Objectives:

I can solve problems using my knowledge of multiplication.

I can solve problems where more than operation is required.

I can solve problems involving scaling.

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

NASMD11. solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.

Teacher Notes:

The children should now be confident with mental and written multiplication strategies. The activities suggested provide the children with opportunities to apply multiplication methods and other operations. The children may need time to discuss what they are required to do and their strategies for solving the problems. The tasks are split into 3 mastery levels where they require application of multiplication methods; conversions of measure; addition, subtraction and division methods and knowledge of scaling and fractions.

Mastery 1: opportunity to apply multiplication methods.

The first mastery task requires the children to use times table facts and written methods to solve multiplication pyramids. Encourage the children to spot how they work and suggest both mental and written methods for working out the answers to the missing boxes.

The second sheet of mastery 1, encourages the children to use multiplication methods to solve word problems. The children also need to understand that 1kg is 1000 grams and use estimation to help them suggest how many lots of 167g will make close to 1000 grams.

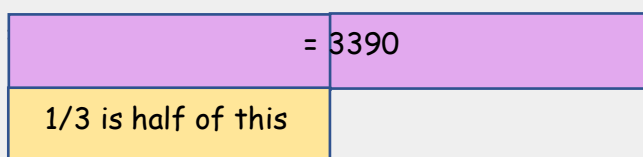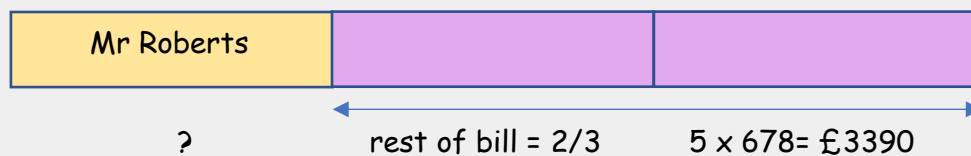### Mastery 2: opportunity to solve multistep problems.

The children are presented with 4 word problems where they must pick out the key information and select operations and strategies they can use to solve the problems. Encourage the children to explain their working out and prove that they have the correct answer. The children are required to use subtraction, division, multiplication, addition and their knowledge of converting measures.

Mastery 3: opportunity to apply multiplication methods to solve scaling and proportion problems (using knowledge of fractions).

The children are presented with 3 different problems. The children may want to work in small groups to discuss the different vocabulary used and starting points for each problem. The first 2 problems require the children to use their knowledge of fractions.

The children may find it useful to draw diagrams or bars to show £125 as 1/6. How many more 6ths are left? How much are each worth? How much is that altogether?

The children also may need support in understanding how to find a 1/3 of the total holiday. The children could draw a diagram and use knowledge of fractions. The children need to work out that 5 x 678 = 2/3 of the bill. To find a 1/3 of this, the amount can be halved.

