

Division Prior Assessment Question 2

Objective: I use my understanding of relationship of numbers to divide mentally

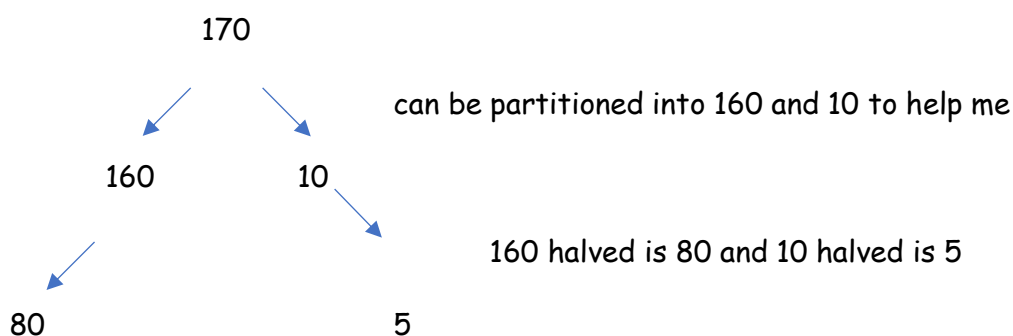
NC: NDM5 multiply and divide numbers mentally drawing upon known facts

Teacher Input Ideas:

Demonstrate to the children the relationship between 2 and 4. This could be done with a large circle, cake or pizza, which is cut in half and half again to make 4. Encourage the children to suggest that if we wanted to divide something by 4, we could use our $\times$ table facts. Such as $44 \div 4 = 11$. However, for some sums it can be more efficient to halve and halve again. Such as $124 \div 4$ could be done mentally by halving = 62 and halve again = 31. Provide the children a little time to explore this idea. Place on the board 88, 24, 840, 1400, encouraging the children to explore if using knowledge of $4 \times$ table is easy to do mentally or if halving and halving again is more efficient.

Some children find it easy to halve amounts with even numbers in the tens or hundreds place but often find it tricky for example to halve 170. Encourage children to find a number near to the amount that they know how to halve. Such as 160, half is 80. I have 10 left over so half of 10 is 5. Therefore, the answer is 85. Children may need to make jottings to help with their mental method. So, children could jot down 80 and then 5.

Some children may need to visually see the thought process



When the children are feeling confident, place $42 \div 4$ on to the board. Allow the children to explore by halving and halving again. Encourage the children to understand that some numbers halved result in a decimal.

Practice Activities:

Purple Practice: Most suited for children who made errors in Q2 or relied on a written method and would benefit from developing quicker mental methods to divide numbers by 2 and 4 mentally.

This activity provides the children with the opportunity to halve numbers and halve again. The questions further down the task encourage the children to halve amounts where 5 will be created. Such as 30 will create 15. Some children find it easy to halve amounts with even numbers in the tens or hundreds column but often find it tricky for example to halve 170. Encourage children to find a number near to the amount that they know how to halve as demonstrated in the input. Children may want to make jottings in their books or on whiteboards of how they have worked it out. There is also a template on the second sheet to help children.

Green Practice: Most suited for children who can find half of amounts in Q2 however would benefit from working with decimals when halving.

The children are to work through the sheet dividing by 2 and 4 by halving and halving again. The answers encourage the children to half whole numbers and decimals to create decimal amounts. If the children are finding this hard, decimal/fraction towers for $\frac{1}{4}$ may help the children to work out the decimal.

Yellow Practice: Most suited for children who are confident with using halving to divide by 2 and 4 and are ready to apply skills to spot patterns

Practical: The children are presented with a task and key question cards to help them explore what happens to different numbers when divided by 2 and 4. The children are to explore what happens to different even and odd numbers and to spot when a decimal is created. The children are also encouraged to spot which even numbers create a decimal when divided by 4 and begin to understand and explain why. The children should also be able to spot that all odd numbers create the same decimal when divided by 2 and 4.

The children should suggest starting numbers, ways to record their findings to help them to spot patterns and the number of examples they need to give to help to prove their findings.

Mastery 1 : Explore

Pick a number between 150 and 200. How many times can it be halved before it reaches a decimal? Which number can be halved the most times before a decimal is formed? What have you divided it by to get it? Can you write the calculation you have completed

Mastery 2 : investigate

I play a game with these rules:

Pick a number.

If it is an odd number $+ 1$.

If it is even halve it.

For example 13

13 is odd so $+ 1 = 14$ 14 halved $= 7$

7 is odd so $+1 = 8$ 8 even $=$ halve

4 even $=$ halve 2 2 even halve $= 1$.

Encourage the children to pick another number to start with and follow these rules.

Keep doing it until you can get as close to zero as possible. What do you notice? What is the final answer. Repeat this game with 5 other numbers.

What do you notice? Explain why this happens?

Why do we have to add one to the odd number?

Answers:

Purple

- | | |
|--|--|
| 1) $280 \div 2 = 140$ $280 \div 4 = 70$ | 2) $600 \div 2 = 300$ $600 \div 4 = 150$ |
| 3) $140 \div 2 = 70$ $140 \div 4 = 35$ | 4) $900 \div 2 = 450$ $900 \div 4 = 225$ |
| 5) $1500 \div 2 = 750$ $1500 \div 4 = 375$ | 6) $340 \div 2 = 170$ $340 \div 4 = 85$ |
| 7) $560 \div 2 = 280$ $560 \div 4 = 140$ | 8) $1820 \div 2 = 910$ $1820 \div 4 = 455$ |
| 9) $60000 \div 2 = 30000$ $60000 \div 4 = 15000$ | |

Green

- 1) $50 \div 2 = 25$ $50 \div 4 = 12.5$
- 2) $82 \div 2 = 41$ $82 \div 4 = 20.5$
- 3) $74 \div 2 = 37$ $74 \div 4 = 18.5$
- 4) $210 \div 2 = 105$ $210 \div 4 = 52.5$
- 5) $830 \div 2 = 415$ $830 \div 4 = 207.5$
- 6) $89 \div 2 = 44.5$ $89 \div 4 = 22.25$
- 7) $63 \div 2 = 31.5$ $63 \div 4 = 15.75$

Mastery 1

Ideas of starting points

200, 100, 50, 25

180, 90, 45

170, 85

160, 80, 40, 20, 10, 5

168, 84, 42, 21,

Look at the amounts below. Use halving to help you to divide by 2 and 4.



