Division Prior Assessment Questions 7 and 8

Objective: I can express remainders of division sums as fractions.

NASMD2: interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context

NFDP: 9: use written division methods in cases where the answer has up to two decimal places

10: solve problems which require answers to be rounded to specified degrees of accuracy

11: recall and use equivalences between simple fractions and decimals

Teacher Input Ideas:

(The children require knowledge of fractions and equivalent fractions for these activities. You may want to teach some of the fraction activities first during the division unit, or you may want to save this lesson to apply division skills when teaching fractions.)

Start with a game of 'match the fractions'. Display cards with equivalent fractions on, such as: 3/4, 9/12, 75/100, 4/10, 2/5, 4/8, ½, 6/12, 3/9, 2/6, 1/3, 2/3, 3/6, 4/6, 6/9. These can be printed onto different coloured card for each group of children and scattered around outside. The children are to collect their colour and match the equivalent fractions. Alternatively, one large copy of these can be placed around the classroom and the children must place equivalent fractions into a grid/table. How will they sort these?
Ensure that the children know that some fractions can be simplified or expressed in a different way.

Establish the link between division and fractions. What is a fraction? How does this link with division? How can I use my knowledge fractions if I have a 4-digit number and want to divide it by a 1 digit number? Establish with the children that when we divide a 4-digit number by another number, we are working out how many groups we can make or how many times we can split/ share into that number.

For example: 3459 divided by 9.
3459 can be shared by 9 384 times (model this with using the short division method). Also, I can see that I have made 384 whole groups of 9. However, you can see that I have some left over; 3 to be exact. So, I have made 384 whole groups of 9: show this with a circular image of 9 sections or a 3 by 3 square. So, I have 384 whole circles/squares and 3 left over. Colour in 3 on the image to show this.
I can express this a 3/9. I have 3 left over for a group of 9. I have 3/9ths.

Encourage children that are ready to see that this is also the same as 1/3. If using a square image or circular image, show this. Also fraction towers may help here.

Place 5646÷ 8 and 2601 ÷ 6 on the board. Encourage the children to perform the short division method. What is the remainder? How can I express this as a fraction? Can you find an equivalent fraction? Can you find the fraction in the simplest form?
Children may need circular fraction templates, fraction squares or fraction towers to help find equivalent fractions.

Practice Activities

Purple Practice: Most suited for children that made errors in Q7 as they were unable to express the remainder of a division sum as a fraction.

This activity provides the opportunity for the children to secure the use of the short division method to divide 4 digit amounts by 1 digit amounts. The children are then supported with images to work out what the remainder would be as a fraction. Encourage the children to place what is left over in the image, such as 5. I have 5 left over and my groups are sized 9, so I have 5/9 of my group left. Or I can say this as ??? can be shared by 9 ??? times and 5 are left over.

Green Practice: Most suited for children that answered Q7 accurately however in Q7b and c did not work out the fraction in the simplest form.

This activity provides the opportunity for the children to secure the use of the short division method to divide 4 digit amounts by 1 digit amounts. The children should then be encouraged to work out the reminder as a fraction and then to see if the fraction can be simplified. The images are there to support the children with seeing the link between fractions; such as 3/9 is the same as 1/3. If children require further support, fraction towers can be used.

Yellow Practice Most suited for children who answered question 7 accurately and would benefit from converting fractions into decimals.

This activity requires the children to perform short division for up to 4 digit amounts. The children are then to use the remainder of their division sum to work out where to place the green sum blocks on the diagram presented in the task.

Encourage the children to identify that they may need to find equivalent fractions to find the correct position on the diagram (such as 4/10 is the same as 2/5). Once the children have found the correct fraction, they are asked to write the equivalent decimal in the yellow boxes in the inner circle.

The children should be encouraged to explore different methods of how to find the remainder as a decimal to help them to check the accuracy of their working out. The children could work out the remainder as a fraction and then convert it into a decimal, such as $\frac{1}{2}$ is 0.5 or the children could apply skills from Q6, where the children are to insert the decimal point when completing the short method and carry over the remainder, continuing to divide.

The children need to have knowledge of fraction and decimal relationships to be able to complete this activity. The children should also spot that 2 questions can be completed mentally rather than using a written method (÷ 10).

Mastery: Suited for children who made errors in Question 8 of the Prior Learning Assessment and need to further develop their understanding of when to round remainders depending on the context of the question.

The children are presented with word problems where they need to apply their knowledge of different division strategies including mental and written methods. Some of the questions include remainders. The children should explain and discuss how they have rounded their answers due to the context of the questions (see answers for more explanation).

