DASP
Getting it right by working together
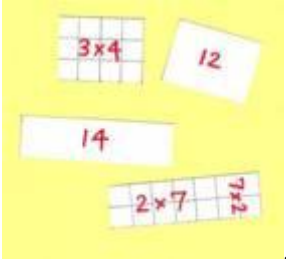
Skill: To be able to derive and recall: • multiplication facts up to 10x10 • the related division facts.	What does this mean? • Your child should be able to work out and then recall all their times table up to 10 x 10. • Your child should also know division facts that correspond to their times tables.

Examples:
- multiplication facts up to 10x10:
  e.g. 7 x 9 = 63... 3 x 6 = 18 ... etc
- the related division facts:
  e.g. 63 ÷ 9 = 7, one ninth of 63 is 7, there are 9 sevens in 63... etc

Key Vocabulary:
multiply
multiplication
multiplied by
times
once
twice
three times
ten times
array
repeated
addition
division
divide
divided by

Prior learning needed:
- learn 2,3,4,5, and 10 times tables first.
- Use arrays to support a visual model for time tables

3x4   12
14
2 x 7   7x2

How to support your child in learning this skill:
Below you will find 8 slides that will help your child develop their skills:
- ❖ Times table grid
- ❖ Tip 1: Order does not matter
- ❖ Tip 2: Learn the Tables in "Chunks"
- ❖ Tip 3: What about the 11 and 12 times tables?
- ❖ Tip 4: What about the 9 times tables?
- ❖ Tip 5: Quickie for 4,6 & 8 times by doubling
- ❖ Tip 6: Learn what you need to
- ❖ Tip 7: What numbers go together?
- ❖ Tip 8: What are the square numbers?

Times table grid:

Your life will be a lot easier when you can simply **remember** the multiplication tables.

So ... **train your memory!**

First, use the table below to start putting the answers into your memory.

12× Multiplication Table

×	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

Tip 1: Order Does Not Matter

When you multiply two numbers, it does not matter which is
first or second, the answer is always the same.

Example: 3×5=15, and 5×3=15

Another Example: 2×9=18, and 9×2=18

In fact, it is like half of the table is a mirror image of the other!

So, don't memorise both "3×5" and "5×3", just memorise that "a 3 and a 5 make 15" when multiplied.

the same !

This is very important! It nearly cuts the whole job in half.

In your mind you should think of
3 and 5 "together" making 15.

so you should be thinking something like this:

$5 \times 3 = 15$

Tip 2: Learn the Tables in "Chunks"

It is too hard to put the whole table into your memory at once. So, learn it in "chunks" ...

A   Start by learning the 5 times table.

B   Then learn up to 9 times 5.

C   Is the same as B, except the questions are the other way around. Learn it too.

D   Lastly learn the "6×6 to 9×9" chunk

Then bring it all together by practicing the whole "10 Times Table"

And you will know your 10 Times Table!

(We look at the 12x table below)

Some Patterns

There are some patterns which can help you remember:

2× is just doubling the number. The same as adding the number to itself.

2×2=4, 2×3=6, 2×4=8, etc.

So the pattern is 2, 4, 6, 8, 10, 12, 14, 16, 18, 20

(And once you remember those, you also know 3×2, 4×2, 5×2, etc., right?)

5× has a pattern: 5, 10, 15, 20, etc. It always end in either a 0 or a 5.

10× is maybe the easiest of them all ... just put a zero after it

10×2=20, 10×3=30, 10×4=40, etc.

9× has a pattern, too: 9, 18, 27, 36, 45, 54, 63, 72, 81, 90

Now, notice how the "units" place goes down: 9,8,7,6, ...? And at the same time, the "tens" place goes up: 1,2,3,...?

You can use this pattern to prompt your memory this way: **the tens place will be 1 less than what you are multiplying by!**

Example: 9×7 ... go 1 less than 7, so the tens place is 6, and then remember 63

Tip 3: What About the 11 and 12 Times Table?