Mr Roberts		

$\xleftarrow{\hspace{6cm}}\xrightarrow{}$

?   rest of bill = 2/3   5 x 678= £3390

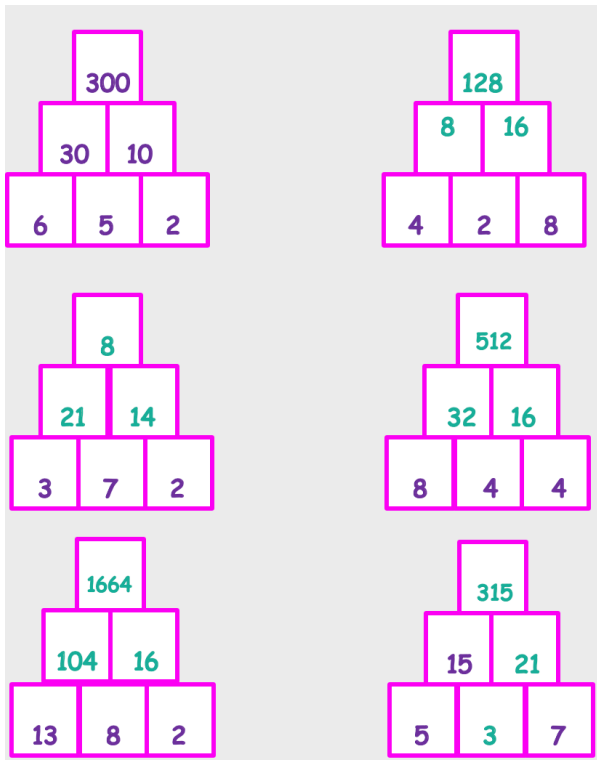| = 3390 |
|---|
| 1/3 is half of this |

£3390 divided by 2 = £1695

For the third problem the children need to understand that often diagrams or models are drawn on a smaller scale as an example before making a real product. Examples of this can be shown or children could also explore cross curricular activities of this in design technology.

Discuss how we can work out something that is 25 x bigger. The children may suggest working out 84 x 25 and then converting the answer which is in mm into cm by dividing by 10. Some children may also be able to say that it is 2.1 metres.

Answers

Mastery 1:

1)

Pyramid 1:
```
      300
    30   10
   6   5   2
```

Pyramid 2:
```
      128
     8   16
   4   2   8
```

Pyramid 3:
```
      8
    21   14
   3   7   2
```

Pyramid 4:
```
      512
    32   16
   8   4   4
```

Pyramid 5:
```
     1664
   104   16
  13   8   2
```

Pyramid 6:
```
      315
    15   21
   5   3   7
```

2) 5 bracelets

3) £612

Mastery 2:

1) £12each
2) £505.05
3) 420m2
4) £266.80

Mastery 3:

1) £625
2) £1695
3) 210cm

BRICKWORK Mathematics

I can solve problems using my knowledge of multiplication .

These are multiplication pyramids. 2 boxes are multiplied by each other to create the amount in the box above. Below is an example. Can you fill in the other pyramids?

| 300 |
| 30 | 10 |
| 6 | 5 | 2 |

4	2	8

3	7	2

8	4	4

13	8	2

15	
5		7

BRICKWORK
Mathematics
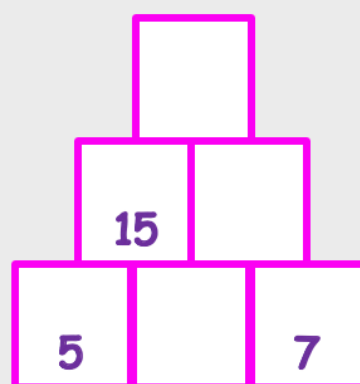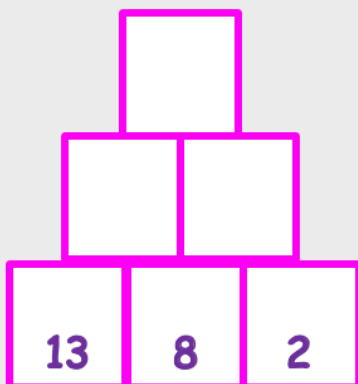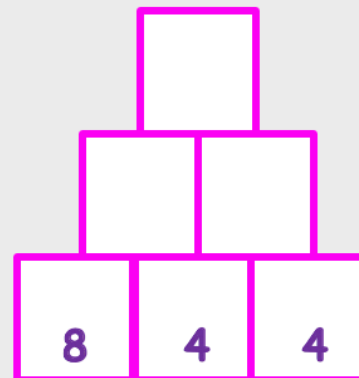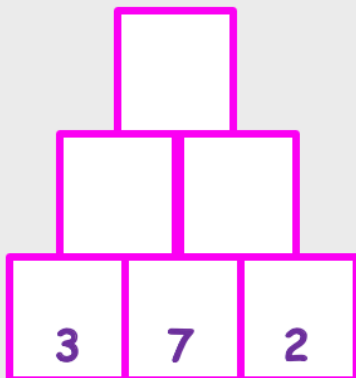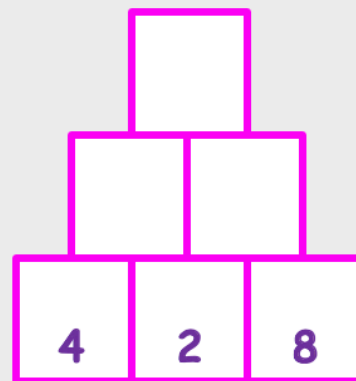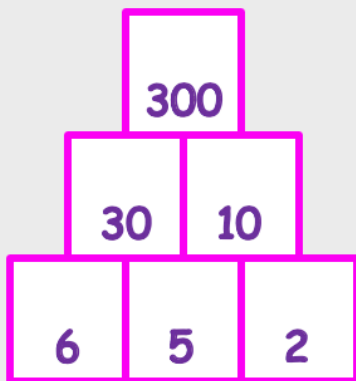
1) Harriet designs bracelets and sends them to different shops to be sold. She sends the bracelets in large boxes.

