Multiplication Prior Learning Assessment Question 3

Objective: I recognise that multiplication is commutative.

NC: NMD 3: recognise and use factor pairs and commutativity in mental calculations

Assessment Question:

Prior Learning:

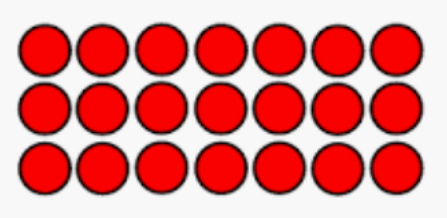
Multiplication + Division	**Question 3 :** I understand that multiplication is commutative.	I feel

Write this sum in another way so that the answer is still the same:

3 x 7 = 21 $\square$ x $\square$ = 21

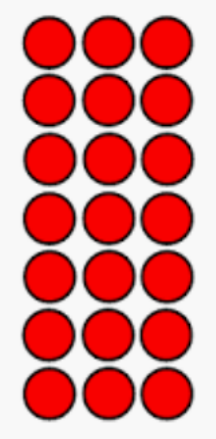
Teacher Input Ideas:

Ask the children to draw or show with objects what 3 x 7 looks like. Some children may have demonstrated this as an array .



model counting up in 3s for each column.

Now ask the children to show what 7 x 3 looks like.



model counting up in 7s for each column.

Compare the 2 arrays. What do the children notice about the answer? Explain to the children that when 2 numbers are multiplied by each other they make a product. 21 is the product of 3 x 7 and 7 x 3. For both sums the answer is 21. The amounts that are multiplied can be arranged in any order and the answer(product) will still be the same.

Now place other sums such as

3 x 2 and 2 x3 4 x 5 and5 x 4 6 x 9 and 9 x6

Get the children to either draw the arrays for each sum or use counters if this helps. Most children will be able to count up using their knowledge of times tables to get to each amount. Discuss that this is called commutativity. This is maths rule that means when amounts are added or multiplied by each other, the order in which the numbers are placed does not change the answer. So we can swap the numbers around to help us.

For example: rather than counting in 2s for 2 x 7 we can count in 7s for 7 x 2 and the answer will be the same.

Practice Activities

Purple Practice: Most suited for children who show difficulty in answering Question 3 of the prior learning and will benefit from exploring commutativity with familiar times tables.

For this activity, the children are provided with sums in pairs. They are to answer each sum and explore the sum represented with the amounts in the other order. The children should notice that for multiplication it does not matter which order the children place the numbers, the answer will remain the same. Encourage and model the use of the word commutative . Get the children to reflect on their answers and to discuss which way is more efficient to answer each sum, for example is it quicker to count in 5s for 3 x 5 or 3s ? Why? What about 10 x 6 or 6 x 10? Is it easier to count in 6s or 10s. Why?

Green Practice: Most suited for children who made errors in Question 3 and are ready to apply trickier times tables using the commutative law.

The green activity is presented in the same format as the purple activity, however the sums are less familiar to the children and provide the opportunity to apply knowledge of year 4 times tables. The children should also be encouraged to discuss the commutative law and how this can help when calculating.

Yellow Practice: **Most suited for children who will benefit from applying knowledge of the commutative law to multiply 3 numbers by each other.**

This activity provides the opportunity for children to apply their knowledge of the commutative law when multiplying 3 numbers by each other. The children should draw upon their prior learning of multiplying 3 numbers by each other, however in this activity the children should be encouraged to explore the order the amounts can be multiplied to make it easier, using the commutative law. This activity provides the opportunity to explore moving the positions of the 3 numbers using the commutative law to help them to multiply quickly and more efficiently. For example 2 x 7 x 3, will be more efficient to work out 2 x 3 = 6 then 6 x 7 using their knowledge of times tables. 2 x 7 = 14 and then 14 x 3 may take the children longer to calculate mentally.

Mastery : Fluency and Reasoning

For this mastery task the children are provided with a sum. They are also provided with 3 different suggestions as to how to work out the sum. Encourage the children to explore each strategy. Encourage the children to make notes, jottings or drawings to help them to understand each one. Discuss which strategy they like the best and why these can be used. Some children may need modelling how 4 x 5 + 8 can be used and why often finding 5 lots is a quick way as we know our 5 times tables well.

Answers :

Purple:

1) 4 2) 8 3) 15 4) 60

Green

1) 30 2 42 3) 32 4) 45

Yellow:

1) 30 2) 90 3) 28 4) 48

5)120 6)84 7)96 8) 54

BRICKWORK Mathematics

Purple Activity

LO: I recognise commutativity.

Look at each set of sums. Draw what each sum looks like and calculate the answer. What do you notice. Can you explain why?

1) 1 × 4 =

4 × 1 =

2) 2 × 4 =

4 × 2 =

3) 3 × 5 =

5 × 3 =

4) 6 × 10 =

10 × 6 =

© Copyright 2018 Brickwork Mathematics

BRICKWORK Mathematics

Green

I can recognise commutativity

Look at each set of sums. Draw what each sum looks like and calculate the answer. What do you notice?

1)

=

=

2)

=

=

3)

=

=

4)

=

=

BRICKWORK Mathematics

Yellow Practice

LO I can use the commutative law to help to multiply 3 numbers by each other.

Explore changing the order of the numbers using the commutative law in each sum so that you can multiply these amounts mentally.

1) 3 × 5 × 2 = ☐

2) 3 × 5 × 6 = ☐

3) 7 × 2 × 2 = ☐

4) 4 × 4 × 3 = ☐

5) 6 × 5 × 4 = ☐

6) 7 × 2 × 6 = ☐

7) 3 × 4 × 8 = ☐

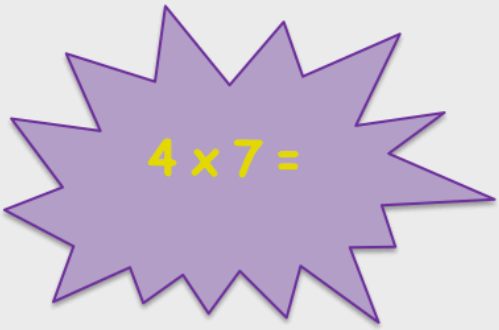
8) 9 × 3 × 2 = ☐

BRICKWORK Mathematics

Mastery

Fluency and Reasoning

Look at the 3 different ways to work out the sum below. Explore using each strategy suggested. Why can we use these strategies? Which do you like using the most? Why?



I can use doubling

I can use the commutative law

I can use 4 x 5 + 8