Multiplication Prior Learning Assessment Q10 & 11

Objective: I can solve problems where more than operation is required.

I can solve problems that involve division.

I use the context of the problem to round any remainders to whole numbers

NC NASMD10: solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign

11. solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.

Practice Activities: Below the children are presented with 3 different problems. You may want to spend a whole lesson on the problems or use these at the end of lessons to apply the children's calculation methods.
The children should be taught the skills to solve problems, therefore you may want to model or discuss the following points:

- Looking for any familiar symbols or information.
- Picking out the information you know in the problem.
- Working out what you are being asked to do.
- Looking for any patterns or additional information.
- Applying knowledge of using inverse operations.
- Suggesting a suitable method for solving the problem.
- Estimating the answer.
- Suggesting a method for checking the answer.
- Working systematically.

Mastery 1: most suited for children who will benefit from applying and securing mental methods and will benefit from solving missing box problems.

For this activity the children are provided with division sums. The children are to work the amounts needed in the missing boxes to make each sum correct. Some of the possibilities are open ended and require the children to find 2 or 3 amounts. The children will need to use mental methods and the inverse operation to calculate the answer.

Mastery 2: **Most suited for children ready to apply division methods to a division visual problem.**

For this activity, the children may choose to apply their halving mental methods for division to find the answer. The problem also provides the opportunity for the children to problem solve and work out algebraic problems.

For children that are finding this hard, this could be done practically with boxes and weights. The children could be given 5 boxes. They could weigh the large box to reveal it weighs 1400 grams. You could then look at the link, this is half of 2800. Why do you think this? So, if we know that this box weighs the same as these 4 small boxes, how can we work out 1 small box? What could we do? Encourage the children to divide by 4 applying halving and halving again or use other division methods they feel appropriate.

Mastery 3: **Most suited for children ready to solve word problems using a variety of operations.** For the word problems provided the children will need to use other operations too, not just division. In some questions they will need to use the context of the question to decide how to record answers with remainders.

For the first question the children are required to add the 2 batches of cakes baked together and then divide by 4 as 4 cakes can fit in to one box. The children will be left with a remainder. Look out for any children that either round up the answer or include the remainder. There will be 2 spare cakes, so the children need to understand that these will not fill one whole box, therefore they cannot be sold so they will need to round the answer down.

For the second question the children are provided with the formula(mean) as how to work out the average price of each car sold. The children are to apply written methods to work out the average price of each car sold.

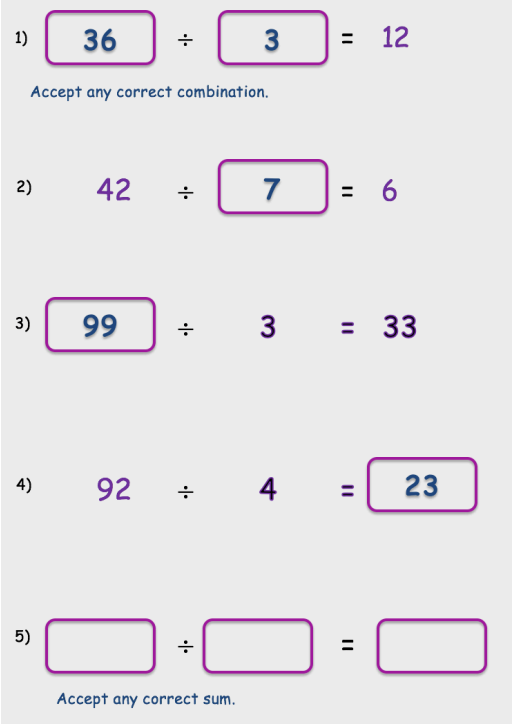
For the final question, the children are to halve the total number of presents donated to a charity in England. They are then to share these between 100 , using knowledge of dividing by 100. Once the children have worked this out, they will need to decide how they will record the answer and whether they will need to round this due to the context of the question.

Key Questions

- What is the problem asking you to do? What key information do you need?
- How will you solve this problem? Is more than one step needed?
- Why have you chosen to select this operation? How can you check that you have calculated accurately?

Answers

Mastery 1



Mastery 2

2800 ÷ 2 to find the large box = 1400.

That means that the 4 boxes = 1400

÷ 4 to find 1 box

1400 halve and halve again = **350 g**

Mastery 3

1) 149 boxes
2) £1959
3) 241 presents (48,260 divided by 2 = 24130) (24,130 divided by 100 = 241.3)

BRICKWORK Mathematics

Mastery 1

Fluency and Problem Solving

Fill in the missing boxes.

1) ☐ ÷ ☐ = 12

2) 42 ÷ ☐ = 6

3) ☐ ÷ 3 = 33

4) 92 ÷ 4 = ☐

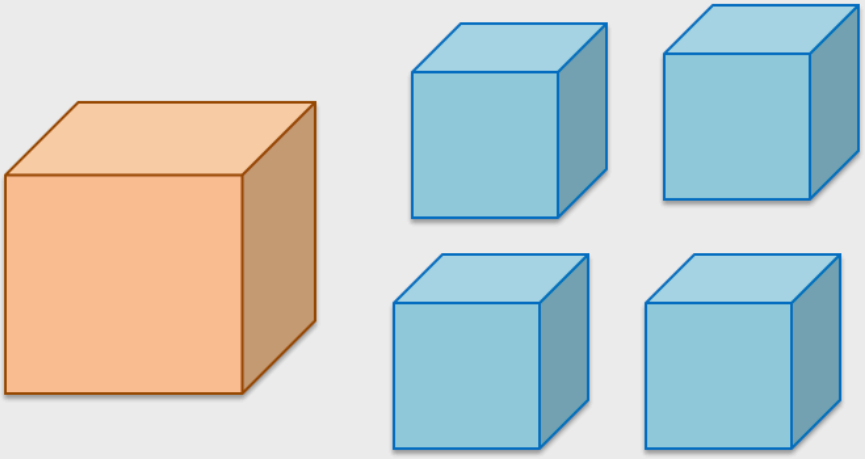
5) ☐ ÷ ☐ = ☐

BRICKWORK Mathematics

Mastery 2

Problem solving and fluency

A large box and 4 small boxes weigh 2800 grams altogether.



The large box weighs the same as 4 small boxes.

How much does one small box weigh?

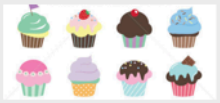
grams

BRICKWORK Mathematics

Mastery 3

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 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?