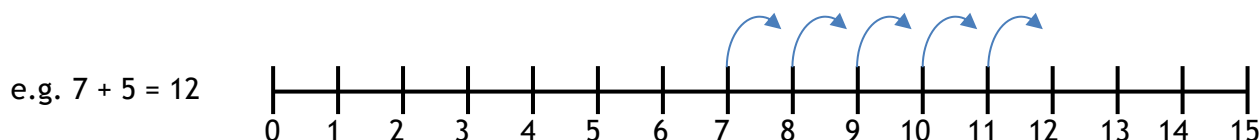


Each section is levelled to help you make progress. Only work on a section if you need to practise it (practice makes perfect). Use a calculator to check.

1. Adding Single-Digit Numbers

Using a number line can help. Adding always makes us jump to the right (\rightarrow).



Start at 7. Now jump 5 places to the right (\rightarrow). We end up at 12!

Now try these.

- | | | | | |
|--------------|--------------|--------------|--------------|---------------|
| 1. $3 + 6 =$ | 2. $2 + 7 =$ | 3. $4 + 5 =$ | 4. $2 + 5 =$ | 5. $5 + 3 =$ |
| 6. $4 + 7 =$ | 7. $6 + 5 =$ | 8. $3 + 8 =$ | 9. $7 + 6 =$ | 10. $8 + 7 =$ |

2. Adding Double-Digit Numbers

Here we have to learn to add up in columns. A number line can help.

eg T U

3 7

2 5

6 2

We always start from the right (dotted line).

$7 + 5 = 12$. We think of this 12 as $10 + 2$. So 2 goes into U

column and we carry the '1' into the T column (doorstep).

Now $3 + 2 + 1 = 6$ (in the T column).

Now try these.

- | | | | | |
|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| 1. T U
2 6
<u>3</u> 5 + | 2. T U
3 8
<u>2</u> 4 + | 3. T U
4 3
<u>3</u> 9 + | 4. T U
5 8
<u>2</u> 3 + | 5. T U
4 6
<u>2</u> 7 + |
| 6. 6 3
<u>2</u> 9 + | 7. 2 9
<u>2</u> 9 + | 8. 6 7
<u>2</u> 4 + | 9. 5 6
<u>4</u> 5 + | 10. 7 2
<u>2</u> 9 + |

3. Adding Treble-Digit Numbers

We continue to add the numbers from the right carrying over any '1's onto the doorstep.

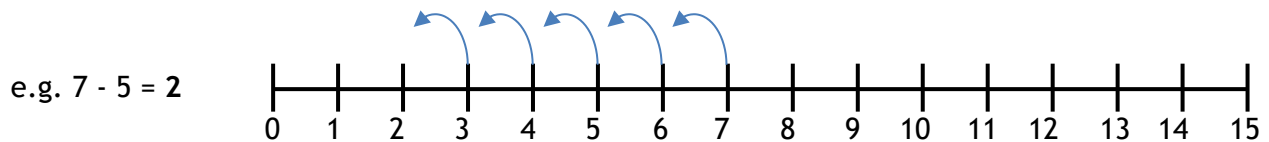
e.g. H T U $4 + 9 = 13$. Put the 3 down in U column and carry the '1' into T column.
 $\begin{array}{r} 3 \ 5 \ 4 \\ 1 \ 6 \ 9 + \\ \hline 5 \ 2 \ 3 \end{array}$ Now $5 + 6 + 1 = 12$. Put the 2 down in T column and carry the '1' into the H column.
 Finally $3 + 1 + 1 = 5$ (in the H column).

Now try these.

