Completing the Whole

There are eight unique groups of three numbers that sum to 10
1 + 2 + 7 = 10 is an example (N.B. 1+2+7 is the same as 2+1+7)

\[ \begin{array}{ccc}
1 & + & 2 \\
& + & 7 \\
\end{array} = 10 \quad \begin{array}{ccc}
& + & \\
& + & \\
\end{array} = 10

\begin{array}{ccc}
& + & \\
& + & \\
\end{array} = 10 \quad \begin{array}{ccc}
& + & \\
& + & \\
\end{array} = 10

\begin{array}{ccc}
& + & \\
& + & \\
\end{array} = 10 \quad \begin{array}{ccc}
& + & \\
& + & \\
\end{array} = 10

\begin{array}{ccc}
& + & \\
& + & \\
\end{array} = 10 \quad \begin{array}{ccc}
& + & \\
& + & \\
\end{array} = 10
In the following list of numbers, how many groups of 10 can you make?
What is the sum of each list?

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>8</td>
<td>3</td>
<td>8</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>+ 4</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>+ 7</td>
<td>6</td>
<td>1</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>+ 9</td>
<td>7</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>+ 9</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>+ 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Perform the following additions and subtractions mentally using the fact that some of the numbers are just over or under a multiple of 10:

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>23</td>
<td>42</td>
<td>51</td>
<td>58</td>
<td>68</td>
<td></td>
</tr>
<tr>
<td>+28</td>
<td>+39</td>
<td>+68</td>
<td>+29</td>
<td>+58</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>53</td>
<td>72</td>
<td>106</td>
<td>55</td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>-28</td>
<td>-39</td>
<td>-68</td>
<td>-29</td>
<td>-38</td>
<td></td>
</tr>
</tbody>
</table>

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>23</td>
<td>42</td>
<td>51</td>
<td>58</td>
<td>68</td>
</tr>
<tr>
<td>39</td>
<td>21</td>
<td>28</td>
<td>18</td>
<td>48</td>
</tr>
<tr>
<td>+28</td>
<td>+39</td>
<td>+68</td>
<td>+29</td>
<td>+58</td>
</tr>
</tbody>
</table>
# Doubling and Halving

Double the following values mentally

<p>| | | | | | |</p>
<table>
<thead>
<tr>
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<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>7</td>
<td>5</td>
<td>8</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>43</td>
<td>32</td>
<td>41</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>48</td>
<td>37</td>
<td>46</td>
<td>29</td>
<td></td>
</tr>
</tbody>
</table>

Group each of the following and then Double the values mentally

<p>| | | | | | |</p>
<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>362</td>
<td>425</td>
<td>373</td>
<td>426</td>
<td>527</td>
<td></td>
</tr>
<tr>
<td>453</td>
<td>623</td>
<td>344</td>
<td>647</td>
<td>727</td>
<td></td>
</tr>
</tbody>
</table>
## Doubling and Halving

Halve the following values mentally

<table>
<thead>
<tr>
<th>42</th>
<th>28</th>
<th>64</th>
<th>80</th>
<th>48</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>52</td>
<td>74</td>
<td>38</td>
<td>92</td>
</tr>
<tr>
<td>94</td>
<td>46</td>
<td>32</td>
<td>54</td>
<td>26</td>
</tr>
</tbody>
</table>

Group each of the following and then Halve the values mentally

<table>
<thead>
<tr>
<th>362</th>
<th>426</th>
<th>352</th>
<th>426</th>
<th>524</th>
</tr>
</thead>
<tbody>
<tr>
<td>450</td>
<td>658</td>
<td>344</td>
<td>528</td>
<td>722</td>
</tr>
</tbody>
</table>
# Doubling and Halving

Multiply the following values by 4 mentally

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<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>7</td>
<td>5</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>20</td>
<td>42</td>
<td>31</td>
<td>42</td>
<td>23</td>
</tr>
<tr>
<td>26</td>
<td>15</td>
<td>37</td>
<td>46</td>
<td>29</td>
</tr>
</tbody>
</table>

Multiply the following values by 8 mentally

<p>| | | | | |</p>
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<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>3</td>
<td>8</td>
<td>21</td>
<td>42</td>
</tr>
<tr>
<td>26</td>
<td>35</td>
<td>342</td>
<td>648</td>
<td>729</td>
</tr>
</tbody>
</table>
## Doubling and Halving

