

Reasoning and Problem Solving

Step 2: Multiply 4-Digits by 2-Digits

National Curriculum Objectives:

Mathematics Year 6: (6C7a) [Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication](#)

Mathematics Year 6: (6C8) [Solve problems involving addition, subtraction, multiplication and division](#)

Differentiation:

Questions 1, 4 and 7 (Problem Solving)

Developing Find the answer to a problem using the given parameters multiplying 4-digits by 2-digits using a column multiplication format where possible with no exchanging.

Expected Find the answer to a problem using the given parameters multiplying 4-digits by 2-digits using a linear and column multiplication format with up to 3 exchanges.

Greater Depth Find the answer to a problem using the given parameters multiplying 4-digits by 2-digits using a linear and column multiplication format with multiple exchanges where numbers are represented in numerals and words.

Questions 2, 5 and 8 (Reasoning)

Developing Identify the error made in working out when multiplying 4-digits by 2-digits using a column multiplication format where possible with no exchanging.

Expected Identify the error made in working out when multiplying 4-digits by 2-digits using a linear and column multiplication format with up to 3 exchanges.

Greater Depth Identify the error made in working out when multiplying 4-digits by 2-digits using a linear and column multiplication format with multiple exchanges where numbers are represented in numerals and words.

Questions 3, 6 and 9 (Problem Solving)

Developing Find two possible answers using given clues and parameters multiplying 4-digits by 2-digits using a column multiplication format where possible with no exchanging.

Expected Find two possible answers using given clues and parameters multiplying 4-digits by 2-digits using a linear and column multiplication format with up to 3 exchanges.

Greater Depth Find two possible answers using given clues and parameters multiplying 4-digits by 2-digits using a linear and column multiplication format with multiple exchanges where numbers are represented in numerals and words.

More [Year 6 Four Operations](#) resources.

Did you like this resource? Don't forget to [review](#) it on our website.

Multiply 4-Digits by 2-Digits

Multiply 4-Digits by 2-Digits

1a. Use all of the digit cards in the calculation below to make the closest possible number to 50,000.



$$\begin{array}{r} \square, 2 \square 1 \\ \times \quad 2 \square \\ \hline \end{array}$$



PS

1b. Use all of the digit cards in the calculation below to make the closest possible number to 45,000.



$$\begin{array}{r} 2, 1 \square \square \\ \times \quad \square 1 \\ \hline \end{array}$$



PS

2a. Jake has worked out the answer to $1,422 \times 21$ below.

| | | | | | |
|---|---|---|---|---|---|
| | | 1 | 4 | 2 | 2 |
| x | | | | 2 | 1 |
| | | 1 | 4 | 2 | 2 |
| | 1 | 8 | 4 | 4 | 0 |
| | 1 | 9 | 8 | 6 | 2 |

Is Jake correct?
Explain your answer.



R

2b. Tina has worked out the answer to $3,102 \times 32$ below.

| | | | | | |
|---|---|---|---|---|---|
| | | 3 | 1 | 0 | 2 |
| x | | | | 3 | 2 |
| | | 6 | 2 | 0 | 4 |
| | 9 | 3 | 3 | 6 | 0 |
| | 9 | 9 | 5 | 6 | 4 |

Is Tina correct?
Explain your answer.



R

3a. Kirsty says,



I can only use the digits 1, 2 or 3 in this calculation:

$$\begin{array}{r} \square, 3 \square \square \\ \times \quad \square 3 \\ \hline \end{array}$$

The result must have the digit 5 in it.

What could Kirsty's number be?
Find two possible numbers.



PS

3b. Chloe says,



I can only use the digits 1, 2 or 3 in this calculation:

$$\begin{array}{r} \square \square \square \square \\ \times \quad \square \square \\ \hline \end{array}$$

The result must have the digits 6 and 1 in it.

What could Chloe's number be?
Find two possible numbers.



PS

Multiply 4-Digits by 2-Digits

Multiply 4-Digits by 2-Digits

4a. Use all of the digit cards in the calculation below to make the closest possible number to 170,000.



$$\begin{array}{r} 7, \square \square 1 \\ \times \quad 2 \square \\ \hline \end{array}$$



PS



4b. Use all of the digit cards in the calculation below to make the closest possible number to 28,000.



$$\begin{array}{r} 2, 3 \square \square \\ \times \quad 1 \square \\ \hline \end{array}$$

PS

5a. Tom has worked out the answer to $2,475 \times 31$ below.

| | | | | | |
|---|--|---|---|---|---|
| | | 2 | 4 | 7 | 5 |
| x | | | | 3 | 1 |
| | | 2 | 4 | 7 | 5 |
| | | 7 | 4 | 2 | 5 |
| | | 9 | 8 | 9 | 5 |

Is Tom correct?
Explain your answer.