- | | | | | |
|--|--|--|--|--|
| 1. $\begin{array}{r} \text{H T U} \\ 2 \ 6 \ 4 \\ 3 \ 2 \ 8 + \end{array}$ | 2. $\begin{array}{r} \text{H T U} \\ 3 \ 4 \ 8 \\ 2 \ 4 \ 5 + \end{array}$ | 3. $\begin{array}{r} \text{H T U} \\ 1 \ 4 \ 3 \\ 2 \ 3 \ 9 + \end{array}$ | 4. $\begin{array}{r} \text{H T U} \\ 3 \ 5 \ 8 \\ 2 \ 3 \ 3 + \end{array}$ | 5. $\begin{array}{r} \text{H T U} \\ 5 \ 4 \ 6 \\ 2 \ 3 \ 7 + \end{array}$ |
| 6. $\begin{array}{r} 6 \ 3 \ 7 \\ 2 \ 9 \ 5 + \end{array}$ | 7. $\begin{array}{r} 2 \ 9 \ 5 \\ 4 \ 3 \ 9 + \end{array}$ | 8. $\begin{array}{r} 2 \ 6 \ 7 \\ 3 \ 7 \ 4 + \end{array}$ | 9. $\begin{array}{r} 5 \ 6 \ 3 \\ 4 \ 5 \ 9 + \end{array}$ | 10. $\begin{array}{r} 7 \ 8 \ 2 \\ 2 \ 9 \ 9 + \end{array}$ |

4. Subtracting Single-Digit Numbers

A number line can help. Subtracting always makes us jump to the left (\leftarrow).



Start at 7. Now jump 5 places to the left (\leftarrow). We end up at 2!

Now try these

- | | | | | |
|--------------|--------------|--------------|---------------|----------------|
| 1. $9 - 6 =$ | 2. $9 - 4 =$ | 3. $8 - 5 =$ | 4. $7 - 3 =$ | 5. $9 - 7 =$ |
| 6. $8 - 7 =$ | 7. $6 - 4 =$ | 8. $9 - 8 =$ | 9. $10 - 6 =$ | 10. $12 - 5 =$ |

We can do subtraction by counting back (adding).

$7 - 5 = 2$ Start at 5. Now jump 2 places to the right (\rightarrow) until we end at 7.

5a. Subtracting Double-Digit Numbers (No borrow)

We continue to add the numbers from the right carrying over any '1's onto the doorstep.

eg

T	U
5	8
2	6
<hr/>	
3	2

We always start from the right (dotted line).
 $8 - 6 = 2$. We put the 2 into U column.
 Now $5 - 2 = 3$ (in the T column).

Now try these.

- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|-------|---|--|---|---|---|---|-------|---|--|---|-------|---|---|-------|---|--|---|---|---|-------|-------|---|---|---|---|---|---|-------|-------|--|---|---|---|---|---|---|---|-------|--|
| 1. <table style="display: inline-table; vertical-align: middle;"><tr><td>T</td><td>U</td></tr><tr><td>5</td><td>6</td></tr><tr><td>3</td><td>5</td></tr><tr><td colspan="2"><hr/></td></tr></table> | T | U | 5 | 6 | 3 | 5 | <hr/> | | 2. <table style="display: inline-table; vertical-align: middle;"><tr><td>T</td><td>U</td></tr><tr><td>3</td><td>8</td></tr><tr><td>2</td><td>4</td></tr><tr><td colspan="2"><hr/></td></tr></table> | T | U | 3 | 8 | 2 | 4 | <hr/> | | 3. <table style="display: inline-table; vertical-align: middle;"><tr><td>T</td><td>U</td></tr><tr><td>4</td><td>7</td></tr><tr><td>1</td><td>2</td></tr><tr><td colspan="2"><hr/></td></tr></table> | T | U | 4 | 7 | 1 | 2 | <hr/> | | 4. <table style="display: inline-table; vertical-align: middle;"><tr><td>T</td><td>U</td></tr><tr><td>5</td><td>8</td></tr><tr><td>2</td><td>3</td></tr><tr><td colspan="2"><hr/></td></tr></table> | T | U | 5 | 8 | 2 | 3 | <hr/> | | 5. <table style="display: inline-table; vertical-align: middle;"><tr><td>T</td><td>U</td></tr><tr><td>4</td><td>9</td></tr><tr><td>2</td><td>7</td></tr><tr><td colspan="2"><hr/></td></tr></table> | T | U | 4 | 9 | 2 | 7 | <hr/> | |
| T | U | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| T | U | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| T | U | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| T | U | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| T | U | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 6. <table style="display: inline-table; vertical-align: middle;"><tr><td>6</td><td>5</td></tr><tr><td>2</td><td>2</td></tr><tr><td colspan="2"><hr/></td></tr></table> | 6 | 5 | 2 | 2 | <hr/> | | 7. <table style="display: inline-table; vertical-align: middle;"><tr><td>7</td><td>9</td></tr><tr><td>2</td><td>6</td></tr><tr><td colspan="2"><hr/></td></tr></table> | 7 | 9 | 2 | 6 | <hr/> | | 8. <table style="display: inline-table; vertical-align: middle;"><tr><td>9</td><td>7</td></tr><tr><td>2</td><td>4</td></tr><tr><td colspan="2"><hr/></td></tr></table> | 9 | 7 | 2 | 4 | <hr/> | | 9. <table style="display: inline-table; vertical-align: middle;"><tr><td>8</td><td>6</td></tr><tr><td>4</td><td>5</td></tr><tr><td colspan="2"><hr/></td></tr></table> | 8 | 6 | 4 | 5 | <hr/> | | 10. <table style="display: inline-table; vertical-align: middle;"><tr><td>7</td><td>8</td></tr><tr><td>3</td><td>1</td></tr><tr><td colspan="2"><hr/></td></tr></table> | 7 | 8 | 3 | 1 | <hr/> | | | | | | | | | | | |
| 6 | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 7 | 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 9 | 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 8 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 7 | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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5b. Subtracting Double-Digit Numbers ('Borrow 1')

eg

T	U
5	6
2	6
<hr/>	
3	7

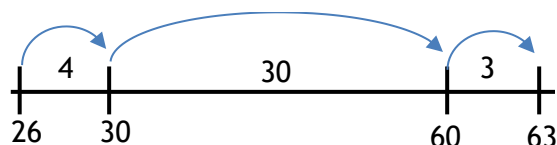
Starting with U. $3 - 6$ we can't do.
 We borrow 'a ten' ('1') from the 6(T) by changing the 60 into $50 + 10$. Now we have $13 - 6 = 7$ (in the U column).
 Finally $5 - 2 = 3$ (in the T column).

Now try these.

- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|-------|---|--|---|---|---|---|-------|---|--|---|-------|---|---|-------|---|--|---|---|---|-------|-------|---|---|---|---|---|---|-------|-------|--|---|---|---|---|---|---|---|-------|--|
| 1. <table style="display: inline-table; vertical-align: middle;"><tr><td>T</td><td>U</td></tr><tr><td>6</td><td>2</td></tr><tr><td>3</td><td>5</td></tr><tr><td colspan="2"><hr/></td></tr></table> | T | U | 6 | 2 | 3 | 5 | <hr/> | | 2. <table style="display: inline-table; vertical-align: middle;"><tr><td>T</td><td>U</td></tr><tr><td>4</td><td>2</td></tr><tr><td>2</td><td>7</td></tr><tr><td colspan="2"><hr/></td></tr></table> | T | U | 4 | 2 | 2 | 7 | <hr/> | | 3. <table style="display: inline-table; vertical-align: middle;"><tr><td>T</td><td>U</td></tr><tr><td>7</td><td>3</td></tr><tr><td>3</td><td>5</td></tr><tr><td colspan="2"><hr/></td></tr></table> | T | U | 7 | 3 | 3 | 5 | <hr/> | | 4. <table style="display: inline-table; vertical-align: middle;"><tr><td>T</td><td>U</td></tr><tr><td>7</td><td>4</td></tr><tr><td>2</td><td>9</td></tr><tr><td colspan="2"><hr/></td></tr></table> | T | U | 7 | 4 | 2 | 9 | <hr/> | | 5. <table style="display: inline-table; vertical-align: middle;"><tr><td>T</td><td>U</td></tr><tr><td>4</td><td>3</td></tr><tr><td>2</td><td>7</td></tr><tr><td colspan="2"><hr/></td></tr></table> | T | U | 4 | 3 | 2 | 7 | <hr/> | |
| T | U | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| T | U | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| T | U | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| T | U | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| T | U | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 6. <table style="display: inline-table; vertical-align: middle;"><tr><td>6</td><td>1</td></tr><tr><td>2</td><td>5</td></tr><tr><td colspan="2"><hr/></td></tr></table> | 6 | 1 | 2 | 5 | <hr/> | | 7. <table style="display: inline-table; vertical-align: middle;"><tr><td>7</td><td>2</td></tr><tr><td>4</td><td>6</td></tr><tr><td colspan="2"><hr/></td></tr></table> | 7 | 2 | 4 | 6 | <hr/> | | 8. <table style="display: inline-table; vertical-align: middle;"><tr><td>9</td><td>3</td></tr><tr><td>5</td><td>7</td></tr><tr><td colspan="2"><hr/></td></tr></table> | 9 | 3 | 5 | 7 | <hr/> | | 9. <table style="display: inline-table; vertical-align: middle;"><tr><td>8</td><td>1</td></tr><tr><td>4</td><td>5</td></tr><tr><td colspan="2"><hr/></td></tr></table> | 8 | 1 | 4 | 5 | <hr/> | | 10. <table style="display: inline-table; vertical-align: middle;"><tr><td>8</td><td>3</td></tr><tr><td>3</td><td>8</td></tr><tr><td colspan="2"><hr/></td></tr></table> | 8 | 3 | 3 | 8 | <hr/> | | | | | | | | | | | |
| 6 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 7 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 9 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 8 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 8 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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Subtraction can be done by counting backwards using a number line.

Always count up to nearest '10'.
 Finally add up... $4 + 30 + 3 = 37$



5c. Subtracting numbers with zeros ('Borrow 1')

We continue to add the numbers from the right carrying over any '1's onto the doorstep.

eg

H	T	U
³ 4	⁹ 0	13
<hr/>		
2	6	5
<hr/>		
1	3	8

 Starting with **U**. 3 - 5 we can't do. We can't borrow from the 0(**T**) so we borrow a ten' ('1') from the 4(**H**) by changing 400 into 300 + 90 + 10. Now we have 13 - 5 = 8 (**U** column). Next we have 9 - 6 = 3 (**T** column) and finally 3 - 2 = 1 (**H**)

"All zeros (0) change to nines (9) and the final ten ('1') is added to the (U)"

eg

⁰ 1	⁹ 0	⁹ 0	⁹ 0	⁹ 0	⁹ 0	¹ 0
4	1	0	7	8	5	-
<hr/>						
5	8	9	2	1	5	

Now try these.

