

Multiplication Prior Assessment Questions 2 and 3

Objective: I can use a written method to multiply a 1 digit number by a 3 or 4-digit number. (short multiplication)

NC NDM 4: multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers

Teacher Input Ideas:

Place a 2 digit number x a one digit number on the board such as 35×7 . See how the children will attempt to multiply this. Talk about different ways that the children have and encourage children to share their methods.

Children may suggest that they used partitioning methods such as:

$$30 \times 7 = 210$$

$$5 \times 7 = 35 \text{ and then added them together}$$

Model how to layout the sum as the expanded multiplication method below to help us to calculate quickly and to support with adding the partitioned parts back together.

H T O	
3 5	
x 7	
3 5	(7×5 is 35)
2 1 0	(7×30 is 210)
2 4 5	

Ensure that the children understand place value and understand that it is 7×30 and not 7×3 . Labelling the columns will help children too and .

Model to the children that when we add them back together, we can use the column addition method to do this quickly. Repeat with other 2 and 3 digit amounts so that the children can see how this works (Such as 76×6 , 124×3).

The purple task has support for the expanded column method for up to 3 digit amounts by 1 digit amounts. The yellow activity can also be used for the expanded column method for up to 4 digits.

Short method:

When the children are confident and secure with the expanded method model how this can be shortened:

76	model alongside	76	
x 6		x 6	
<hr/>		<hr/>	
456		36	(6 x 6 = 36)
3		420	(6 x 70 = 420)
		456	

Further support:

th h t o

239
6
<hr/>
54
180
1200
<hr/>
1434
1

Expanded method: ensure that when this is being modelled that vocabulary such as thirty x 6 and two hundred x 6 is being used so that the children understand the value of the amounts they are multiplying.

When ready, move on to compare with showing the short method alongside to show that we can make this method quicker and more efficient by adding as we go along.

th h t o

239
6
<hr/>
1434
<hr/>
125

Short multiplication method:

Ensure that the children understand why amounts are being carried across and why we add them as we go along.

Practice Activities:

Purple Practice: most suited for children who made errors in Q2 and Q3 or over rely on the use of the partitioning method to multiply.

This activity models how to use the expanded multiplication method to move the children away from partitioning and towards a more formal written method. The children are provided with 6 questions with space to work out the answers using the expanded column method for 1 digit multiplication by up to 3 digits. The children also have a challenge to order 4 amounts after they have worked out the answers. The children should be able to apply the use of the expanded column method independently.

Green Practice: most suited for children who demonstrated some accuracy in Q2, Q3 and Q4 and would benefit from being introduced to a more formal written method using short multiplication.

This activity models how to use the short multiplication method to move the children away from partitioning and towards a formal written method. The children are provided with 6 questions with space to work out the answers using the short method for 1 digit multiplication by up to 3 digit. Additionally the numbers that the 3 digits numbers are multiplied by are 6,7,8 or 9 (which are often x tables that children are unconfident in). The questions in this section can also be completed using the expanded column method if some children will benefit with multiplying by 6,7,8, or 9.

Yellow Practice: most suited for children who will benefit from multiplying 3 and 4 digit amounts by a 1 digit amount.

The yellow activity encourages children to use the short multiplication method to multiply a 1 digit number by a 4 digit number. Encourage the children to explain how they use the method and use the correct vocabulary (such as 40×7 , not 4×7 if the 4 is in the tens place). If there are some children that are ready to multiply a one digit amount by a 4 digit amount using the expanded method, this sheet can be used.

Mastery- efficiency

For this mastery task, the children are required to work along the track as quickly as possible. The children are provided with a variety of questions and they should select either a mental or written method to work out the answer. The children should also discuss their answers and working out with others so that children can share methods and see if there was a more efficient strategy they could have used for certain questions.

