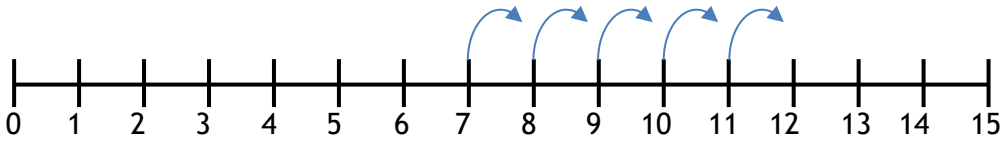
Each section is levelled to help you make progress. Only work on a section if you need to practise it (practice makes perfect). Use a calculator to check.

1. Adding Single-Digit Numbers

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

e.g. 7 + 5 = 12



Start at 7. Now jump 5 places to the right (→). 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_1	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
3	5 +

2.
T	U
3	8
2	4 +

3.
T	U
4	3
3	9 +

4.
T	U
5	8
2	3 +

5.
T	U
4	6
2	7 +

6.
6	3
2	9 +

7.
2	9
2	9 +

8.
6	7
2	4 +

9.
5	6
4	5 +

10.
7	2
2	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
3 5 4
1_1 6_1 9 +
5 2 3

4 + 9 = 13. Put the 3 down in U column and carry the '1' into T column.
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. H T U
2 6 4
3 2 8 +

2. H T U
3 4 8
2 4 5 +

3. H T U
1 4 3
2 3 9 +

4. H T U
3 5 8
2 3 3 +

5. H T U
5 4 6
2 3 7 +

6. 6 3 7
2 9 5 +

7. 2 9 5
4 3 9 +

8. 2 6 7
3 7 4 +

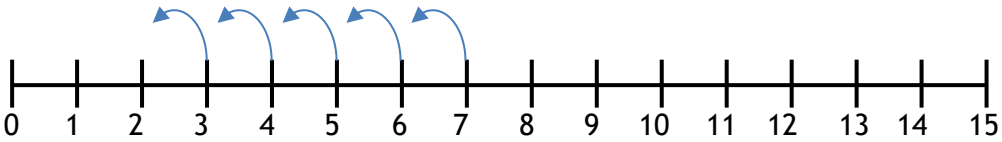
9. 5 6 3
4 5 9 +

10. 7 8 2
2 9 9 +

4. Subtracting Single-Digit Numbers

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

e.g. 7 - 5 = **2**



Start at 7. Now jump 5 places to the left (←). 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 (→) 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
-------
  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.
```
  T U
  5 6
- 3 5
-------
```
2.
```
  T U
  3 8
- 2 4
-------
```
3.
```
  T U
  4 7
- 1 2
-------
```
4.
```
  T U
  5 8
- 2 3
-------
```
5.
```
  T U
  4 9
- 2 7
-------
```

6.
```
  6 5
- 2 2
-------
```
7.
```
  7 9
- 2 6
-------
```
8.
```
  9 7
- 2 4
-------
```
9.
```
  8 6
- 4 5
-------
```
10.
```
  7 8
- 3 1
-------
```

5b. Subtracting Double-Digit Numbers ('Borrow 1')