- | 1. <table style="display: inline-table;"><tr><th>H</th><th>T</th><th>U</th></tr><tr><td>6</td><td>0</td><td>0</td></tr><tr><td colspan="3"><hr/></td></tr><tr><td>3</td><td>5</td><td>8</td></tr></table> - | H | T | U | 6 | 0 | 0 | <hr/> | | | 3 | 5 | 8 | 2. <table style="display: inline-table;"><tr><th>H</th><th>T</th><th>U</th></tr><tr><td>4</td><td>0</td><td>0</td></tr><tr><td colspan="3"><hr/></td></tr><tr><td>2</td><td>7</td><td>4</td></tr></table> - | H | T | U | 4 | 0 | 0 | <hr/> | | | 2 | 7 | 4 | 3. <table style="display: inline-table;"><tr><th>H</th><th>T</th><th>U</th></tr><tr><td>7</td><td>0</td><td>0</td></tr><tr><td colspan="3"><hr/></td></tr><tr><td>3</td><td>5</td><td>9</td></tr></table> - | H | T | U | 7 | 0 | 0 | <hr/> | | | 3 | 5 | 9 | 4. <table style="display: inline-table;"><tr><th>H</th><th>T</th><th>U</th></tr><tr><td>4</td><td>0</td><td>0</td></tr><tr><td colspan="3"><hr/></td></tr><tr><td>2</td><td>9</td><td>8</td></tr></table> - | H | T | U | 4 | 0 | 0 | <hr/> | | | 2 | 9 | 8 | 5. <table style="display: inline-table;"><tr><th>H</th><th>T</th><th>U</th></tr><tr><td>8</td><td>0</td><td>0</td></tr><tr><td colspan="3"><hr/></td></tr><tr><td>3</td><td>7</td><td>9</td></tr></table> - | H | T | U | 8 | 0 | 0 | <hr/> | | | 3 | 7 | 9 |
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| 6 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 3 | 5 | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 4 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 2 | 7 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 7 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 3 | 5 | 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 4 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 2 | 9 | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 8 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 3 | 7 | 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6. <table style="display: inline-table;"><tr><td>6</td><td>0</td><td>0</td></tr><tr><td colspan="3"><hr/></td></tr><tr><td>2</td><td>5</td><td>9</td></tr></table> - | 6 | 0 | 0 | <hr/> | | | 2 | 5 | 9 | 7. <table style="display: inline-table;"><tr><td>7</td><td>0</td><td>0</td></tr><tr><td colspan="3"><hr/></td></tr><tr><td>4</td><td>6</td><td>3</td></tr></table> - | 7 | 0 | 0 | <hr/> | | | 4 | 6 | 3 | 8. <table style="display: inline-table;"><tr><td>1</td><td>0</td><td>0</td><td>0</td></tr><tr><td colspan="4"><hr/></td></tr><tr><td>5</td><td>7</td><td>4</td><td></td></tr></table> - | 1 | 0 | 0 | 0 | <hr/> | | | | 5 | 7 | 4 | | 9. <table style="display: inline-table;"><tr><td>1</td><td>0</td><td>0</td><td>0</td></tr><tr><td colspan="4"><hr/></td></tr><tr><td>7</td><td>2</td><td>8</td><td></td></tr></table> - | 1 | 0 | 0 | 0 | <hr/> | | | | 7 | 2 | 8 | | 10. <table style="display: inline-table;"><tr><td>3</td><td>0</td><td>0</td><td>0</td></tr><tr><td colspan="4"><hr/></td></tr><tr><td>1</td><td>5</td><td>7</td><td>4</td></tr></table> - | 3 | 0 | 0 | 0 | <hr/> | | | | 1 | 5 | 7 | 4 | | | | | | |
| 6 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 2 | 5 | 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 4 | 6 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 5 | 7 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 7 | 2 | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 1 | 5 | 7 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

6a. Multiplying two-digit numbers by single digit numbers

Here we can use the 'GRID' or Farmers Field Method.

e.g. $37 \times 6 = \underline{222}$

x	30	7
6	180	42

We split 37 into 30 and 7. These two go into column headings and the 6 goes into the row heading. $30 \times 6 = 180$ and $7 \times 6 = 42$.

$$180 + 42 = \underline{222}$$

Finally we add these to get the answer.

Now try these.

- | | | | | |
|--------------------|--------------------|--------------------|--------------------|---------------------|
| 1. $24 \times 3 =$ | 2. $43 \times 4 =$ | 3. $53 \times 6 =$ | 4. $72 \times 4 =$ | 5. $64 \times 5 =$ |
| 6. $27 \times 8 =$ | 7. $54 \times 6 =$ | 8. $29 \times 9 =$ | 9. $83 \times 6 =$ | 10. $58 \times 7 =$ |

6b. Multiplying three-digit numbers by two-digit numbers

We just extend the grid method further.

e.g. $374 \times 63 = 23562$

x	300	70	4
60	18000	4200	240
3	900	210	12

18000
4200
240
900
210
12
+
<u>23562</u>
11

We split 374 into 300, 70 and 4. 63 becomes 60 and 3.

