Tables Tricks!

How to learn your multiplication tables painlessly
(well, *almost*!) by spotting patterns.

an e-book by Andrew Jeffrey

Welcome to Tables Tricks. This is not a book about magic tricks, but it *will* help you see patterns in order to master those tricky tables that you always seem to get wrong. Some of the tricks will *seem* like magic, because they will unlock the patterns of maths for you! To get the best from this book, work through it S-L-O-W-L-Y!

There are no prizes for rushing through, really take time to absorb the information from each page before moving on. It will really, really help if you ask someone to test you on the red tables from each page, once you have learnt the trick.

Do this little and often, as that will speed up your learning, and ensure that once learnt, the tables STAY learnt!

Congratulations! By downloading this e-book, you have taken the first step towards tackling your tables problems for good.

Now – you need to be clear about something from the start. Really knowing your tables requires a bit of hard work on your part. The good news is, with this original e-book, you can minimise that work to a fraction of what it would otherwise be.

Why bother to learn your tables? What's the point when we can just use a calculator? Well, there really are several reasons, but here are just three for now:

1. **Because it's much faster to know your tables than reach for a calculator, especially as you might not have one handy when you most need it. Fluency is one of the aims of the National Curriculum; tables will really help you.**

2. **Because tables are like tools; having a good knowledge of them will help your maths so much. Not knowing them makes life so difficult that you will find it hard to make progress in maths lessons and may quickly become discouraged. Perhaps, as you are already reading this, you are already at that stage; be encouraged - help is at hand!**

3. **Because a solid knowledge will give you so much confidence to go on and achieve more (in maths and in your life) than you are at the moment.**

So – here's the deal. Over the next few pages we will define the scale of the problem first, then outline ten ways in which we can shrink the problem to much more manageable chunks. Often, people are frightened of learning their tables because they don't know where to start. You are lucky - you should start right here! You may already know some of the tricks; that's OK. You should still read through and practise them, as familiarity will build knowledge and security.

Good Luck!

The Multiplication Table

x	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

There are ten rows of ten - one hundred in all! But - you don't need to learn that many. As we go through the book, we will change to **bold red** any tables that you can learn using the tricks. This means that you will see more and more turning red, and hopefully be very encouraged to see what progress you are making.

So, without further ado, **ON WITH THE PATTERNS!**

Trick 1: You already know the 1 times table!

Think about it: 1 times 5 =5, 1 times 7 = 7, 1 times 3 million = 3 million!

SO anything multiplied by one is itself; how easy is that?

Here are the easiest tables you will ever learn:

1 x 1 = 1
2 x 1 = 2
3 x 1 = 3
4 x 1 = 4
5 x 1 = 5
6 x 1 = 6
7 x 1 = 7
8 x 1 = 8
9 x 1 = 9
10 x 1 = 10

If we update our tables grid to show that we know our 1 times table, it looks like:

x	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

Now, this might not *seem* like much, but we have actually eliminated 19 of our 100 tables; that's almost one fifth of them, and there are only 81 left to go!

Trick 2: Adding a Zero Gives us the 10 times table!

Think about it: 10 times 5 =50, 10 times 6 = 60, 10 times 3 = 30

SO any whole number multiplied by ten stays the same, but adds a ZERO at the end; this is to do with 'Place Value': the columns in which digits are placed in to create longer numbers.

Here are the tables you should learn now:

1 x 10 = 10
2 x 10 = 20
3 x 10 = 30
4 x 10 = 40
5 x 10 = 50
6 x 10 = 60
7 x 10 = 70
8 x 10 = 80
9 x 10 = 90
10 x10 = 100

If we update our tables grid to show that we know our 10 times table, it looks like:

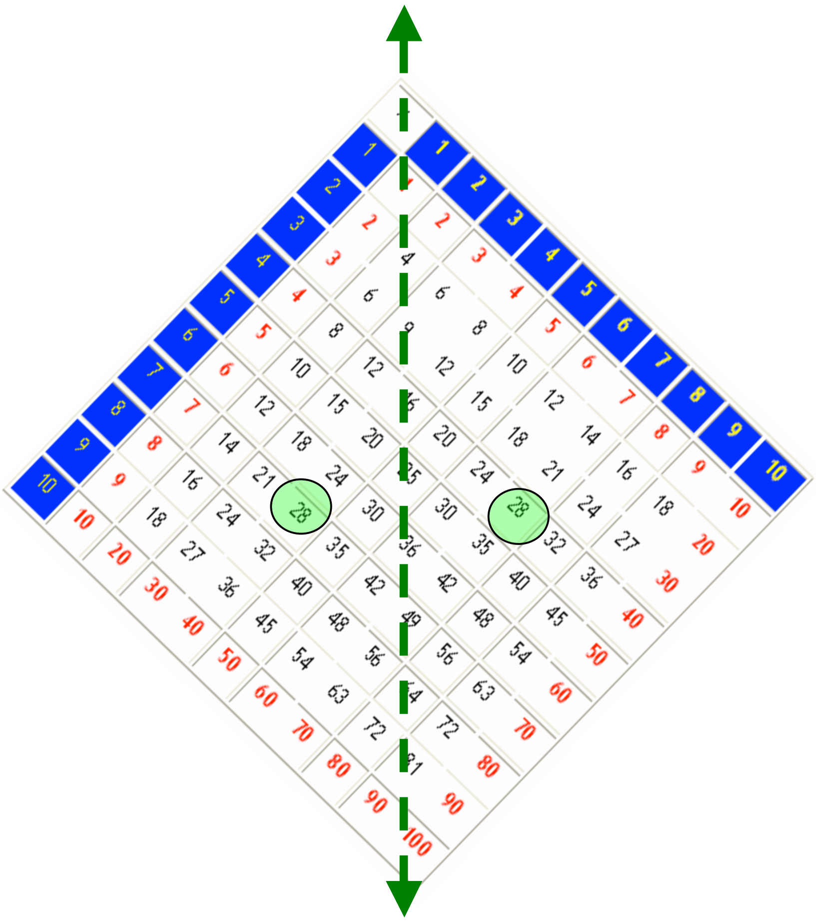
x	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