1 kg

167 g

A bracelet weighs 167g each. The large box can only hold 1kg of weight. How many bracelets can be placed into the box?

bracelets

2) A school has 3 football teams. Each team has 12 players. Each player needs a new football kit that costs £17 each. How much money will the football kits cost altogether?

£

Mastery 2

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

BRICKWORK Mathematics

1) It is Sophia's birthday and she takes 7 of her friends out for a meal. The total bill comes to £185. Sophia has £101.25 in her bank account and uses her bank card to pay this amount towards the meal.

The 7 friends round the remaining amount to the nearest pound and then share the cost between them equally.
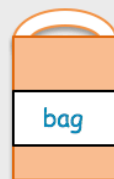
How much will each friend pay?

£

Sam goes shopping. He wants to buy 14 shirts for his football team . They each cost £36 pounds. He also needs to buy carrier bags to hold them in. He puts 2 shirts into each carrier bag. How much does he spend in total?

£36

bag 15p

£

Mastery 2

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

BRICKWORK
Mathematics

The school are purchasing covers for the playground for when it snows. Each cover has an area of 0.060Km. The school would like to buy 7 covers. How many metres will that cover of the playground?

m

A concert ticket costs £65 pounds. Sally buys 4 tickets. She then has to pay a £1.70 booking fee for each ticket. How much does Sally pay in total?

£
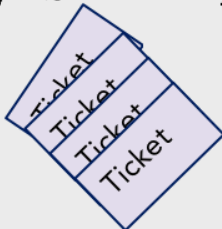
Jamie wants to hold different charity events at school to raise money towards new sports equipment. After one cake sale, he raises £125. This is 1/6 of his target. How much more money does he need to raise?

3 families book a holiday to Spain. Mr Roberts pays 1/3 of the total bill for his family. There are 5 left people to pay. They pay £678 pounds each. How much does Mr Roberts pay?

£

Jay designs a wardrobe and makes a small 3D model first.
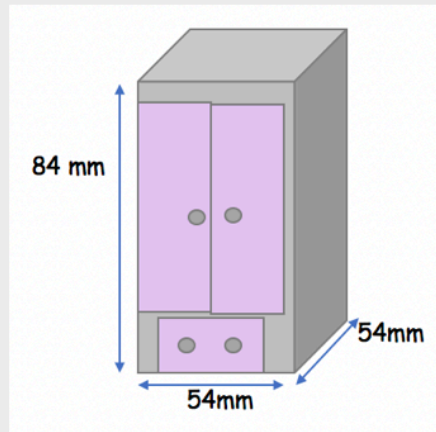
He wants to make this **25 times bigger** for the final wardrobe.

How many centimetres tall will the wardrobe be?

cm