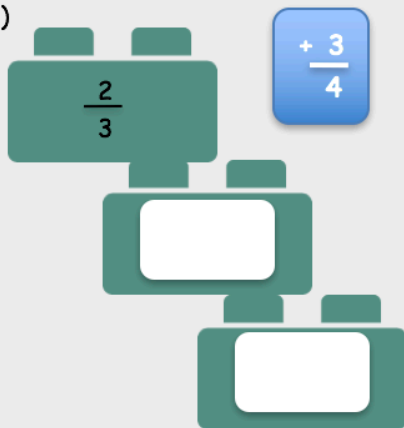
1)



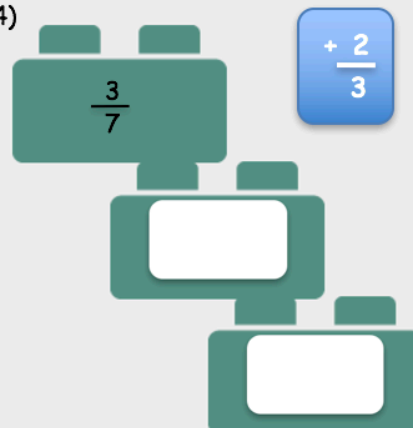
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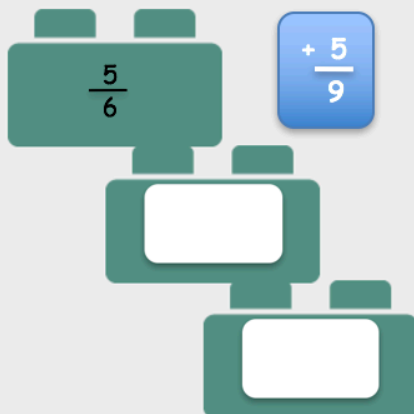
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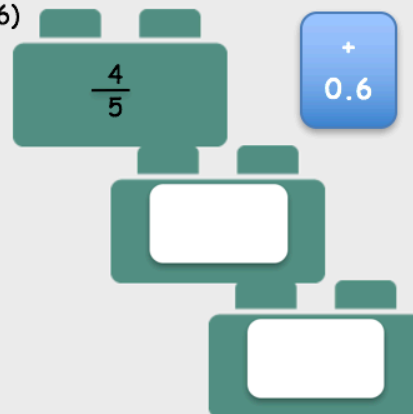
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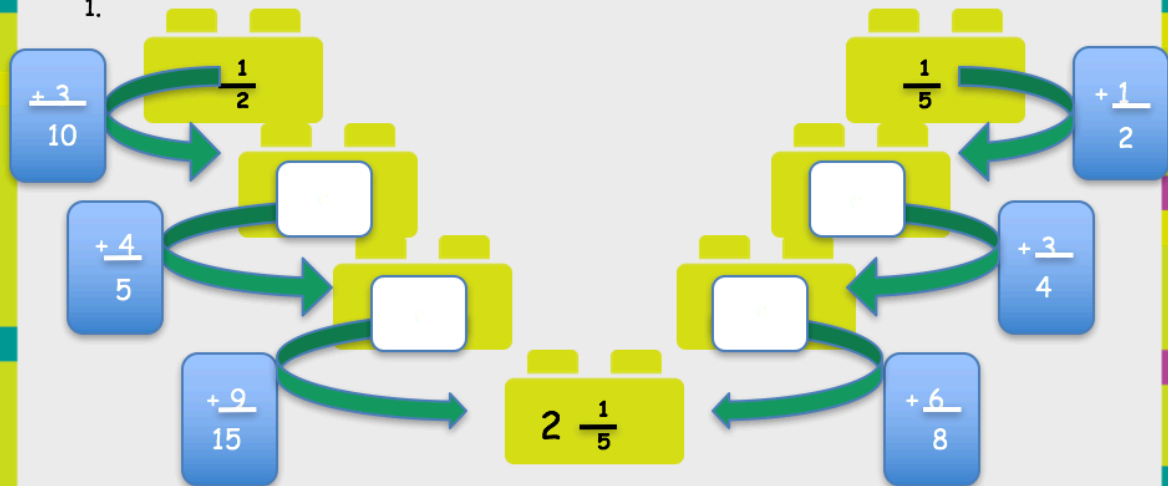


6)



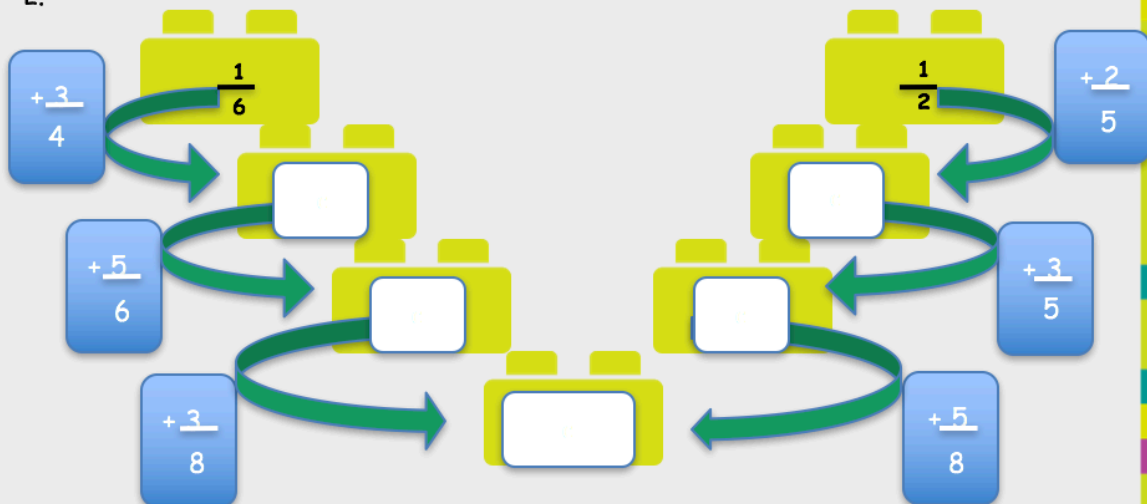
Look at the diagram below. Fill in the missing boxes by adding the fractions in the blue boxes each time to your answer.

1.



Prove that your answer is the same as the fraction in the bottom block. This has been worked out as a mixed number. Can you make your answer the same? Share your working out with a partner. Did they complete any different calculations?

2.



Work out the final answer as a mixed number.

Add two fractions together that have different denominators so that the answer is equal to $\frac{3}{4}$ when simplified.

$\frac{?}{?} + \frac{?}{?} = \frac{?}{?}$ simplified to $\frac{3}{4}$

Tips:

- What are you being asked to do?
- Where is a good starting point?
- Which information is the most useful?
- What do you know about the simplified fraction?
- How many different possibilities can you find?