Sounds tough, but once you have mastered the 10× table, it is just a few steps away.

- Firstly, 11× is **mostly easy**: from 11×2 to 11×9 you just put the two digits together. 11×2=22, 11×3=33, ..., 11×9=99.

- And of course 2×, 5× and 10× just follow their simple rules you know already, so it just leaves these to remember:

  - 3×12=36,
  - 4×12=48,
  - 6×12=72,
  - 7×12=84,
  - 8×12=96,
  - 9×12=108

- And the "Big 3":

  - 11×11=121,
  - 11×12=132 and
  - 12×12=144

The 11 Times Rule #1

1. Take any number to 10 and multiply it by 11.
2. Multiply 11 by 3 to get 33, multiply 11 by 4 to get 44. Each number to 10 is just duplicated.

The 11 Times Rule #2

1. Use this strategy for two digit numbers only.
2. Multiply 11 by 18. Jot down 1 and 8 with a space between it. 1 --8.
3. Add the 8 and the 1 and put that number in the middle: 198

Tip 4: What About the 9 Times Table?

Using your fingers

Step 1	Step 2	Step 3
Put your hands on the table in front of you.	Your fingers represent the numbers 1 through 10.	Curl under the FOURTH finger to represent 4 x 9.

Step 4

Learn the Nines

- Each finger to the left of the curled finger represents 10. Say 10, 20, 30.
- Each finger to the right of the curled finger represents one. Count 1, 2, 3, 4, 5, 6. (Or 31, 32, 33, 34, 35, 36) 9 x 4 = 36

1 x 9	2 x 9	3 x 9
1 x 9 = 9	2 x 9 = 18	3 x 9 = 27

4 x 9	5 x 9	6 x 9
4 x 9 = 36	5 x 9 = 45	6 x 9 = 54

7 x 9   8 x 9   9 x 9
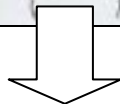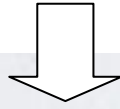
7 x 9 - 63   8 x 9 - 72   9 x 9 - 81

Another way : . .

Multiplying by 9 is really multiplying by 10 and take away what you are multiplying by.

SO, 8 x 9 is just 8 x 10 - 8 which is 80 - 8 = 72

Tip 5: Quickie for 4, 6 and 8 times by doubling

Teach 4, 6 and 8 times tables using logic. Make up a cheat sheet for the children that they can use while practicing these times tables. The rules that go on the cheat sheet are: "For 4 times tables, you double-double the number." For example, for 4x7, you would think 7 doubled is 14, double it again and you have 28. "For 6 times tables you triple-double the number." For example, for 6x7 you would think, triple 7 is 21, double that is 42. "For 8 times tables you double-double-double the number. For example, for 8x7 you think, double 7 is 14, double it again and you have 28, double it again and you have 56. I let them practice these for several weeks before moving on. Before long, this logic becomes ingrained and they can work it out quickly.

Tip 6: Learn what you need to

This one is a little controversial but bear with me. One of the criticisms of learning by rote is that there is no understanding. It's important that children appreciate the relationships between numbers rather than just reciting them.

Much of primary maths is "derived" ie. building on what you know. There's also been quite a bit of effort to encourage children to learn "halving and doubling." So why not just learn the key times table facts rather than the whole lot? When you're then asked a question you can then use these to answer.

The key facts are

$8 \times 7 = 56$
$4 \times 9 = 36$
$11 \times 12 = 132$
$7 \times 9 = 63$
$6 \times 7 = 42$
$12 \times 8 = 96$
$4 \times 7 = 28$
$6 \times 8 = 48$
$9 \times 12 = 108$
$8 \times 9 = 72$
$11 \times 11 = 121$
$6 \times 9 = 54$

I've mixed them up a bit as it might be better for the child to learn out of order. Just learn these off by heart and use them to work out any other tables.

Tip 7: What Numbers Go Together?

