Year 5: Week 3, Day 2

Short multiplication

Each day covers one maths topic. It should take you about 1 hour or just a little more.

1. If possible, watch the PowerPoint presentation with a teacher or another grown-up.

OR start by carefully reading through the Learning Reminders.

2. Tackle the questions on the Practice Sheet. There might be a choice of either Mild (easier) or Hot (harder)! Check the answers.

3. Finding it tricky? That’s OK... have a go with a grown-up at A Bit Stuck?

4. Have I mastered the topic? A few questions to Check your understanding. Fold the page to hide the answers!
Learning Reminders

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

Use the grid method or short multiplication to calculate $3 \times 235$.

<table>
<thead>
<tr>
<th>×</th>
<th>200</th>
<th>30</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>600</td>
<td>90</td>
<td>15</td>
</tr>
</tbody>
</table>

1. Multiply the 1s: $5 \times 3$
2. Multiply the 10s: $30 \times 3$
3. Multiply the 100s: $200 \times 3$

Don’t forget to add any ‘carry’ digits!

\[
\begin{array}{c}
2 \\
3 \\
5 \\
\hline
1 \\
1 \\
\hline
7 \\
0 \\
5 \\
\end{array}
\]
Learning Reminders

Use short multiplication to multiply 4-digit by 1-digit numbers.

\[ 3 \times 4235 \]

<table>
<thead>
<tr>
<th></th>
<th>4000</th>
<th>200</th>
<th>30</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>12,000</td>
<td>600</td>
<td>90</td>
<td>15</td>
</tr>
</tbody>
</table>

Adding the four numbers:

\[ 4 \quad 2 \quad 3 \quad 5 \]
\[ \times \quad 3 \]
\[ 1 \quad 1 \]
\[ 1 \quad 2 \quad 7 \quad 0 \quad 5 \]

Multiply the 1s first, then the 10s, then the 100s, then the 1000s. Remember to leave a line for any ‘carry’ digits during addition.

We need an extra column!

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Learning Reminders

Use short multiplication to multiply 4-digit by 1-digit numbers; Use rounding to approximate.

Use the grid method or short multiplication to work out $6 \times 3241$.
First, estimate the answer.

Does your answer look sensible?

$6 \times 3241 = 19,446$

The answer must be more than 18,000 ($6 \times 3000$) but quite a bit less than 24,000 ($6 \times 4000$). Knowing the range of the answer helps us see if we've made a mistake with place value.

Now go ahead and calculate the answer...

Use the grid method or short multiplication to work out $5734 \times 4$.
First, estimate the answer...

Does your answer look sensible?

$5734 \times 4 = 22,936$

The answer must be between 20,000 ($4 \times 5000$) and 24,000 ($4 \times 6000$). Now go ahead and calculate the answer.
Practice Sheet Mild
Multiplication Challenge

Estimate before doing the calculations!

1. Which of these gives the closest answer to 2000?
   a) $431 \times 5$  b) $678 \times 3$  c) $473 \times 6$

2. Which of these gives the closest answer to 4000?
   a) $842 \times 4$  b) $851 \times 5$  c) $654 \times 7$

3. Which of these gives an answer between 5000 and 6000?
   a) $787 \times 6$  b) $925 \times 5$  c) $723 \times 8$

Challenge

Make up a puzzle like this for a partner or classmate to solve.
Estimate before doing the calculations!

1. Which of these gives the closest answer to 20,000?
   
a) $4361 \times 5$   
b) $7036 \times 3$   
c) $2973 \times 6$

2. Which of these gives the closest answer to 40,000?
   
a) $9892 \times 4$   
b) $8051 \times 5$   
c) $5754 \times 7$

3. Which of these gives the closest answer to 60,000?
   
a) $9451 \times 7$   
b) $7444 \times 8$   
c) $7023 \times 9$

4. Which of these gives an answer between 25,000 and 30,000?
   
a) $5137 \times 6$   
b) $6205 \times 4$   
c) $3629 \times 8$

Challenge

Make up a puzzle like this for a partner or classmate to solve.
Practice Sheet Answers

Multiplication challenge (mild)
1. b
2. b
3. c

Multiplication challenge Sheet 2 (hot)
1. b
2. b
3. b
4. c
A Bit Stuck?
Multiplication splits

Try this activity with a partner, but record your calculations on your own sheet.

What to do:

• Use the grid method to work out the answers to these multiplications.

\[
\begin{array}{c|c|c|c}
3 \times 125 & 5 \times 323 & 4 \times 435 \\
\hline
100 & 300 & 400 \\
20 & 20 & 30 \\
5 & 3 & 5 \\
3 & & 4 \\
\hline
\end{array}
\]

• Next choose at least two multiplications and draw your own grids to keep track of your steps.

\[
\begin{array}{c|c|c|c}
7 \times 123 & 6 \times 214 & 8 \times 142 & 5 \times 415 \\
\hline
& & & \\
& & & \\
& & & \\
& & & \\
& & & \\
\hline
\end{array}
\]

S-t-r-e-t-c-h:
Which of these multiplications will have the biggest answer?
Which will have the smallest answer?
\[
\begin{array}{c|c|c|c}
8 \times 243 & 6 \times 411 & 2 \times 534 \\
\hline
& & & \\
& & & \\
& & & \\
\hline
\end{array}
\]

Learning outcomes:
• I can use the grid method to multiply 3-digit numbers by 1-digit numbers.
• I am beginning to estimate the answers.
Check your understanding

Questions

Does 2340 x 8 give the same answer as 4320 x 4?
Explain how you are certain that your answer is correct.

Choose a strategy for each of these three multiplications.
Explain why it is not sensible to use the same method for all three.
(i) 340 x 5 =
(ii) 421 x 7 =
(iii) 350 x 9 =

Using the digits 3, 5, 6, 7 and 9, how close can you get to an answer of 20,000?

Fold here to hide answers

Check your understanding

Answers

Does 2340 x 8 give the same answer as 4320 x 4?
Explain how you are certain that your answer is correct.
Answers are 18,720 and 17,280 respectively.
You need to double 2340 and multiply by 4 to get the same answer as 2340 x 8; 4680 x 4 = 18,720.

Choose a strategy for each of these three multiplications.
Explain why it is not sensible to use the same method for all three.
(i) 340 x 5 = 1700 Solve by partitioning: multiply 300 by 5, then 40 by 5, and add.
(ii) 421 x 7 = 2947 Solve as short multiplication.
(iii) 350 x 9 = 3150 Multiply by 10, then subtract 350.
Other strategies possible, these are examples. The important thing is that children make a sensible choice based upon reviewing the numbers to be multiplied.

Using the digits 3, 5, 6, 7 and 9, how close can you get to an answer of 20,000? 6597 x 3 = 19,791
Children could use a ‘trial and improvement’ (not trial and error) strategy.

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