Multiply the following values by 5 mentally
By initially multiplying by 10 and then halving the result

<p>| | | | | |</p>
<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>18</td>
<td>34</td>
<td>82</td>
<td>65</td>
</tr>
<tr>
<td>83</td>
<td>46</td>
<td>39</td>
<td>45</td>
<td>27</td>
</tr>
</tbody>
</table>

Multiply the following values by 50 mentally
By initially multiplying by 100 and then halving the result

<p>| | | | | |</p>
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<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>46</td>
<td>82</td>
<td>21</td>
<td>73</td>
</tr>
</tbody>
</table>

Multiply the following values by 25 mentally
By initially multiplying by 100 and then halving the result twice

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>48</td>
<td>52</td>
<td>26</td>
<td>72</td>
<td>17</td>
</tr>
</tbody>
</table>
Doubling and Halving

Simplify the following problems proportionately
And then solve each problems mentally

\[
Example: \ 16 \times 7 = 2(8 \times 7) = 2(56) = 112
\]

<table>
<thead>
<tr>
<th>Problem 1</th>
<th>Problem 2</th>
<th>Problem 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 \times 6</td>
<td>18 \times 7</td>
<td>12 \times 9</td>
</tr>
<tr>
<td>32 \times 6</td>
<td>36 \times 7</td>
<td>28 \times 3</td>
</tr>
<tr>
<td>18 \times 14</td>
<td>36 \times 8</td>
<td>48 \times 7</td>
</tr>
</tbody>
</table>
## Digit Sums

Find the Digit Sum of the following numbers mentally

<table>
<thead>
<tr>
<th>Number</th>
<th>Digit Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td></td>
</tr>
<tr>
<td>43</td>
<td></td>
</tr>
<tr>
<td>65</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td></td>
</tr>
<tr>
<td>125</td>
<td></td>
</tr>
<tr>
<td>147</td>
<td></td>
</tr>
<tr>
<td>562</td>
<td></td>
</tr>
<tr>
<td>12472</td>
<td></td>
</tr>
</tbody>
</table>
Digit Sums

There are four unique groups of two numbers (less than 9) that sum to 9

\[ \square + \square = 9 \]
\[ \square + \square = 9 \]
\[ \square + \square = 9 \]
\[ \square + \square = 9 \]

There are seven groups of three numbers (less than 9) that sum to 9
(numbers can be used more than once)

\[ \square + \square + \square = 9 \]
\[ \square + \square + \square = 9 \]
\[ \square + \square + \square = 9 \]
\[ \square + \square + \square = 9 \]
\[ \square + \square + \square = 9 \]
\[ \square + \square + \square = 9 \]
\[ \square + \square + \square = 9 \]
Digit Sums

Find the Digit Sum of the following numbers mentally by “casting 9’s”

194 ____ 276 ____ 7439 ____

6125 ____ 1235 ____ 89125 ____

396147 ____ 5481562 ____ 193478 ____

Vedic Worksheet – Digit Sums - 3
### All from 9 and the Last from 10

Perform the following subtractions mentally
Using “All from 9 and the Last from 10”

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>- 28</td>
<td>- 39</td>
<td>- 67</td>
<td>- 23</td>
<td>- 7</td>
<td></td>
</tr>
</tbody>
</table>

<p>| | | | | | |</p>
<table>
<thead>
<tr>
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<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
</tr>
<tr>
<td>- 348</td>
<td>- 579</td>
<td>- 455</td>
<td>- 232</td>
<td>- 583</td>
<td></td>
</tr>
</tbody>
</table>

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>3000</td>
<td></td>
</tr>
<tr>
<td>- 340</td>
<td>- 507</td>
<td>- 360</td>
<td>- 23</td>
<td>- 538</td>
<td></td>
</tr>
</tbody>
</table>

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>10000</td>
<td>10000</td>
<td>10000</td>
<td>10000</td>
<td>1000</td>
<td></td>
</tr>
<tr>
<td>- 2358</td>
<td>- 579</td>
<td>- 455</td>
<td>- 232</td>
<td>- 583</td>
<td></td>
</tr>
</tbody>
</table>
All from 9 and the Last from 10

