## Reasoning about pattern and sequences: Identifying patterns.

## Independent task

Mr Critchlow

## To Start Can you complete the number grid by putting the numbers into the correct places?

|  |  |  |  |  |  | 1 |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
|  |  |  |  |  |  | 4 |  |  |  |  |  |
|  |  |  |  |  |  | 2 |  |  |  |  |  |
|  |  |  |  |  |  | 6 |  |  |  |  |  |
|  |  |  |  |  |  | 1 |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
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|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | 3 | 4 | 8 | 7 | 5 |  |  |  |  |  |


| 3 DIGITS |  | 4 DIGITS |  | 5 DIGITS |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 217 | 625 | 1524 | 5371 | 14261 | 41385 |
| 246 | 756 | 1594 | 6174 | 24173 | 71490 |
| 251 | 842 | 2652 | 6205 | 34875 | 75216 |
| 258 | 924 | 3861 | 7326 | 35420 | 90162 |
| 321 | 925 | 4528 | 8275 |  |  |
| 328 | 961 | 4832 | 9527 |  |  |
| 367 |  | 5290 |  |  |  |

## Task 1

Can you work out the solutions to the calculations? Write the answers in Roman numerals too

| Calculation | Answer |
| :---: | :---: |
| XV + XV |  |
| XXIII + XXIII |  |
| $M M I I+M M I I$ |  |
| $M M V+M M V$ |  |
| $C L X X I+C L X X I$ |  |
| $D C V I I+D C V I I$ |  |


| Don't forget: |  |
| :---: | :---: |
| I | 1 |
| V | 5 |
| X | 10 |
| L | 50 |
| C | 100 |
| D | 500 |
| $M$ | 1000 |

Can you write the first 6 terms in each sequence - follow the rule and pay attention to the start number

1. The rule is add 10 , the start-point is 11
2. The rule is add 5 , the start-point is 37
3. The rule is subtract 13 , the start point is 9
4. The rule is subtract 9 , the start point is 25
5. The rule is add 100 , the start point is -394

## Challenge

Fill in the inputs/outputs from these function machines.


| in |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| out | 45 | 48 | 42 | 36 | 33 | 27 |