OK, this is big stuff here... The key to getting your times tables and being able to use them in bigger math problems later on is to see how multiplication and division fit together! These are called number families.
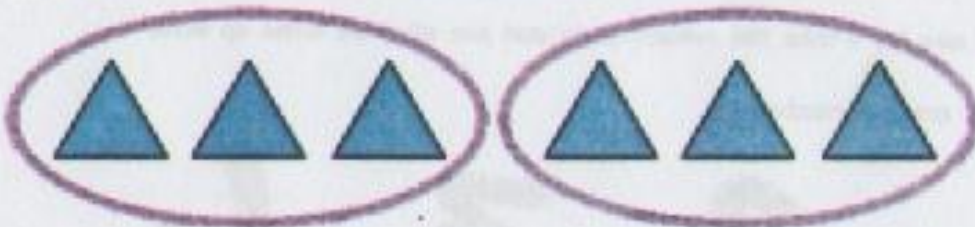
Look at these numbers:

$$2 \quad 3 \quad 6$$

What are four ways we can put these numbers together?

Check out these pictures:

Here's the 6:

We get two things!

$$2 \times 3 = 6 \text{ and } 6 \div 3 = 2$$

Look at the colours and think about it!!
Remember to read what these things mean...

$2 \times 3 = 6$ means "2 chunks of 3"

$6 \div 3 = 2$ means "How many chunks of 3 are in 6?"
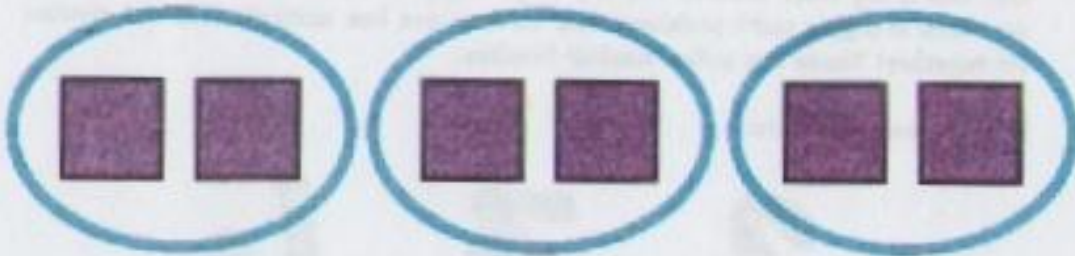
How else can we put these numbers together?

Here's the 6 again:

What does this picture give us?

We get two things!

$$3 \times 2 = 6 \text{ and } 6 \div 2 = 3$$

Look at the colours and think about it!
Remember to read what these things mean...

$3 \times 2 = 6$ means "3 chunks of 2"

$6 \div 2 = 3$ means "How many chunks of 2 are in 6?"

OK, now let's take the colours away. and see what we come up with!

Here are the numbers:

$$2 \quad 3 \quad 6$$

We can put them together four different ways!

$$2 \times 3 = 6 \qquad 6 \div 3 = 2$$

$$3 \times 2 = 6 \qquad 6 \div 2 = 3$$

Now create your own number families . . .

Tip 8: What are the Square numbers?

A square number is a number multiplied by **itself** (a number 'squared'; the symbol for squared is ^{2}):

- $1^2 = 1 \times 1 = 1$

- $2^2 = 2 \times 2 = 4$

- $3^2 = 3 \times 3 = 9$

- $4^2 = 4 \times 4 = 16$

They're called square numbers because they can be made into square shapes.

1	2
3	4

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

The square numbers up to 100 are: **1, 4, 9, 16, 25, 36, 49, 64, 81, 100**

Where do they appear on the multiplication grid?

Resources to use/ Games to Play:
http://tutpup.com/
http://www.sumdog.com/
Essential iPhone app: search for: 'Multiple Wipeout' & 'Eggs on Legs'

Next steps:
Your child, once secure and confident, will be able to apply their knowledge to problems such as: 23 x 9 =207.   Where 3 x 9 is **27**... &   20 x 9 becomes (2 x 9) x 10 is **180**.