Answers

Purple:

- | | | |
|---------|---------|----------|
| 1) 1026 | 2) 1002 | 3) 1648 |
| 4) 1505 | 5) 5120 | 6) 3834? |

Challenge :

1260	965	872	734
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Green :

- | | | |
|---------|---------|-------------------|
| 1) 1267 | 2) 1578 | 3) 3367 (481x 7) |
| 4) 1345 | 5) 3556 | 6) 7632 |

Yellow:

- | | | |
|----------|----------|----------|
| 1) 8868 | 2) 7693 | 3) 8013 |
| 4) 22320 | 5) 20048 | 6) 29848 |
| 7) 35080 | 8) 45661 | 9) 74529 |

Mastery: (follow along the track)

32, 60, 600, 56, 744, 2000, 6300, 340, 2040, 5327, 24873, 408, 174, 720

Look at each sum and use the expanded column method to work out the answer.

Example: 213×6

	H T O	
	2 1 3	
x	<u> 6</u>	
	1 8	(6 × 3)
	6 0	(6 × 10)
	1 2 0 0	(6 × 200)
	<u>1 2 7 8</u>	

HINT
Remember place value.
Example= 6×10
 6×200

Now try:

1)

H T O
3 4 2
x <u> 3</u>

2)

H T O
1 6 7
x <u> 6</u>

3)

H T O
4 1 2
x <u> 4</u>

4)

H T O
3 0 1
x <u> 5</u>

5)

H T O
6 4 0
x <u> 8</u>

6)

H T O
5 4 8
x <u> 7</u>

Challenge: Order these following amounts from largest to smallest.

4×218 7×180 5×193 2×367

LO: I can use the short-written multiplication method to multiply 1-digit numbers by 3-digit numbers.

Use the short multiplication method to multiply the 3-digit numbers by 1-digit numbers.

Example:

$$\begin{array}{r}
 \text{H T O} \\
 287 \\
 \times \quad 3 \\
 \hline
 861 \\
 \hline
 22
 \end{array}$$

1)

$$\begin{array}{r}
 \text{H T O} \\
 181 \\
 \times \quad 7 \\
 \hline
 \\
 \hline
 \\
 \hline
 \end{array}$$

2)

$$\begin{array}{r}
 \text{H T O} \\
 263 \\
 \times \quad 6 \\
 \hline
 \\
 \hline
 \\
 \hline
 \end{array}$$

3)

$$\begin{array}{r}
 \text{H T O} \\
 481 \\
 \times \quad 7 \\
 \hline
 \\
 \hline
 \\
 \hline
 \end{array}$$

4)

$$\begin{array}{r}
 \text{H T O} \\
 269 \\
 \times \quad 5 \\
 \hline
 \\
 \hline
 \\
 \hline
 \end{array}$$

5)

$$\begin{array}{r}
 \text{H T O} \\
 508 \\
 \times \quad 7 \\
 \hline
 \\
 \hline
 \\
 \hline
 \end{array}$$

6)

$$\begin{array}{r}
 \text{H T O} \\
 954 \\
 \times \quad 8 \\
 \hline
 \\
 \hline
 \\
 \hline
 \end{array}$$

LO: I can use the short-written multiplication method to multiply 1-digit numbers by 4-digit numbers.

Use the short multiplication method to multiply the amounts in each sum.

Example:

	Th	H	T	O
	2	3	1	8
x				3
	<hr/>			
	6	9	5	4
	<hr/>			
				2



<p>1) 1 4 7 8 2) 1 0 9 9 3) 2 6 7 1</p> <p> x 6 x 7 x 3</p> <p> <hr/></p> <p> <hr/></p>		
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<p>4) 3 7 2 0 5) 2 5 0 6 6) 7 4 6 2</p> <p> x 6 x 8 x 4</p> <p> <hr/></p> <p> <hr/></p>		
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<p>7) 7 0 1 6 8) 6 5 2 3 9) 8 2 8 1</p> <p> x 5 x 7 x 9</p> <p> <hr/></p> <p> <hr/></p>		
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Work your way along the track as quickly as you can. For each question, you need to decide if a mental or written method will be the most efficient way.

4×8

15×4

30×20

7×8

124×6

510×4

85×4

90×70

200×10

7×761

8291×3

102×4

29×6

8×90

Finished?

Discuss with a friend how you worked out some of the sums.

- Did you use the same methods as each other?
- Did you use a variety of methods along your journey?
- Can you find a more efficient method for one of the sums?