Compute the change received in the following examples
Using “All from 9 and the Last from 10”

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$10.00</td>
<td>$10.00</td>
<td>$10.00</td>
<td>$5.00</td>
<td>$5.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$3.28</td>
<td>$6.37</td>
<td>$9.07</td>
<td>$3.24</td>
<td>$2.34</td>
</tr>
</tbody>
</table>

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$20.00</td>
<td>$20.00</td>
<td>$20.00</td>
<td>$10.00</td>
<td>$20.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$13.43</td>
<td>$15.86</td>
<td>$4.56</td>
<td>$8.37</td>
<td>$5.82</td>
</tr>
</tbody>
</table>

Vedic Worksheet – All from 9 and the Last from 10 - 2
Number Splitting

Split the following problems up into two more manageable parts
And then solve the problem mentally

\[
\begin{align*}
327 &+ 525 \\
372 &+ 435 \\
561 &+ 627 \\
452 &+ 357 \\
651 &+ 728 \\
\end{align*}
\]

\[
\begin{align*}
2347 &+ 4545 \\
5439 &+ 2621 \\
3782 &+ 4609 \\
7378 &- 4859 \\
5828 &- 2688 \\
\end{align*}
\]

\[
\begin{align*}
8436 &\div 4 \\
153627 &\div 3 \\
12530 &\div 5 \\
236458 &- 74740 \\
237834 &- 32621 \\
\end{align*}
\]
Base Multiplication

Fill in each of the boxes in the following problems using the example below as a guide.

12
x 13

15 = 12+3 or 13+2
think “crosswise”

12 is 2 above 10

13 is 3 above 10

6 = 2x3
think “vertically”

15

6

156
answer

14
x 12

14
x 11

13
x 12

14
x 13

15
x 12

Vedic Worksheet – Base Multiplication - 1
Base Multiplication

Fill in each of the boxes in the following problems using the example below as a guide.

Example:

102 x 103

- 102 is 2 above 100
- 103 is 3 above 100
- 105 = 102 + 3 or 103 + 2
- 6 = 2 x 3

Answer: 10506

think “crosswise”

think “vertically”

Problems:

104 x 102
107 x 103
106 x 108
111 x 103
105 x 112
Base Multiplication

Fill in each of the boxes in the following problems using the example below as a guide.

98 \times 97

- 98 is 2 below 100
- 97 is 3 below 100
- 95 = 98-3 or 97-2 (think “crosswise”)
- 6 = 2 \times 3 (think “vertically”)

9506

Answer

Additional Problems:

98 \times 96
97 \times 93
96 \times 92
98 \times 88
95 \times 89
Base Multiplication

Fill in each of the boxes in the following problems using the example below as a guide.

112
x 98

110 = 98+12 or 112-2
think “crosswise”

112 is 12 above 100

98 is 2 below 100

110 -24

-24 = -2x12
think “vertically”

10976
answer

103
x 98

105
x 97

102
x 95

106
x 90

108
x 96

Vedic Worksheet – Base Multiplication - 4
Fill in each of the boxes in the following problems

<p>| | | | | | |</p>
<table>
<thead>
<tr>
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<th></th>
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<tbody>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td>113</td>
<td></td>
</tr>
<tr>
<td>x 15</td>
<td></td>
<td></td>
<td></td>
<td>x 102</td>
<td></td>
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<td></td>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>105</td>
<td></td>
<td></td>
<td></td>
<td>98</td>
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<tr>
<td>x 95</td>
<td></td>
<td></td>
<td></td>
<td>x 91</td>
<td></td>
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<td></td>
<td></td>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>92</td>
<td></td>
<td></td>
<td></td>
<td>108</td>
<td></td>
</tr>
<tr>
<td>x 96</td>
<td></td>
<td></td>
<td></td>
<td>x 108</td>
<td></td>
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<td></td>
<td></td>
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<td></td>
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</tbody>
</table>

<p>| | | | | | |</p>
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<thead>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>93</td>
<td></td>
<td></td>
<td></td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>x 97</td>
<td></td>
<td></td>
<td></td>
<td>x 90</td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>
## Base Multiplication

Multiply each of the following problems Mentally!

