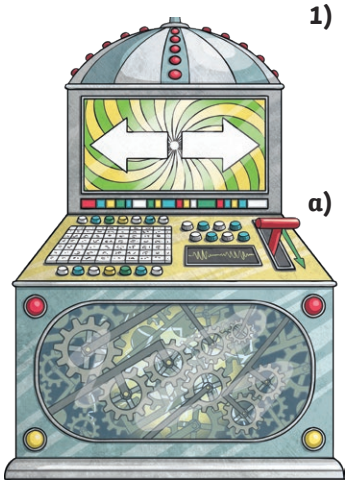


**1)** The time machine has broken down. We need a 3-digit code to make it work again. The code is the second digit of each product.

Write the multiplication calculation which is represented by the place value counters and find the product to help work out the code.

**a)**

| Thousands | Hundreds | Tens | Ones |
|---|---|---|---|
| ● | ● | ● ● ● | ● ● |
| ● | ● | ● ● ● | ● ● |
| ● | ● | ● ● ● | ● ● |

**b)**

| Thousands | Hundreds | Tens | Ones |
|---|---|---|---|
| ● ● | | ● ● ● ● | ● ● |
| ● ● | | ● ● ● ● | ● ● |
| ● ● | | ● ● ● ● | ● ● |
| ● ● | | ● ● ● ● | ● ● |

**c)**

| Thousands | Hundreds | Tens | Ones |
|---|---|---|---|
| ● ● ● | ● ● ● ● ● ● | ● | ● ● ● |
| ● ● ● | ● ● ● ● ● ● | ● | ● ● ● |
| ● ● ● | ● ● ● ● ● ● | ● | ● ● ● |
| ● ● ● | ● ● ● ● ● ● | ● | ● ● ● |
| ● ● ● | ● ● ● ● ● ● | ● | ● ● ● |
| ● ● ● | ● ● ● ● ● ● | ● | ● ● ● |

What is the 3-digit code?

**2)** Write two different word problems which could be solved by the calculation represented by the place value counters.

| Thousands | Hundreds | Tens | Ones |
|---|---|---|---|
| ● ● | ● | | ● ● ● |
| ● ● | ● | | ● ● ● |
| ● ● | ● | | ● ● ● |
| ● ● | ● | | ● ● ● |

**1)** Harry has been practising short multiplication. Identify and explain the errors he has made.

**2)** Now complete each calculation correctly.

**a)**

| | | | |
|---|---|---|---|
| 2 | 3 | 1 | 4 |
| × | | | 3 |
| 6 | 9 | 3 | 12 |
| | | | |

| | | | |
|---|---|---|---|
| 2 | 3 | 1 | 4 |
| × | | | 3 |
| | | | |
| | | | |

**b)**

| | | | | |
|---|---|---|---|---|
| | 3 | 0 | 4 | 3 |
| × | | | | 4 |
| 1 | 2 | 1 | 6 | 2 |
| | | 1 | | |

| | | | | |
|---|---|---|---|---|
| | 3 | 0 | 4 | 3 |
| × | | | | 4 |
| | | | | |
| | | | | |

**c)**

| | | | | |
|---|---|---|---|---|
| | 5 | 2 | 0 | 6 |
| × | | | | 6 |
| 3 | 1 | 2 | 9 | 6 |
| | 1 | | 3 | |

| | | | | |
|---|---|---|---|---|
| | 5 | 2 | 0 | 6 |
| × | | | | 6 |
| | | | | |
| | | | | |

**d)**

| | | | | |
|---|---|---|---|---|
| | 4 | 3 | 1 | 0 |
| × | | | | 8 |
| | 3 | 4 | 4 | 8 |
| | | 2 | | |

| | | | | |
|---|---|---|---|---|
| | 4 | 3 | 1 | 0 |
| × | | | | 8 |
| | | | | |
| | | | | |

**1)** Can you identify the missing digits in these calculations?

**a)**

| | | | |
|---|---|---|---|
| □ | 2 | □ | 2 |
| × | | | 3 |
| 9 | □ | 3 | 6 |

**b)**

| | | | | |
|---|---|---|---|---|
| | 4 | □ | 1 | □ |
| × | | | | 4 |
| □ | 6 | 0 | 6 | 0 |

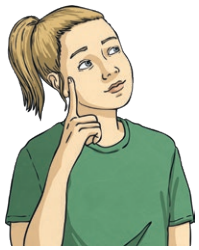
**c)**

| | | | | |
|---|---|---|---|---|
| | □ | 1 | □ | □ |
| × | | | | 5 |
| 3 | 0 | 5 | 1 | 5 |

**2)** Replace the letters with numbers to make this multiplication calculation work.

**a)** Find 3 possible solutions.

| | | | |
|---|---|---|---|
| A | B | B | A |
| × | | | C |
| C | D | D | C |



**b)** Explain how you found solutions. For example, what can the letters be and what can they not be?