All Kinds of Word Problems

Number and Place Value
10 Questions, Answers and a Challenge

Year 4
Look at these numbers:

400  225  135  990  300  345  600  880  775  100

a Which of them would you say if you started from the number 150 and counted up in 10s?

b Which of them would you say if you started on 150 and counted up in 25s?

c Which of them would you say if you started on 150 and counted up in 100s?
Complete the table below to find 100 more and 100 less than the actual number. Then find 1000 more and 1000 less than the actual number. The first example has been done for you.

<table>
<thead>
<tr>
<th>1000 less</th>
<th>100 less</th>
<th>Actual number</th>
<th>100 more</th>
<th>1000 more</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>2911</td>
<td>3011</td>
<td>3111</td>
<td>4011</td>
</tr>
<tr>
<td>231</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3456</td>
<td></td>
<td></td>
<td>6987</td>
</tr>
<tr>
<td>1134</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4555</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Complete the table to show the value of the digits in each number. Use words like in the example below. If the number in the first column does not have a 1, 3, 5 or 9 digit in it, then you can leave that value blank.

<table>
<thead>
<tr>
<th>Number</th>
<th>Value of 1</th>
<th>Value of 3</th>
<th>Value of 5</th>
<th>Value of 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>123</td>
<td>‘one hundred’ or ‘one lot of hundred’</td>
<td>‘three’ or ‘three lots of one’</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5913</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9053</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1059</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>509</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2095</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
I have four digit cards, shown below. I can only use each digit card once when making each number.

![Digit cards: 5, 3, 9, 7]

a. What is the largest number I can make with my digit cards?

b. What is the smallest number I can make with my digit cards?

c. What is the difference between the two numbers you made in a and b?

Answer a ....................................................................................................

Answer b ....................................................................................................

Answer c ....................................................................................................
Amjit has 8 counters to make different numbers using the place value grid below.

```
<table>
<thead>
<tr>
<th>TH</th>
<th>H</th>
<th>T</th>
<th>O</th>
</tr>
</thead>
</table>
```

a. Can you help him identify the largest 4 digit number he can make that has at least one counter in each column of the grid?

b. Can you help him identify the smallest 4 digit number he can make that has at least one counter in each column of the grid?

c. Can you help him make a number with a value which falls in the middle of the largest and smallest numbers he made?

Answer a

Answer b

Answer c
Eva is collecting pound coins. Every time she reaches £25 she deposits it into her bank account. How many visits to the bank will she have made when she has saved £325?

Answer  

Leo used one set of 0 - 9 digit cards (0, 1, 2, 3, 4, 5, 6, 7, 8, 9). He has only one card for each digit to help him create answers to the following calculations.

- 10 more than 65 – 22
- 100 more than 10 x 2
- 100 less than 10 x 10
- 1000 more than 10 + 23
- 10 less than 345 + 55
- 1000 less than 100 x 10

Which of the calculations above can not be answered using Leo’s 0 - 9 digit cards?

Answer  

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Thomas looked at the temperatures over a week.

<table>
<thead>
<tr>
<th>Day</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
<th>Sunday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daytime</td>
<td>9 °C</td>
<td>8 °C</td>
<td>2 °C</td>
<td>3 °C</td>
<td>-2 °C</td>
<td>-1 °C</td>
<td>-5 °C</td>
</tr>
<tr>
<td>temperature</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Night time</td>
<td>2 °C</td>
<td>1 °C</td>
<td>-2 °C</td>
<td>1 °C</td>
<td>0 °C</td>
<td>-9 °C</td>
<td>-10 °C</td>
</tr>
<tr>
<td>temperature</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a What was the lowest temperature recorded? 
Answer  a ................................................................. °C

b What was the highest temperature recorded? 
Answer  b ................................................................. °C

c What is the difference between the two temperatures you have found? 
Answer  c ................................................................. °C
Hari created 5 four digit numbers. In each number the tens digit was a 3. When he added up all the digits in each of his 5 numbers they came to the total 7. What could Hari’s five numbers be?

Answer ........................................................................................................................................................................
Using 0 - 9 digit cards (0, 1, 2, 3, 4, 5, 6, 7, 8, 9) can you make the following 4 digit numbers? You can only use each digit card once in each number you make.

a. Can you make the smallest odd number from all the digit cards?

b. Can you make the smallest even number from all the digit cards?

c. Can you make the largest odd number from all the digit cards?

d. Can you make the largest even number from all the digit cards?

Answer a ..................................................................................................

Answer b ..................................................................................................

Answer c ..................................................................................................

Answer d ..................................................................................................
Challenge Question! 🧠

Callum has created a circuit of lights to help him practise his times tables.