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>102</td>
<td>112</td>
<td>97</td>
<td>97</td>
<td>115</td>
<td></td>
</tr>
<tr>
<td>x 15</td>
<td>x 105</td>
<td>x 95</td>
<td>x 104</td>
<td>x 88</td>
<td>x 98</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td>105</td>
<td>110</td>
<td>96</td>
<td>105</td>
<td>115</td>
<td>105</td>
<td></td>
</tr>
<tr>
<td>x 90</td>
<td>x 105</td>
<td>x 112</td>
<td>x 103</td>
<td>x 94</td>
<td>x 109</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>102</td>
<td>93</td>
<td>92</td>
<td>96</td>
<td>96</td>
<td>103</td>
<td></td>
</tr>
<tr>
<td>x 95</td>
<td>x 88</td>
<td>x 93</td>
<td>x 103</td>
<td>x 89</td>
<td>x 87</td>
<td></td>
</tr>
</tbody>
</table>
Base Multiplication

Rewrite each of the following problems “Proportionately” and then solve **mentally** using the example

\[
\begin{align*}
212 \times 104 & \rightarrow 106 \times 104 \\
\text{Proportionately rewrite problem} & \text{vertically/crosswise doubling} \\
\quad & 11024 \times 2 = 22048
\end{align*}
\]

**mentally**

\[
\begin{array}{cccccccc}
102 & 98 & 198 & 408 & 115 & 412 \\
\times 206 & \times 210 & \times 106 & \times 105 & \times 190 & \times 48
\end{array}
\]
Bar Numbers

Convert the following numbers to their equivalent Bar Number

29 = ___
48 = ___
507 = ___
308 = ___
646 = ___

57 = ___
582 = ___
399 = ___
1928 = ___
17938 = ___

Convert the following Bar Numbers to their equivalent number

32 = ___
63 = ___
612 = ___
232 = ___
611 = ___

312 = ___
623 = ___
812 = ___
825 = ___
732 = ___
Bar Numbers

Add the following numbers and Bar Numbers

\[
\begin{array}{cccccc}
21 & 72 & 63 & 231 & 342 \\
+ 32 & + 44 & + 37 & + 36 & + 431 \\
\hline
221 & 732 & 634 & 213 & 342 \\
+ 434 & + 544 & + 337 & + 426 & + 431
\end{array}
\]

Subtract the following numbers and Bar Numbers

\[
\begin{array}{cccccc}
52 & 74 & 63 & 235 & 642 \\
- 31 & - 42 & - 33 & - 31 & - 431 \\
\hline
854 & 732 & 634 & 713 & 742 \\
- 421 & - 541 & - 337 & - 426 & - 431
\end{array}
\]

Vedic Worksheet – Bar Numbers - 2
Bar Numbers

Multiply the following numbers and Bar Numbers and convert the product to the equivalent number

\[
\begin{array}{cccccc}
21 & 72 & 63 & 231 & 342 \\
\times 3 & \times 4 & \times 3 & \times 5 & \times 3 \\
\end{array}
\]

\[
\begin{array}{cccccc}
221 & 732 & 634 & 213 & 342 \\
\times 4 & \times 4 & \times 3 & \times 2 & \times 3 \\
\end{array}
\]

Divide the following numbers and Bar Numbers and convert the quotient to the equivalent number

\[
\begin{array}{cccccc}
82 & 84 & 93 & 216 & 642 \\
\div 2 & \div 4 & \div 3 & \div 3 & \div 431 \\
\end{array}
\]
Special Multiplication

Multiply each of the following numbers by 11 by filling in each of the boxes using the examples below as a guide.

\[
\begin{array}{c}
\text{45} \\
4 \hspace{0.5cm} 9 \hspace{0.5cm} 5 \\
\text{495} \\
\text{answer} \\
\end{array}
\]

\[
\begin{array}{c}
\text{57} \\
5 \hspace{0.5cm} 12 \hspace{0.5cm} 7 \\
\text{627} \\
\text{answer} \\
\end{array}
\]

\[
\begin{array}{c}
\text{26} \\
\text{answer} \\
\end{array}
\]

\[
\begin{array}{c}
\text{53} \\
\text{answer} \\
\end{array}
\]

\[
\begin{array}{c}
\text{76} \\
\text{answer} \\
\end{array}
\]

\[
\begin{array}{c}
\text{89} \\
\text{answer} \\
\end{array}
\]
Special Multiplication

Multiply each of the following numbers by 11 by filling in each of the boxes using the examples below as a guide.