The sums I have made are: $280 \div 2 =$

$280 \div 4 =$



The sums I have made are: $600 \div 2 =$

$600 \div 4 =$



The sums I have made are:



The sums I have made are:



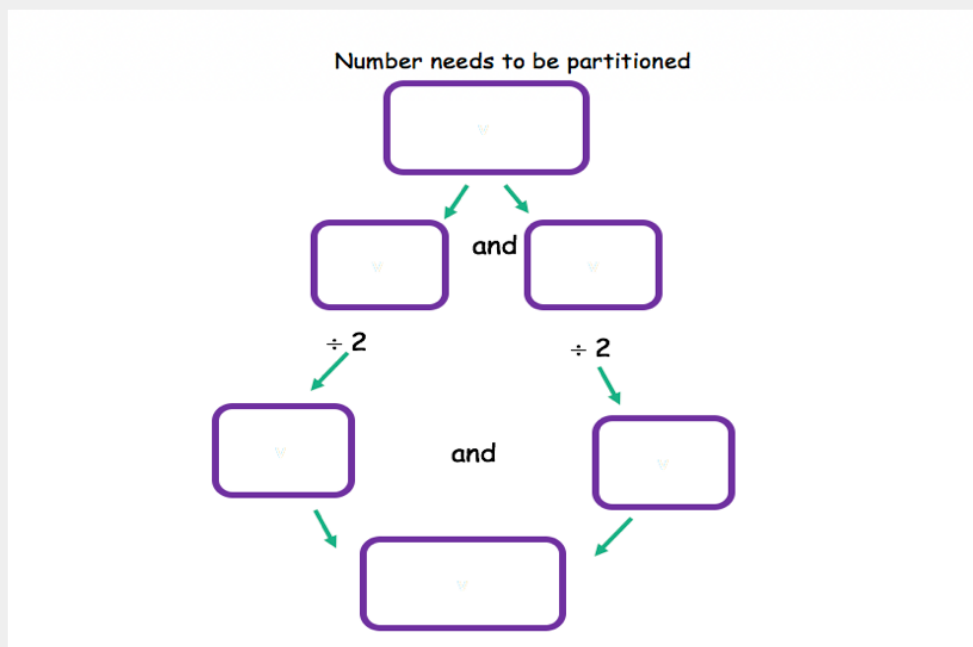
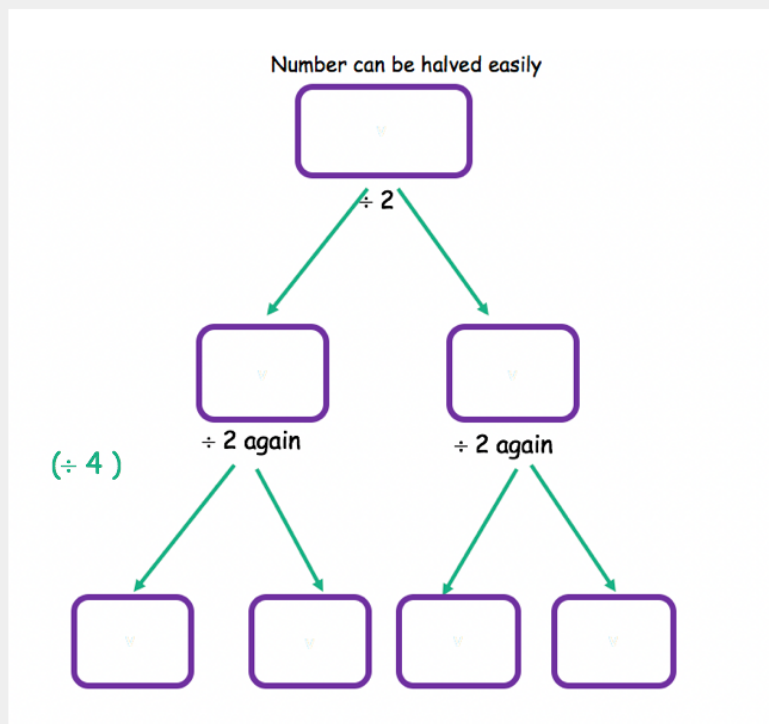
The sums I have made are:



The sums I have made are:



The sums I have made are:



Look at the amounts below. Use halving to help you to divide by 2 and 4.



The sums I have made are: $50 \div 2 =$ $50 \div 4 =$



The sums I have made are:



The sums I have made are:



The sums I have made are:



The sums I have made are:



The sums I have made are:



The sums I have made are:

Yellow Practice

I can mentally divide by 2 and 4 .

Pick any numbers between 0-1000. Explore what happens when you divide the numbers by 2 and 4.

Key Questions

- What numbers do you create?
- Why does this happen?
- Do you create a whole number or a decimal?
- Do you notice any patterns?

Explore dividing even numbers.

Explore dividing odd numbers.

What do you notice when numbers ending in a 6 are halved?

What do you notice when numbers ending in a 8 are halved?

What do you notice when numbers ending in a 0 are halved?

What do you notice when numbers ending in a 2 are halved?