See discussions, stats, and author profiles for this publication at: https://www.researchgate.net/publication/323676648

## How to learn the times tables in ten easy lessons

Book • December 2016

| CITATIONS |  |  |
| :--- | :--- | :--- |

# How to learn the times tables in ten easy lessons 

Authors:
Francisco J. Alós; Rosario Castillo-Mayén; Miguel Ángel Maldonado; Salud Jiménez; Francisco García-Torres

Córdoba, 2016

How to learn the times tables in ten easy lessons
Department of psychology from the University of Córdoba
©Francisco J. Alós, Rosario Castillo-Mayén, Miguel Ángel Maldonado, Salud Jiménez, Miguel Ángel Maldonado, Francisco García-Torres

Graphic designer: Nuria Laguna Jiménez
Córdoba, 2016
I.S.B.N. 978-84-617-7493-7

## Index

Information for students ..... 4
One Times Table ..... 6
Two Times Table ..... 9
Three Times Table ..... 12
Four Times Table ..... 15
Five Times Table ..... 18
Six Times Table ..... 21
Seven Times Table ..... 24
Eight Times Table ..... 27
Ten Times Table ..... 33
Supergift: signing the agreement ..... 37
Information for adults ..... 39

## Information for students

We are going to learn the times tables, with the help of an adult who will teach you the times tables step by step. This booklet contains several things that will make studying easier.

For instance, you will see a figure on each multiplication table that you come across, so you can colour what you learn. Once you learn a complete column, the adult will give you a present. There are ten columns in total, meaning you will receive ten presents.

The following figure also appears so that you can colour each column as you learn it.

What's more, once you know all your times tables, you will get a SUPERGIFT, the most important one of all. So that the adult doesn't forget about the supergift, he/she will have to write his/her name in the following figure.

You can colour the booklet and decorate it as you wish, there are a set of numbers shaped like animals. You will like them!

We hope that you have fun learning your times tables. If you have any questions, you can ask the adult. Enjoy!

## Student . . . . . . . . . . . . . . . . . . . . . . . . . . . .

Age.
School.


## One Times Table



Complete table ${ }_{\text {paxes }} \quad 1 \times 0=0$

$$
\begin{aligned}
& 1 \times 1=1 \\
& 1 \times 2=2 \\
& \hline
\end{aligned}
$$

$$
1 \times 3=3
$$

$$
1 \times 4=4
$$

$$
1 \times 5=5
$$

## $1 \times 6=6$

$$
1 \times 7=7
$$

$$
1 \mathrm{x} 8=8
$$

$1 \times 9=9$
$1 \times 10=10$

## Partial table

## Phase 2

$1 \times 0=$
Number of repetitions

Phase 3 $\square$ Number of repetitions
ज)
$1 \times 1=$

Phase 4


Number of repetitions

Phase $5 \quad 1 \mathbf{X 3}=$
Number of repetitions
風自

Phase 6 $\square$ Number of repetitions
-1.1

Phase $7 \quad 1 \mathbf{X 5}=$
Number of repetitions
-

Phase $8 \quad 1 \times 6=\quad$ Number of repetitions
Phase $9 \quad 1 \mathbf{X 7}=\square$ Number of repetitions