This is terribly simple, but now we have eliminated 36 of our 100 tables; we only have 64 left to learn!

Trick 3: The table is symmetrical; this halves the work!

Think about this: **2 times 3 = 6**, so **3 times 2 = 6** as well.

Imagine the table turned round slightly. Can you se that there is a vertical line of symmetry going straight down the centre?



Look at the two numbers in the circles. They are both 28, but one is 4 x 7 and the other is 7 x 4. This means that, because of the symmetry of the grid, if we know the numbers in the left hand half (as it appears above), then we know the numbers in the other side as well! This effectively halves the number of tables we need to know!

When we shade the right hand half red, and turn the table back round, it looks like this:

x	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

This is great, as it means that there are now **only 36 tables left to learn!** This is much less daunting than learning all 100 tables, isn't it?!

Trick 4: The 2 times table just means 'double' !

Think about this:

3+3 = 6, so double 3 is 6, so 2 x 3 = 6.

5+5 =10, so double 5 is 10, so 2 x 5 = 10

Look at this pattern:
2+2 = 4 **2 x 2 = 4**
3+3 = 6 **3 x 2 = 6**
4+4 = 8 **4 x 2 = 8**
5+5 =10 **5 x 2 =10**
6+6 = 12 **6 x 2 = 12**
7+7 = 14 **7 x 2 = 14**
8+8 = 16 **8 x 2 = 16**
9+9 = 18 **9 x 2 = 18**
10+10=20 **10 x2 = 20**

So, work on this pattern until you *know your 2 times table, without counting*.

If we update our tables grid to show that we know our 2 times table, it looks like:

x	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

Guess what – there are only 28 left to learn!

Trick 5: Five is Half of Ten !

Think about this:

Because 5 is half of 10, we can work out our 5s by halving our 10s. So - if 6 x 10 = 60 , then 6 x 5 is half of 60 (30).

Look at this pattern:

1 x 10 = 10.	Halving this means that		**1 x 5 = 5**
2 x 10 = 20	"	"	**2 x 5 = 10**
3 x 10 = 30	"	"	**3 x 5 = 15**
4 x 10 = 40	"	"	**4 x 5 = 20**
5 x 10 = 50	"	"	**5 x 5 = 25**
6 x 10 = 60	"	"	**6 x 5 = 30**
7 x 10 = 70	"	"	**7 x 5 = 35**
8 x 10 = 80	"	"	**8 x 5 = 40**
9 x 10 = 90	"	"	**9 x 5 = 45**
10 x10 = 100	"	"	**10 x 5 = 50**

To sum up: **"to find 5 times any whole number, add a zero and halve"**.

So, work on this pattern until you *know your 5 times table, without counting*.

If we update our tables grid to show that we know our 5 times table, it looks like:

x	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

You're doing well – there are **only 21 to go**; that's exciting!

Trick 6: Nine Fingers!

Try this:

Hold both hands palm up in front of you so that you can see ten fingers in a row. Call the left thumb "one" and the right thumb "ten". To find the answer to 9 x 3, fold down finger number "three" (the middle finger on your left hand). Count the number of fingers to the left of the folded finger (there are 2.) Now count the fingers to the right of the folded one; (there are 7.) This tells us that 9 x 3 = 27. Try this for other multiples of 9; it's fantastic!

**Notice two things: firstly, the tens digit is always one less than the number you are multiplying by 9.
Secondly, the two digits always add up to 9;so if you know the tens digit you can work out the units digit very easily.**

Look at this pattern:

1 x 9 = 9
2 x 9 = 18
3 x 9 = 27
4 x 9 = 36
5 x 9 = 45
6 x 9 = 54
7 x 9 = 63
8 x 9 = 72
9 x 9 = 81
10 x 9 = 90

To sum up: "To find 9 times any whole number, subtract one to find the tens; subtract that from 9 to find the units figure."