The red light flashes every 3 seconds.
The blue light flashes every 5 seconds.
The yellow light flashes every 6 seconds.

a Using a hundred square to help, when will all the lights flash at the same time?

b Using a hundred square to help, write down three times when none of the lights will flash.

\[
\begin{array}{cccccccc}
1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 \\
11 & 12 & 13 & 14 & 15 & 16 & 17 & 18 \\
21 & 22 & 23 & 25 & 26 & 27 & 28 & 29 \\
31 & 32 & 34 & 35 & 36 & 37 & 38 & 39 \\
41 & 42 & 44 & 45 & 46 & 47 & 48 & 49 \\
51 & 52 & 54 & 55 & 56 & 57 & 58 & 59 \\
61 & 62 & 64 & 65 & 66 & 67 & 68 & 69 \\
71 & 72 & 74 & 75 & 76 & 77 & 78 & 79 \\
81 & 82 & 84 & 85 & 86 & 87 & 88 & 89 \\
91 & 92 & 94 & 95 & 96 & 97 & 98 & 99 \\
\end{array}
\]

Answer a = all lights will flash after .................................................................

Answer b = no lights will flash after .................................................................
Answer Sheet

1. a. 400, 990, 300, 600, 880
   b. 400, 225, 300, 600, 775
   c. Trick question - you would not say any of the numbers

Content Domain: Counting in multiples (4N1)

2. | 1000 less | 100 less | Actual number | 100 more | 1000 more |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>2911</td>
<td>3011</td>
<td>3111</td>
<td>4011</td>
</tr>
<tr>
<td>231</td>
<td>1131</td>
<td>1231</td>
<td>1331</td>
<td>2231</td>
</tr>
<tr>
<td>2356</td>
<td>3256</td>
<td>3356</td>
<td>3456</td>
<td>4356</td>
</tr>
<tr>
<td>4987</td>
<td>5887</td>
<td>5987</td>
<td>6087</td>
<td>6987</td>
</tr>
<tr>
<td>234</td>
<td>1134</td>
<td>1234</td>
<td>1334</td>
<td>2234</td>
</tr>
<tr>
<td>3555</td>
<td>4455</td>
<td>4555</td>
<td>4655</td>
<td>5555</td>
</tr>
</tbody>
</table>

Content Domain: Finding 100 and 1000 more or less than a given number (4N2b)

3. | Number | Value of 1 | Value of 3 | Value of 5 | Value of 9 |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>123</td>
<td>One hundred or one lot of hundred</td>
<td>Three or three lots of one</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5913</td>
<td>Ten or one ten</td>
<td>Three or three lots of one</td>
<td>Five thousands or five lots of thousand</td>
<td>Nine hundreds or nine lots of hundred</td>
</tr>
<tr>
<td>9053</td>
<td>One thousand or one lot of a thousand</td>
<td>Three or three lots of one</td>
<td>Fifty or five lots of ten</td>
<td>Nine thousands or nine lots of thousand</td>
</tr>
<tr>
<td>1059</td>
<td>One thousand or one lot of a thousand</td>
<td></td>
<td>Fifty or five lots of ten</td>
<td>Nine or nine lots of one</td>
</tr>
<tr>
<td>509</td>
<td></td>
<td></td>
<td>Five hundreds or five lots of hundred</td>
<td>Nine or nine lots of one</td>
</tr>
<tr>
<td>2095</td>
<td></td>
<td></td>
<td></td>
<td>Ninety or nine lots of ten</td>
</tr>
</tbody>
</table>

Content Domain: Recognising place value up to the thousands (4N3a)

4. a. 9753
   b. 3579
   c. 6174

Content Domains: Ordering and recognising 4 digit numbers (4N2a, 4N3a)
5. a. 5111  
   b. 1115  
   c. 3113

Content Domains: Recognising place value in context (4N3a, 4N6)

6. Eva will have visited the bank 13 times.

Content Domain: Counting in multiples of 25 (4N1)

7. 100 more than 10 + 23 as he would need two digit cards showing 3 to make 133.

Content Domain: Finding 1000 more or less than a number (4N2b)

8. a. – 10 °C  
   b. 9 °C  
   c. 19 °C

Content Domain: Using negative numbers across zero (4N5)

9. All possible answers are:
   1132, 1231, 1330, 1033, 2032, 2131, 2230, 3031, 3130, 4030

Content Domain: Value of digits (4N3a)

10. a. 1023  
    b. 1024  
    c. 9875  
    d. 9876

Content Domains: Ordering and recognising number value, Solving problems using such approaches (4N1, 4N2a, 4N3a, 4N6)

Challenge Question

a. All lights will flash after 30 seconds, 60 seconds and 90 seconds.
b. No lights will flash after 1, 2, 4, 7, 8, 11, 13, 14, 16, 17, 19, 22, 23, 26, 28, 29, 31, 32, 34, 37, 38, 41, 43, 44, 46, 47, 49, 52, 53, 56, 58, 59, 61, 62, 64, 67, 68, 71, 73, 74, 76, 77, 79, 82, 83, 86, 88, 91, 92, 94, 97 seconds.

Content Domain: Value of digits (4N3a)