Phase $10 \square \mathbf{X 8}=\square$ Number of repetitions

Phase $11 \quad 1 \mathbf{X P}=\square$ Number of repetitions

Phase $12 \quad 1 \mathrm{X} 10=$

## Two Times Table



Complete table

$$
{ }^{\text {Praces }} \quad 2 \times 0=0
$$

$$
2 \times 1=2
$$

$$
2 \times 2=4
$$

$$
2 \times 3=6
$$

$$
2 \times 4=8
$$

$$
2 \times 5=10
$$

$$
2 \times 6=12
$$

$$
2 \times 7=14
$$

$\square$

$$
2 \times 8=16
$$

$$
2 \times 9=18
$$

$2 \times 10=20$

## Partial table

## Phase 2

$2 \times 0=$
Number of repetitions

Phase 3 $\square$ Number of repetitions

Phase 4 $\square$ Number of repetitions
-
Phase 4
$2 \times 2=$

Phase 5
$2 \times 3=$
Number of repetitions
in
$\square$

Phase 6
Number of repetitions
B


Number of repetitions
8
Phase 7
$2 \times 5=$
7

Phase 8


Number of repetitions


Number of repetitions


Phase $10 \quad 2 \times 8=$
of repetitions
$20)$
5


Number of repetitions

Number of repetitions
Phase 12 $\square$
$2 \times 10=$

## Three Times Table



Complete
table

| Phase 1 |
| :---: |
| $3 \times 0=0$ |
| $3 \times 1=3$ |

$3 \times 2=6$
$3 \times 3=9$

$$
3 \times 4=12
$$

$3 \times 5=15$

$$
3 \times 6=18
$$

$3 \times 7=21$
$3 \times 8=24$
$3 \times 9=27$
$3 \times 10=30$

Partial table


## Four Times Table



Complete table

$$
\begin{aligned}
& 4 \times 1=4 \\
& \hline 4 \times 2=8
\end{aligned}
$$

$$
4 \times 3=12
$$

$$
4 \times 4=16
$$

$$
4 \times 5=20
$$

$$
4 \times 6=24
$$

$$
4 \times 7=28
$$

$$
4 \times 8=32
$$

$4 \mathrm{x} 9=36$
$4 \times 10=40$

## Partial table

## Phase 2 <br> $4 \mathrm{x} 0=$

Number of repetitions

Phase 3 $\square$ Number of repetitions


都


9
$4 \times 3=$
Number of repetitions
$?$
Phase 5 $\square$

Phase 6
2


Number of repetitions
2
Phase 7 $\square$

Phase 8


Number of repetitions


Number of repetitions


Number of repetitions


Phase 12
$4 \times 10=$
Number of repetitions
4

Five Times Table


Complete table mane $\quad 5 \times 0=0$

$$
\begin{aligned}
& 5 \times 1=5 \\
& 5 \times 2=10 \\
& \hline
\end{aligned}
$$

$$
5 \times 3=15
$$

$$
5 \times 4=20
$$

$$
5 \times 5=25
$$

$$
5 \times 6=30
$$

$$
5 \times 7=35
$$

$$
5 \times 8=40
$$

$$
5 \times 9=45
$$

$$
5 \times 10=50
$$

## Partial table

$5 \times 0=$
$\square$
$\square$
$\square$
$\square$

## Six Times Table



Complete table

$$
\begin{aligned}
& \text { Phase ce } 6 \times 0=0 \\
& \hline
\end{aligned}
$$

$$
6 \times 1=6
$$

$6 \times 2=12$
$6 \times 3=18$
$6 \times 4=24$
$6 \times 5=30$
$6 \times 6=36$
$6 \times 7=42$
$6 \times 8=48$
$6 \times 9=54$