Answers:

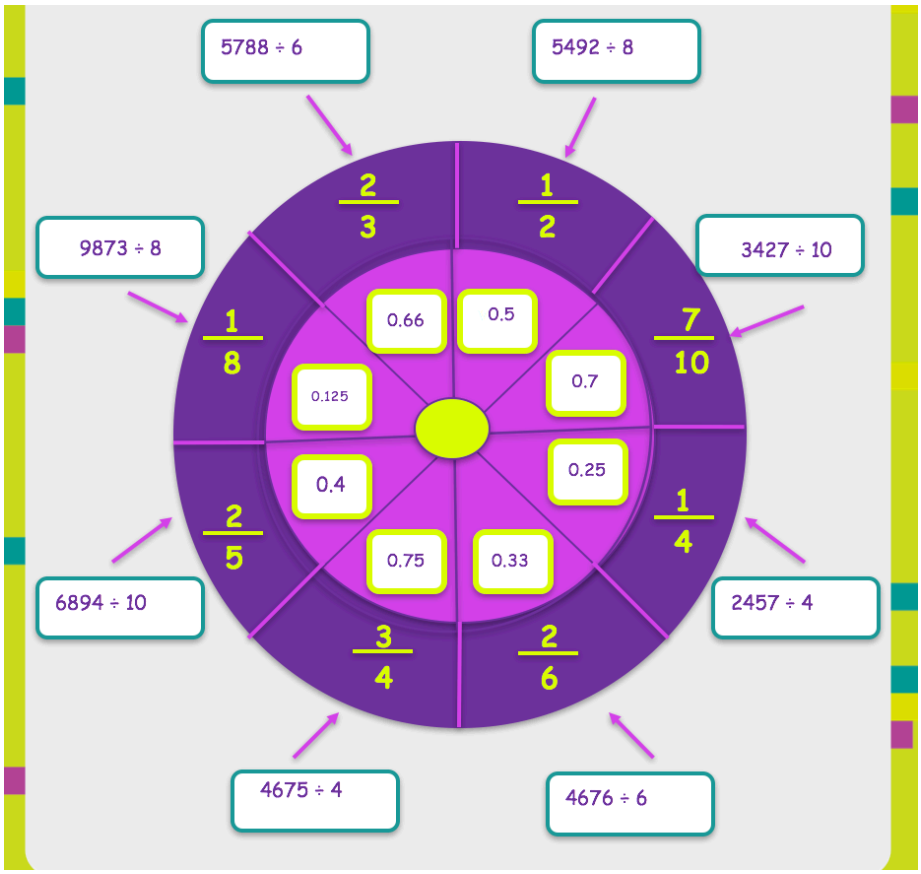
Purple:

1)345 r4/9	2) 969 r1/7	3) 985 r2/6 or 1/3
4) 974 r1/3	5) 1745 r4/5	6) 2455 r3/4
7) 1216 r4/6 or 2/3	8) 1314	

Green:

1)345 r1/3	2) 1696 r1/2	3) 739 r$\frac{3}{4}$
4) 487 r1/6	5) 1579 r1/5	6) 913 r $\frac{1}{2}$
7) 821 r1/4	8) 536 r 2/3	

Yellow:



Mastery

1) 149 boxes of cakes could be sold. There are 2 cakes left over but the children should understand to round this down in the context of the question.
2) £1,959
3) 4241 presents

   The children should divide 848260 by 2. They could do this with jottings as the numbers can be easily halved or some may use a written method. The children should then divide 424130 by 100, again using jottings or mental methods. This gives the children an answer of 4241.3. However, the answer is 4241 as the presents cannot be cut up to be shared, they must be given in whole amounts.

BRICKWORK Mathematics

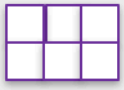
Purple Practice

Lo: I can express any remainders of a division sum as a fraction.

Look at each set of calculations and express any remainders as fractions.

1) 3109 ÷ 9 = 

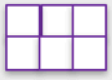
2) 6784 ÷ 7 = 

3) 5912 ÷ 6 = 

4) 2923 ÷ 3 = 

5) 8729 ÷ 5 = 

6) 9823 ÷ 4 = 

7) 7300 ÷ 6 = 

8) 6570 ÷ 5 = 

BRICKWORK Mathematics

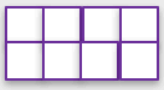
Green Practice

Lo: I can express any remainders of a division sum as a fraction.

Look at each set of calculations and express any remainders as fractions.
Challenge: can you write the fraction in the simplest form?