R

5b. Julie has worked out the answer to $3,618 \times 13$ below.

| | | | | | |
|---|--|---|---|---|---|
| | | 3 | 6 | 1 | 8 |
| x | | | | 1 | 3 |
| | | 9 | 8 | 5 | 4 |
| | | 3 | 6 | 1 | 8 |
| | | 4 | 5 | 0 | 3 |

Is Julie correct?
Explain your answer.



R

6a. Nina says,



I am thinking of a 4-digit number less than 2,000. Only two of the digits in my number are greater than 3. If I multiply my number by 13, I get an answer between 20,000 and 25,000.

What could Nina's number be?
Find two possible numbers.



PS

6b. Joe says,



I am thinking of a 4-digit number between 2,000 and 3,000. Only one of the digits is greater than 3. If I multiply my number by 14, I get an answer between 35,000 and 40,000.

What could Joe's number be?
Find two possible numbers.



PS

Multiply 4-Digits by 2-Digits

Multiply 4-Digits by 2-Digits

7a. Use all of the digit cards in the calculation below to make the closest possible number to 240,000.



$$\square \square 25 \times 3 \square$$



PS



PS

7b. Use all of the digit cards in the calculation below to make the closest possible number to 260,000.



$$\square 2 \square 4 \times \square 7$$

8a. Philip has worked out the answer to $3,186 \times 47$ below.

| | | | | | |
|---|---|--------------|--------------|--------------|---|
| | | 3 | 1 | 8 | 6 |
| x | | | | 4 | 7 |
| | 2 | 2 | 3 | 0 | 2 |
| | | ₁ | ₆ | ₄ | |
| 1 | 2 | 7 | 2 | 4 | 0 |
| | | ₃ | ₂ | | |
| 1 | 4 | 9 | 5 | 4 | 2 |

Is Philip correct?
Explain your answer.



R

8b. Amy has worked out the answer to $8,527 \times 65$ below.

| | | | | | |
|---|---|--------------|--------------|--------------|---|
| | | 8 | 5 | 2 | 7 |
| x | | | | 6 | 5 |
| | 4 | 2 | 6 | 3 | 5 |
| | | ₂ | ₁ | ₃ | |
| 5 | 1 | 1 | 6 | 2 | 0 |
| | | ₃ | ₁ | ₄ | |
| 5 | 5 | 4 | 2 | 5 | 5 |

Is Amy correct?
Explain your answer.



R

9a. Paul says,



I am thinking of a 4-digit number between four thousand and five thousand. The total of the digits in my number is nineteen. If I multiply my number by fourteen, I get an answer between sixty-five thousand and seventy thousand.

What could Paul's number be?
Find two possible numbers.



PS

9b. David says,



I am thinking of a 4-digit number between three thousand and four thousand. The total of the digits in my number is twenty. If I multiply my number by twenty-six, I get an answer between ninety thousand and ninety-one thousand.

What could David's number be?
Find two possible numbers.



PS

Reasoning and Problem Solving Multiply 4-Digits by 2-Digits

Developing

1a. $2,211 \times 23 = 50,853$

2a. An explanation that recognises Jake has not correctly multiplied the thousands in the first number by the tens in the second number.

3a. Various answers, for example: $2,311 \times 23 = 53,153$ and $2,322 \times 23 = 53,406$

Expected

4a. $7,931 \times 21 = 166,551$

5a. An explanation that recognises Tom has not included a place holder when multiplying his tens.

6a. Various answers, for example: $1,682 \times 13 = 21,866$ and $1,673 \times 13 = 21,749$

Greater Depth

7a. $6,425 \times 37 = 237,725$

8a. An explanation that recognises Philip has not added on the 2 hundreds which were carried over from the multiplication of the 4 tens and the 6 ones.

9a. Various answers, for example: $4,735 \times 14 = 66,290$ and $4,726 \times 14 = 66,164$

Reasoning and Problem Solving Multiply 4-Digits by 2-Digits

Developing

1b. $2,140 \times 21 = 44,940$

2b. An explanation that recognises that Tina has not correctly multiplied the tens in both numbers.

3b. Various answers, for example: $3,221 \times 21 = 67,641$ and $3,321 \times 21 = 69,741$

Expected

4b. $2,317 \times 12 = 27,804$

5b. An explanation that recognises Julie has not added the thousand carried over from the 3×6 hundreds.

6b. Various answers, for example: $2,512 \times 14 = 35,168$ and $2,612 \times 14 = 36,568$

Greater Depth

7b. $9,284 \times 27 = 250,668$

8b. Amy is correct. Multiplications have been done correctly, ensuring correct values have been carried.

9b. Various answers, for example: $3,494 \times 26 = 90,844$ and $3,476 \times 26 = 90,376$