eg
```
   T U
  5/6 3
- 2 6
-------
  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).

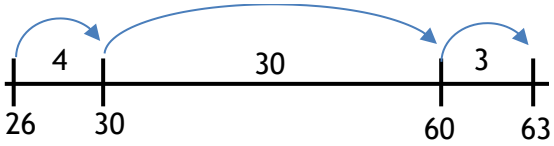
Now try these.

1.
```
  T U
  6 2
- 3 5
-------
```
2.
```
  T U
  4 2
- 2 7
-------
```
3.
```
  T U
  7 3
- 3 5
-------
```
4.
```
  T U
  7 4
- 2 9
-------
```
5.
```
  T U
  4 3
- 2 7
-------
```

6.
```
  6 1
- 2 5
-------
```
7.
```
  7 2
- 4 6
-------
```
8.
```
  9 3
- 5 7
-------
```
9.
```
  8 1
- 4 5
-------
```
10.
```
  8 3
- 3 8
-------
```

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
$^{3}\not{4}$	$^{9}\not{0}$	$^{1}3$
2	6	5 -
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

$^{0}\not{1}$	$^{9}\not{0}$	$^{9}\not{0}$	$^{9}\not{0}$	$^{9}\not{0}$	$^{9}\not{0}$	$^{1}\not{0}$	
	4	1	0	7	8	5	-
	5	8	9	2	1	5	

Now try these.

1.

H	T	U	
6	0	0	
3	5	8	-

2.

H	T	U	
4	0	0	
2	7	4	-

3.

H	T	U	
7	0	0	
3	5	9	-

4.

H	T	U	
4	0	0	
2	9	8	-

5.

H	T	U	
8	0	0	
3	7	9	-

6.

6	0	0	
2	5	9	-

7.

7	0	0	
4	6	3	-

8.

1	0	0	0	
	5	7	4	-

9.

1	0	0	0	
	7	2	8	-

10.

3	0	0	0	
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 × 6 = 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 x 6 = 180 and 7 x 6 = 42.

180 + 42 = 222 Finally we add these to get the answer.

Now try these.

1. 24 × 3 = **2.** 43 × 4 = **3.** 53 × 6 = **4.** 72 × 4 = **5.** 64 × 5 =

6. 27 × 8 = **7.** 54 × 6 = **8.** 29 × 9 = **9.** 83 × 6 = **10.** 58 × 7 =

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

We just extend the grid method further.

e.g. 374 × 63 = 23562

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

18000
4200
240
900
210
12
+
23562
11

We split 374 into **300**, **70** and 4. 63 becomes **60** and 3.
300 × **60** = 18**000**, **70** × **60** = 42**00**, **4 × 60 = 240.**
Also **300** × 3 = **900**, **70** × 3 = **210** and 4 x 3 = 12.
Finally add up all these answers.

Now try these.

1. 34 × 25 = **2.** 43 × 24 = **3.** 53 × 16 = **4.** 72 × 24 = **5.** 64 × 35 =

6. 27 × 38 = **7.** 54 × 36 = **8.** 259 × 34 = **9.** 283 × 42 = **10.** 458 × 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 × 7 = 28 … so … 28 ÷ 7 = 4 … and … 280 ÷ 7 = 40

e.g. 42 ÷ 6 = 7 … because … 7 × 6 = 42 [6 × table … 6, 12, 18, 24, 30, 36, **42**,…]

Now try these.

1. 18 ÷ 3 = **2.** 20 ÷ 5 = **3.** 24 ÷ 6 = **4.** 27 ÷ 9 = **5.** 30 ÷ 6 =

6. 42 ÷ 7 = **7.** 36 ÷ 9 = **8.** 48 ÷ 8 = **9.** 70 ÷ 10 = **10.** 72 ÷ 8 =

And these…

11. 180 ÷ 3 = **12.** 200 ÷ 5 = **13.** 240 ÷ 6 = **14.** 120 ÷ 4 = **15.** 300 ÷ 5 =

16. 280 ÷ 7 = **17.** 360 ÷ 9 = **18.** 240 ÷ 8 = **19.** 700 ÷ 10 = **20.** 720 ÷ 8 =

7b. Use of 'chunking

e.g. 266 ÷ 7 = 38

$$7 \overline{)\,2\,{}^{2}6\,{}^{5}6}$$
$$0\,\mathbf{3}\;8$$

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 × 3 = 21].
Carry the '5' into the next column.
Finally '7 into 56' goes ***8*** times.

Now try these.

1. 186 ÷ 3 = **2.** 145 ÷ 5 = **3.** 204 ÷ 6 = **4.** 184 ÷ 4 = **5.** 234 ÷ 6 =

6. 175 ÷ 7 = **7.** 234 ÷ 9 = **8.** 144 ÷ 8 = **9.** 170 ÷ 10 = **10.** 576 ÷ 8 =

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

$$7 \overline{)\,2\,6\,6}$$
$$0\,\mathbf{3}\;8$$
$$2\,1\,0 \quad = 7 \times 8$$
$$5\,6$$
$$5\,6 \quad = 7 \times 8$$

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 × **8** = *56*.
Finally we add up our multiples. 30 + 8 = 38.

Answer = **30** + **8** = 38

Now try these.

11. 192 ÷ 6 = **12.** 345 ÷ 5 = **13.** 264 ÷ 6 = **14.** 232 ÷ 4 = **15.** 534 ÷ 6 =

16. 441 ÷ 7 = **17.** 567 ÷ 9 = **18.** 344 ÷ 8 = **19.** 1248 ÷ 4 = **20.** 1472 ÷ 8 =

And these …

21. 1422 ÷ 3 = **22.** 2910 ÷ 5 = **23.** 3144 ÷ 6 = **24.** 5204 ÷ 4 = **25.** 3025 ÷ 5 =

26. 3283 ÷ 7 = **27.** 4203 ÷ 9 = **28.** 3504 ÷ 8 = **29.** 7038 ÷ 6 = **30.** 7038 ÷ 9 =