## $6 \times 10=60$



## Seven Times Table



Complete table

$$
\begin{aligned}
& \text { phase c } \\
& 7 \times 0=0
\end{aligned}
$$

$$
7 \mathrm{x} 1=7
$$

$$
7 \times 2=14
$$

$$
7 \times 3=21
$$

$$
7 x 4=28
$$

$$
7 x 5=35
$$

$$
7 \times 6=42
$$

$$
7 x 7=49
$$

$$
7 x 8=56
$$

$$
7 x 9=63
$$

$$
7 \times 10=70
$$

## Partial table

## $7 x 0=$

Number of repetitions

Phase 3


Number of repetitions

Phase 4 $\square$ Number of repetitions
$7 \times 2=$

Phase 5 $\square$ Number of repetitions

$$
7 x 3=
$$

$\square$ Number of repetitions
Phase 6
$7 \times 4=$

Phase 7 $\square$
$7 \times 5=$
Number of repetitions

Phase 8 $\square$ Number of repetitions
$7 \times 6=$

Phase 9
$\square \mathrm{P}^{\square} \neq$

Number of repetitions

Phase 10


Number of repetitions
Phase 11



Phase 12
$7 \times 10=$
Number of repetitions

Eight Times Table


Complete table

Phase 1
$8 \times 0=0$

$$
8 \times 1=8
$$

$$
8 \times 2=16
$$

$$
8 \times 3=24
$$

$$
8 \times 4=32
$$

$$
8 \times 5=40
$$

$$
8 \times 6=48
$$

$$
8 \times 7=56
$$

$$
8 \times 8=64
$$

$$
8 \times 9=72
$$

$$
8 \times 10=80
$$

Partial table

## Phase 2 <br> $8 \times 0=$

Number of repetitions
$\infty$

Phase 3


Number of repetitions $\otimes$


Number of repetitions
용


Number of repetitions

Phase $7 \quad 8 \times 5=$
Number of repetitions
(8)


Phase $9 \quad 8 \times 7=$| Number of repetitions |
| :--- |

Phase $10 \quad 8 \times 8=$| Number of repetitions |
| :--- |
| 0 |

Phase $11 \quad 8 \times 9=\quad$ Number of repetitions


Phase 12
$8 \times 10=$
Number of repetitions


Complete table

Phase 1

$$
\begin{array}{l|l}
\hline 9 \times 0=0 \\
& >8
\end{array}
$$

$$
9 \times 1=9
$$

$9 \times 2=18$
$9 \times 3=27$
$9 \times 4=36$
$9 \times 5=45$
$9 \times 6=54$
$9 \times 7=63$
$9 \times 8=72$
$9 \times 9=81$
$9 \times 10=90$

Partial table
Phase 2


Number of repetitions
Phase $3 \quad 9 \mathrm{X}=$
Number of repetitions
Phase 4

Number of repetitions

## Phase 5 <br> Phase 5

$\square$ Number of repetitions
$9 \times 3=$


Phase 7
$9 \times 5=$
Number of repetitions


Phase $10 \quad 9 \times 8=$


Phase $12 \quad 9 \mathrm{X} 10=$
Number of repetitions


Complete table

$$
10 \times 1=10
$$

$10 \times 2=20$
$10 \times 3=30$
$10 \times 4=40$
$10 \times 5=50$
$10 \times 6=60$
$10 \times 7=70$
$10 \times 8=80$
$10 \times 9=90$
$10 \times 10=100$

Partial table
Phase 2 $\square$ Number of repetitions

Phase 3 $\square$ Number of repetitions | $Y$ |
| :--- | Phase $4 \quad 10 \mathrm{X} 2=$

Number of repetitions


Phase 5


Number of repetitions

Phase $6 \quad 10 \times 4=\quad$ Number of repetitions


Phase 7
HOX

Number of repetitions


Number of repetitions


Phase 12
$10 \times 10=$
Number of repetitions
$\square$


Supergift: signing the agreement


## All of the times tobles you

 have learnat

## Information for adults: Mode of Application

## Information for adults

Introduction

Learning the times tables is a complex subject that on occasion can present a certain amount of difficulty for some children. The traditional form of teaching the times tables consists of asking children to memorise a series of numbers and to keep repeating until they are able to recite the times tables in complete form. Thus, it is normal for students to make errors; usually generating feelings of frustration and insecurity in the children and may cause bother in the person who is teaching them. From our point of view, it is necessary to develop procedures that will eliminate or reduce these kinds of problems. The present material intends to offer the educative community a new teaching strategy for learning the times tables (see Alós, Lora \& Jiménez, 2014). The reader can consult the theoretical foundation in Alós, Guerrero \& Falla (2013).

The aim of this booklet is to teach the multiplication tables with minimal errors, favouring a greater level of motivation from the people who are in the process of learning: child and adult. In essence, it will be a step by step process, so that the child can memorise, little by little the numbers and from this way avoid mistakes.