243

\[
\begin{array}{cccc}
2 & 6 & 7 & 3 \\
\end{array}
\]

\[2673\]

345

\[
\begin{array}{cccc}
 & & & \\
\end{array}
\]

\[
\begin{array}{cc}
\end{array}
\]

\[
\begin{array}{cc}
\end{array}
\]

answer

463

\[
\begin{array}{cccc}
 & & & \\
\end{array}
\]

\[
\begin{array}{cc}
\end{array}
\]

\[
\begin{array}{cc}
\end{array}
\]

answer

697

\[
\begin{array}{cccc}
 & & & \\
\end{array}
\]

\[
\begin{array}{cc}
\end{array}
\]

\[
\begin{array}{cc}
\end{array}
\]

answer
Special Multiplication

Multiply each of the following numbers
Recognizing that the first digits are the same and the last digits sum to 10

12 x 18  
36 x 34  
47 x 43  
88 x 82  
71 x 79  
23 x 27

Multiply each of the following numbers
Recognizing that the last digits are the same and the first digits sum to 10

21 x 81  
65 x 45  
74 x 34  
12 x 92  
27 x 87  
32 x 72
## Special Multiplication

Multiply the following numbers by 99

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>36</td>
<td>47</td>
<td>88</td>
<td>64</td>
</tr>
<tr>
<td>x 99</td>
<td>x 99</td>
<td>x 99</td>
<td>x 99</td>
<td>x 99</td>
</tr>
</tbody>
</table>

Multiply the following numbers by 999

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>217</td>
<td>654</td>
<td>764</td>
<td>542</td>
<td>627</td>
<td>932</td>
</tr>
<tr>
<td>x 999</td>
<td>x 999</td>
<td>x 999</td>
<td>x 999</td>
<td>x 999</td>
<td>x 999</td>
</tr>
</tbody>
</table>

_Vedic Worksheet – Special Multiplication - 4_
General Multiplication

Fill in each of the boxes in the following problems using the example as a guide.

**Example:**

\[ 24 \times 43 \]

- **Upper half (vertical):**
  - \( 8 = 2 \times 4 \)
  - \( 16 = 4 \times 4 \) and \( 6 = 2 \times 3 \)

- **Lower half (vertical):**
  - \( 12 = 4 \times 3 \)

- **Crosswise:**
  - \( 812 + 220 = 1032 \)

**Problems:**

1. \( 52 \times 64 \)
2. \( 46 \times 34 \)
3. \( 28 \times 76 \)
4. \( 39 \times 27 \)
5. \( 23 \times 35 \)
6. \( 17 \times 38 \)

**Answers:**

- 1. \( 3288 \)
- 2. \( 1564 \)
- 3. \( 2128 \)
- 4. \( 1053 \)
- 5. \( 805 \)
- 6. \( 656 \)
General Multiplication

Fill in each of the boxes in the following problems using the example as a guide

**Example**

617 x 893

\[
\begin{array}{cccc}
6 & 1 & 7 \\
\times & 8 & 9 & 3 \\
\hline
48 & 62 & 83 & 66 & 21 \\
\hline
550981
\end{array}
\]

Mentally, 48; 542; 5503; 55096; 550981

---

542

\[
\begin{array}{c}
\times 634
\end{array}
\]

---

783

\[
\begin{array}{c}
x 509
\end{array}
\]

---

287

\[
\begin{array}{c}
x 193
\end{array}
\]

---

567

\[
\begin{array}{c}
x 838
\end{array}
\]

---
# General Multiplication

Multiply each of the following mentally!

<table>
<thead>
<tr>
<th>42</th>
<th>56</th>
<th>93</th>
<th>67</th>
<th>49</th>
<th>82</th>
</tr>
</thead>
<tbody>
<tr>
<td>x 31</td>
<td>x 42</td>
<td>x 32</td>
<td>x 84</td>
<td>x 73</td>
<td>x 54</td>
</tr>
</tbody>
</table>

Multiply each of the following. Try to work each mentally!