$300 \times 60 = 18000$, $70 \times 60 = 4200$, $4 \times 60 = 240$.

Also $300 \times 3 = 900$, $70 \times 3 = 210$ and $4 \times 3 = 12$.

Finally add up all these answers.

Now try these.

1. $34 \times 25 =$
2. $43 \times 24 =$
3. $53 \times 16 =$
4. $72 \times 24 =$
5. $64 \times 35 =$
6. $27 \times 38 =$
7. $54 \times 36 =$
8. $259 \times 34 =$
9. $283 \times 42 =$
10. $458 \times 37 =$

7a. Dividing two and three-digit numbers by one-digit numbers

We can use our multiplication tables to help as they are inverse operations.

e.g. $4 \times 7 = 28$... so ... $28 \div 7 = 4$... and ... $280 \div 7 = 40$

e.g. $42 \div 6 = 7$... because ... $7 \times 6 = 42$ [6 × table ... 6, 12, 18, 24, 30, 36, 42,...]

Now try these.

1. $18 \div 3 =$
2. $20 \div 5 =$
3. $24 \div 6 =$
4. $27 \div 9 =$
5. $30 \div 6 =$
6. $42 \div 7 =$
7. $36 \div 9 =$
8. $48 \div 8 =$
9. $70 \div 10 =$
10. $72 \div 8 =$

And these...

11. $180 \div 3 =$
12. $200 \div 5 =$
13. $240 \div 6 =$
14. $120 \div 4 =$
15. $300 \div 5 =$
16. $280 \div 7 =$
17. $360 \div 9 =$
18. $240 \div 8 =$
19. $700 \div 10 =$
20. $720 \div 8 =$

7b. Use of 'chunking'

e.g. $266 \div 7 = \underline{38}$

$$\begin{array}{r} 038 \\ 7 \overline{) 22656} \end{array}$$

Write our 7 ÷ table: 7, 14, 21, 28, 35, 42, 49, 56, 63, 70
Working from left. '7 into 2' doesn't go. Carry the '2' into next column.
'7 into 26' goes **3** times with '5' left over [as $7 \times 3 = 21$].
Carry the '5' into the next column.
Finally '7 into 56' goes **8** times.

Now try these.

1. $186 \div 3 =$
2. $145 \div 5 =$
3. $204 \div 6 =$
4. $184 \div 4 =$
5. $234 \div 6 =$
6. $175 \div 7 =$
7. $234 \div 9 =$
8. $144 \div 8 =$
9. $170 \div 10 =$
10. $576 \div 8 =$

Another way is to use 'chunking' by repeated subtraction or 'building up'.

$$\begin{array}{r} 038 \\ 7 \overline{) 266} \\ \underline{210} \\ 56 \\ \underline{56} \\ 00 \end{array} = 7 \times 8$$

$$\begin{array}{r} 56 \\ \underline{56} \\ 00 \end{array} = 7 \times 8$$

Write our 7 ÷ table: 7, 14, 21, 28, 35, 42, 49, 56, 63, 70.
Try to build up with powers of 10: 70, 140, **210**, 280, ...
'**210**' is the closest multiple up to 266 ... 7×30 .
Build this up to '266' by either adding ... $266 - 210 = 56$.
 $7 \times 8 = 56$.
Finally we add up our multiples. $30 + 8 = 38$.

Answer = $30 + 8 = \underline{38}$

Now try these.

11. $192 \div 6 =$
12. $345 \div 5 =$
13. $264 \div 6 =$
14. $232 \div 4 =$
15. $534 \div 6 =$
16. $441 \div 7 =$
17. $567 \div 9 =$
18. $344 \div 8 =$
19. $1248 \div 4 =$
20. $1472 \div 8 =$

And these ...

21. $1422 \div 3 =$
22. $2910 \div 5 =$
23. $3144 \div 6 =$
24. $5204 \div 4 =$
25. $3025 \div 5 =$