## Conditions for teaching

The didactic material should be on a table. The child and adult should sit side by side, both in front of the material. This position will make it easier for the adult to guide the process of teaching.

## What is the strategy for teaching this kind of material?

The present didactic material includes two versions for each of the times table: a complete table $\square$ and a partial table. The difference between them is that the first includes the answers $(1 \times 0=0)$ and the second does not $(1 \times 0=)$. Also, in the complete table, each multiplication is separated from the next one by a dashed line which divide the times table into eleven pieces of paper. Following the Phase of teaching, the adult should cut $>\delta$ the dashed lines and put it to the left side of the booklet, this way, when we put the piece of paper to the left, on the right side of the booklet we will be able to see the partial table and the rest of the complete multiplication tables, we finalize the process when the eleven pieces of paper have all passed to the left and on the right only the partial table is left.

## How to change the Phase?

To change to another Phase, for example from Phase $1(1 \mathrm{x} 0=0)$ to Phase 2 ( $1 \times 0=$ ), the student should complete the whole multiplication table five times: $1 \mathrm{x} 0=0$. If the student does not make any errors in the whole process of learning, as there are twelve Phases they would be repeating the times tables 60 times, 5 repetitions for all twelve Phases. Now, if the student makes an error, for example in Phase 3, we return to Phase 2, until the new criteria of change is complete (five repetitions of the complete times tables).

Yes, although a change criterion of less than three is not advisable, since logic indicates that the fewer repetitions that are made, the more likely it is to make mistakes. What is really important is that once a criterion is adopted, it should be maintained for the entire teaching procedure.

## How to teach the times tables?

To continue, we describe the Phases that can make the process of learning easier.

Phase 0. Initial Evaluation. Asking the child to say the multiplication tables twice with the booklet closed. This information can be noted on the evaluation table (Attachment 1) on page 46. Although, this Phase can be taken out if we are certain that the child does not know the multiplication tables.

Phase 1. List the multiplications with visual support The child should say the multiplications while looking at the printed numbers $\square$ (complete table). Here is an example to better understand this idea: the adult would give the following instruction "tell me the .... times table", after this pointing to each of the multiplications with a pencil and the child should say the correct answer. Each time that the child says the complete multiplications table correctly, for example the one times table, the adult should motivate the student with praises like: Very good, awesome, etc. On the contrary, when the child makes a mistake you would say 'no' and start from the beginning, for example, $1 \mathrm{x} 0=0$, etc. To consider if the sequence is correct, the multiplications should appear in a consecutive form, from the lowest $(\mathbf{1 x 0}=0)$ to the highest $(\mathbf{1 x} 10=10)$. To pass a Phase, it is necessary to establish a criterion of change; this can be the correct recitation of the adequate multiplication tables (five times). This is when the student is able to correctly say the complete multiplication table five times for the Phase they are at, and if they do not make any mistakes, they can go on to the next Phase. The number of repetitions for a Phase can be noted in the grey box. Here is an example:


Phase 2. Revealing the multiplication of zero (x0). In the complete table, the adult should cut the dashed line that divides the first and second multiplication and pass the strip to the left side. This way, the child will only be able to see the first multiplication from the partial table and the rest would be from the complete table. That is to say that the child will see the first multiplication without the answer ( $1 \mathrm{x} 0=$ ) and the rest would have the answers printed. The criterion to move on to the next Phase is the same as that in the previous Phase. Here is an example:


Phase 3. Revealing the multiplication of one (x1). Now the child will see two multiplications without answers ( $1 \mathrm{x} 0=$, $1 \mathrm{x} 1=$ ), although, the rest of the multiplications will be visible, which the child will be able to see and therefore read. The criterion to pass this Phase is the same as the previous Phase.

Phase 4. Revealing the multiplication of two (x2). The child will see three multiplications without answers and the rest of the multiplications will be printed.