<table>
<thead>
<tr>
<th>432</th>
<th>681</th>
<th>123</th>
<th>178</th>
<th>675</th>
<th>987</th>
</tr>
</thead>
<tbody>
<tr>
<td>x 624</td>
<td>x 534</td>
<td>x 321</td>
<td>x 293</td>
<td>x 482</td>
<td>x 678</td>
</tr>
</tbody>
</table>

*Vedic Worksheet – General Multiplication - 3*
Squaring

Square each of the following numbers ending in 5 – Mentally!

Example:

\[ 45^2 \quad 25^2 \quad 85^2 \quad 95^2 \quad 35^2 \quad 105^2 \]

\[ 2025 \quad \text{__} \quad \text{__} \quad \text{__} \quad \text{__} \quad \text{__} \quad \text{__} \]

Square each of the following numbers near 50 – Mentally!

Example:

\[ 54^2 \quad 52^2 \quad 48^2 \quad 45^2 \quad 55^2 \quad 56^2 \quad 47^2 \]

\[ 2916 \quad \text{__} \quad \text{__} \quad \text{__} \quad \text{__} \quad \text{__} \quad \text{__} \quad \text{__} \]
# Squaring

Find the Duplex of each of the following numbers – *Mentally*!

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>7</td>
<td>32</td>
<td>48</td>
<td>71</td>
<td>89</td>
</tr>
<tr>
<td>25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>123</td>
<td>284</td>
<td>345</td>
<td>648</td>
<td>983</td>
</tr>
</tbody>
</table>

For each number, find the Duplex of the first digit, last digit and the number – *Mentally*!

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>34</td>
<td>52</td>
<td>28</td>
<td>78</td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>24</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>93</td>
<td>84</td>
<td>76</td>
<td>58</td>
<td>43</td>
<td></td>
</tr>
</tbody>
</table>
Squaring

For each number, find the Duplex of the first digit, last digit and the number
Then combine the three numbers to determine the square – Mentally!

Example

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>34</td>
<td>52</td>
<td>28</td>
</tr>
<tr>
<td>9</td>
<td>24</td>
<td>16</td>
</tr>
<tr>
<td>1616</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9, 24, 16 → 1156

Find the square of each of the following number using Duplexes – Mentally!

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>57</td>
<td>63</td>
<td>59</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>67</td>
<td>53</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>26</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Vedic Worksheet – Squaring - 3
Divide each of the following numbers by 9 showing the remainder – Mentally!

example

\[32 \div 9 = 3\ r 5\]
\[57 \div 9 = \]
\[87 \div 9 = \]
\[34 \div 9 = \]

\[123 \div 9 = \]
\[345 \div 9 = \]
\[648 \div 9 = \]
\[186 \div 9 = \]

\[1023 \div 9 = \]
\[2457 \div 9 = \]
\[2345 \div 9 = \]
\[6527 \div 9 = \]

\[7843 \div 9 = \]
\[6895 \div 9 = \]
\[12874 \div 9 = \]
\[34878 \div 9 = \]
Division

Divide the following using the a flag and following the example

1. Create flag, 1, from divisor 2\textsuperscript{nd} digit
2. 5 goes into 30 6 times with remainder 0
3. 08 – 1\times 6 = 2

\[
\begin{array}{c|cccc}
\text{example} & 308 & \div & 51 & \\
\hline
5 & 3 & 0 & 8 & \\
& & & & 6 \quad 2
\end{array}
\]

= 6 \, r2

\[
\begin{array}{c|c}
452 & \div 32 \\
\hline
\end{array}
\quad \quad \quad \quad \quad
\begin{array}{c|c}
375 & \div 43 \\
\hline
\end{array}
\]

\[
\begin{array}{c|c}
765 & \div 52 \\
\hline
\end{array}
\quad \quad \quad \quad \quad
\begin{array}{c|c}
763 & \div 61 \\
\hline
\end{array}
\]

\[
\begin{array}{c|c}
457 & \div 83 \\
\hline
\end{array}
\quad \quad \quad \quad \quad
\begin{array}{c|c}
376 & \div 94 \\
\hline
\end{array}
\]