So, work on this pattern until you *know your 9 times table, without counting*.
If we update our tables grid to show that we know our 9 times table, it looks like:

x	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70

8	**8**	**16**	24	32	**40**	48	56	64	**72**	**80**
9	**9**	**18**	**27**	**36**	**45**	**54**	**63**	**72**	**81**	**90**
10	**10**	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**

If you've worked through this far, you're a star: there are only 15 left to learn!

Trick 7: 12345678!

Think about this:

The digits 1 to 8 have a very special property that is rarely discussed.

First of all, imagine them written in a long line with spaces between:

1 2 3 4 5 6 7 8

But look what happens when we add some equals (=) signs and some x signs:

1 2 = 3 x 4 5 6 = 7 x 8

Suddenly, there are two more tables staring you in the face! Say to yourself "One two equals three times four. Five Six equals seven times eight". Repeat it a few times and you'll have some easy facts at your fingertips!

So, work on these patterns until you *know both these tables instantly.*

If we update our tables grid to show that we know both these tables, it looks like:

x	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

Now look: there are only 13 left to learn!

Trick 8: The Secret of Six-cess!

This trick is a play on words. 'Six-cess' sounds like 'success', and success is what you will experience with this trick. Six-cess isn't even a real word, of course, but just look what happens when you multiply 6 by an even number:

6 x 2 = 12   6 x 4 = 24   6 x 6 = 36   6 x 8 = 48

Do you notice anything unusual about the green digits? You probably saw straight away that they match!

So - 6 times any even digit will always end in that digit.

Now, remember that this trick is a play on words. The next thing to do is to say each of the four tables above over and over again in a rhythm, and they will stick in your memory.

Practise putting the emphasis on the last syllable of each table: "*Six fours are twenty FOUR, six fours are twenty FOUR*", and so on.

Do the same with "*Six sixes are thirty SIX, six sixes are thirty SIX*", and finally with "*Six eights are forty EIGHT, six eights are forty EIGHT*". (You already know 6 twos of course).

Now you know that **6 x 4 = 24, 6 x 6 = 36,** and **6 x 8 = 48.**

If we update our tables grid to show that we know these tables, it looks like:

x	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

I hope that by this stage you are feeling more confident about your tables.

There are very few left to learn now…only 10 in fact!

Trick 9: Fair and Square!

This trick uses a visual example. All tables can be displayed as a rectangle. For example, here are two ways of showing 2 x 4:

1	2	3	4
5	6	7	**8**

1	2
3	4
5	6
7	**8**

But only a few tables can be displayed as squares: they are 1x1, 2x2, 3x3, 4x4, 5x5, 6x6, etc. The first few look like this:

1

1 x 1 =1

1	2
3	**4**

2 x 2 = 4

1	2	3
4	5	6
7	8	**9**

3 x 3 = 9

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	**16**

4 x 4 = 16

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	**25**

5 x 5 = 25

Your Turn: Draw squares to prove that **6x6=36, 7x7=49, 8x8=64 and 9x9=81**.
we update our tables grid to show that we know these tables, it looks like:

x	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

You should be feeling great by now - **only 6 more tables still to learn!**

Trick 10: Toil and Trouble!

Not everything is easy, but by now I hope that you are now confidently able to recall your times tables with ease. Like anything, the more you practice the better you will become.

The last six tables to learn are:

3 x 6 = 18, 3 x 7 = 21, 4 x 7 = 28, 6 x 7 = 42, 8 x 3 = 24 and 8 x 4 = 32

These can all be found by doubling or halving a table you have already learnt. For example, you know that **3 x 3 = 9**, so **3 x 6 must be 18**. Learn it!

To help cement them ALL in your mind, here they are again, but this time they are written next to a list of green tables which you already know. Can you work out which green table you could use to work out each of the red ones?

3 x 6 = 18	**8 X 2 = 16**
3 x 7 = 21*	**4 X 3 = 12**
4 x 7 = 28	**2 X 7 = 14**
6 x 7 = 42*	**2 X 7 = 14**
8 x 3 = 24	**3 X 3 =9**
8 x 4 = 32	***each depends on the other!***

If we update our tables grid to show that we know these tables, it looks like:

x	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

CONGRATULATIONS! YOU HAVE DONE IT!

A FINAL WORD OF WARNING: Reading this e-book will not achieve anything on its own; only YOU can learn your tables; this book cannot do it for you!

All this e-book will do is to provide you with a systematic method of breaking down the learning of tables into smaller more manageable chunks.

Use the book in whatever way suits you best. I suggest that you tackle a single trick a day for the first week, then see whether you want to go faster or slower than that. Make sure that when you are asked a table, you can instantly recall it, without having to resort to mentally counting in your head. Only then can you say you actually *know it.*

Once you really, really know them, you will have them forever, and be able to do so much more maths once they are securely learnt.

Well done for persevering with this e-book: if it has helped you, do let others know so that they can benefit.

Thank you and good luck!

Andrew Jeffrey

Magic Message Ltd.

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