1) 3108 ÷ 9 = 

2) 6786 ÷ 4 = 

3) 5918 ÷ 8 = 

4) 2923 ÷ 6 = 

5) 7896 ÷ 5 = 

6) 5481 ÷ 6 = 

7) 6570 ÷ 8 = 

8) 4830 ÷ 9 = 

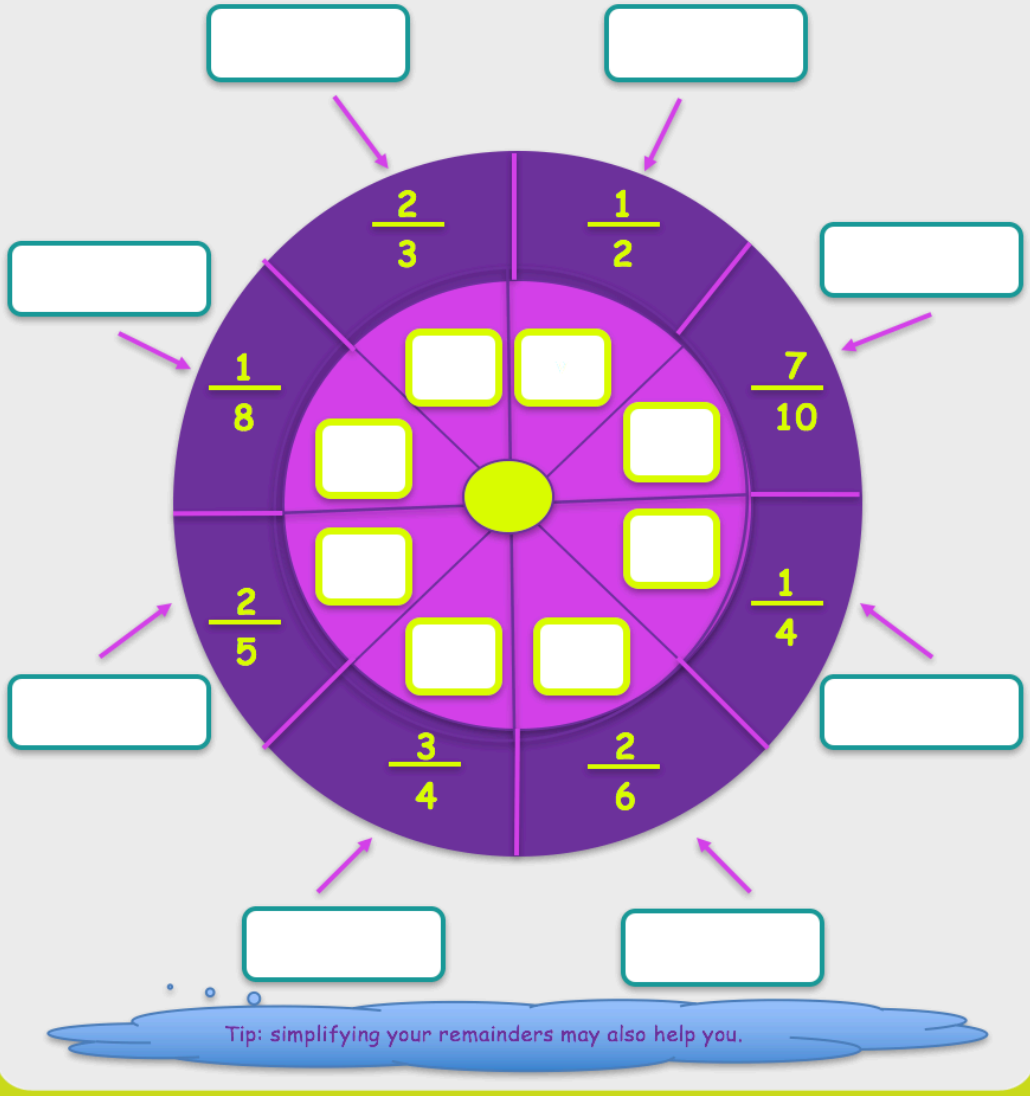
BRICKWORK Mathematics

Yellow Practice

I can work out remainders as fractions and decimals.

The sums below all have remainders. Work out each sum and its remainder. Place the sum that matches the remainder in to the green box around the outside of the circle. Then write the remainder as a decimal in the yellow box inside the circle.

9873 ÷ 8 | 6894 ÷ 10 | 5492 ÷ 8 | 4675 ÷ 4 | 5788 ÷ 6 | 4676 ÷ 6 | 2457 ÷ 4 | 3427 ÷ 10



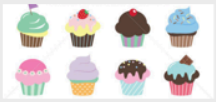
Tip: simplifying your remainders may also help you.

BRICKWORK Mathematics

Mastery

Solving problems and fluency

1) A cake shop packages their cakes in boxes of 4. The owner bakes 245 cakes one day and 353 cakes the next day. How many boxes of cakes can be put on the shelves to sell.



2) A car dealership sells 8 cars in one week for a total of £15672. The owner wants to work out the average each car was sold for. He uses the formula below to calculate the average:

total amount ÷ number of cars sold

On average, how much was each car sold for?

3) A charity collects Christmas presents to send to care homes across the UK. The charity receives eight hundred and forty-eight thousand, two hundred and sixty presents. Half of the presents are distributed in England and the rest are shared equally between Ireland, Wales and Scotland. There are 100 care homes in England that receive the presents. How many presents will each care home receive?