Phase 5. Revealing the multiplication of three (x3). The child will see four multiplications without answers and the rest printed.

Phase 6. Revealing the multiplication of four (x4). The child will see five multiplications without answers and the rest printed.

Phase 7. Revealing the multiplication of five ( $\times 5$ ). The child will see four multiplications without answers and the rest printed.

Phase 8. Revealing the multiplication of six (x6). The child will see seven multiplications without the results and the rest printed.

Phase 9. Revealing the multiplication of seven ( $x 7$ ). The child will see eight multiplications without answers and three with answers.

Phase 10. Revealing the multiplication of eight (x8). The child will see nine multiplications without answers and two with answers.

Phase 11. Revealing the multiplication of nine ( x 9 ). The child will see ten multiplications without answers and one with the answer.

Phase 12. Revealing the multiplication of ten (x10). The child will see all the multiplications without answers.

Phase 13. Saying the multiplication tables with the booklet closed (final questions). The child can say the multiplication tables without any help.

## How to know if the child has learnt the times tables

To be certain if the child knows the times tables it is necessary to evaluate the skill. An initial and a final evaluation could be done (Phase thirteen), without visual support: printed multiplication table. That is, for a certain number of times, for example, we could ask the child to say a certain multiplication table two times and write the results. A correct execution will imply that the child will correctly list the complete times table.

## What to do if a child fails at a stage of learning?

If the child makes a mistake on a multiplication, that is, they do not say the number that corresponds with the multiplication, it would be adequate to return immediately to the previous Phase until the criteria is met and then they can move on to the next Phase.

One of the key ways to improve learning is to maintain a good level of student motivation. Therefore, in this procedure it is very important that each time the child has finished a multiplication table from start to finish, the adult has to let the child know that they have done well with expressions like: very good, perfect, awesome, etc. There are also circle figures and the word 'gift' that the child can colour for each Phase they pass, so when they complete each Phase the child can receive a small prize, for example, a small toy, a book, a DVD, a visit to their favourite place, etc. Furthermore, two new figures will appear on pages 37 and 38 with the word 'supergift' this gift, presumably the most important one, could be received by the child as a final prize for learning all the multiplication tables. On page 37 it is very important to note which supergift the child will receive and that the agreement is signed. On page 38 there will be circles with animal-numbers that the student should colour when they have surpassed each table, there will also be some circles with the words (review all), with that the child can review all of the times tables that they have learned up to that moment.

## What to do once all the times tables have been learnt?

Once the child has learned the multiplication tables, it should be reviewed to maintain what has been learned. For this reason, it is important that the child writes the multiplication tables down, puts them into practice and is able to say them out of order. In short, to use them in a fluid way, as this knowledge is essential to perform well in the field of mathematics.

## Is it important to fill in the figures?

From our point of view, it is very important because in this way the students would have visual information of their progression and they could estimate how much progress they have made and how much work they still need to do. Signing and fulfilling the agreement for receiving the supergift is very important. The
prospect of obtaining this supergift could motivate the child to make the extra effort that he would need to learn the multiplication tables.

## References

Alós, F. J., Guerrero, M. S. \& Falla, D. (2013). Cadenas intraverbales: un ejemplo en vocales. En Alós, F. J., Sánchez, A. \& Luque, B. (Comp.) Atención temprana: aportaciones para la práctica. (pp. 207-221). Ed. Don Folio. Córdoba.

Alós, F. J., Lora, M. M. \& Jiménez, M. S. (2014). Las tablas de multiplicar en diez fáciles lecciones. Ed. Don Folio. Córdoba.

## And to finalise, we give some thanks to those who have helped us in creating this booklet

- To José Julio Carnerero for his contributions and suggestions, all which have enriched this didactic material
- To Aitana, Minerva and Daniela, for the best revision and analysis of the work created.
- To Zeinab Munye and Virginia Acedo, for the translation and revision of this book.

