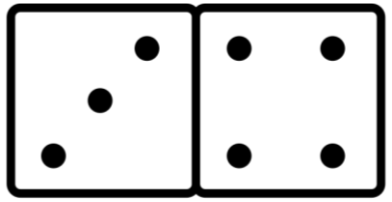

Maths

Multiplication Tables for Y3 Parents

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There's no way I can help my child with maths. It's so difficult and I can't do it!

Teach it!

Practise it!

Test it!

I don't know times tables myself – how can I help?

Why? Why does the government target tables in Year 3 and 4?

4.345×2.3

4567×45

$4x + 8 = 44$

Y7 Readiness Diagnostic (NCETM)

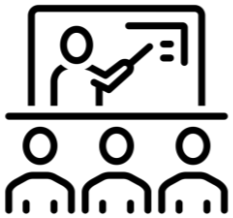
3.4×4.9

$207 \div 23$

$1\frac{3}{4} \div \frac{1}{2}$

$3\frac{4}{5} + 1\frac{2}{3}$

That's before we even mention secondary and GCSE!



Teach It!

Teach generalisations and patterns not just answers

In English, do we learn just spellings or also rules and patterns?

The same applies to maths and multiplication tables.

1x10=10
2x10=30
3x10=30
4x10=40
5x10=50
6x10=60
7x10=70
8x10=80
9x10=90
10x10=100
11x10=110
12x10=120

What is the generalisation?

1 x 2 = 2
2 x 2 = 4
3 x 2 = 6
4 x 2 = 8
5 x 2 = 10
6 x 2 = 12
7 x 2 = 14

What is the rule/pattern?

Teach generalisations and patterns not just answers

What is the generalisation?

What is the rule/pattern?

What are some generalisations about the x10 table?

x5 table?

x11 table?

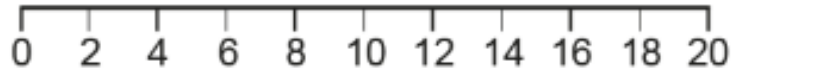
x4 table?

x7 table?

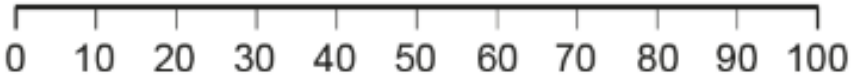
Counting

Counting with the ***support*** of visual representations and ***gestural patterns***, for example pupils can point to numerals on a number line or 100 square. **If you are going to count…old school…long form…one times four is four…**

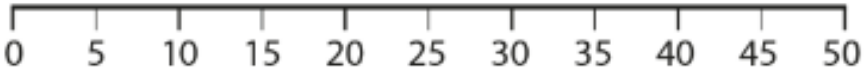
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



number line to support counting in multiples of 2

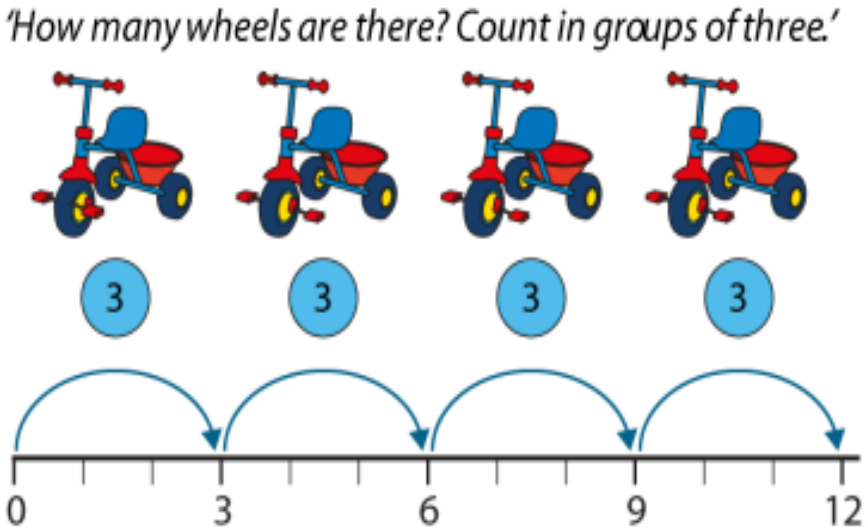


number line to support counting in multiples of 10



number line to support counting in multiples of 5

Repeated Addition… How additive structures develop in multiplicative structures



Give your child a table fact they are learning, for example 4 x 3 = 12 and ask them to write it as repeated addition…

3 + 3 + 3 + 3 = 4 x 3 = 12

The Commutative Property… teach it rather than hope they notice

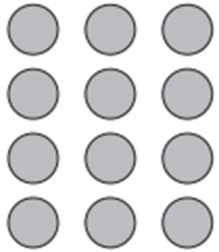
Addition and multiplication can be done in any order.

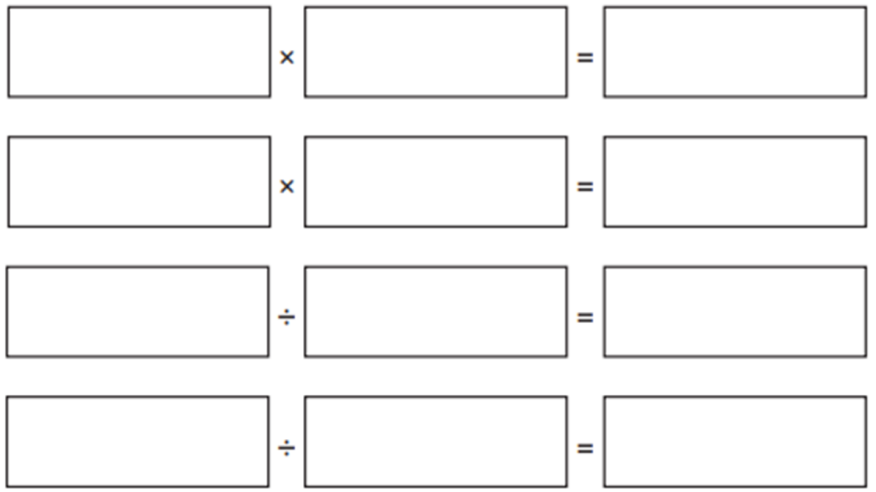
5 x 6 = 6 x 5 = 30

This is a really powerful strategy, especially for some facts…

5 x 7

Many children struggle with the 7 times table but they will know their 5s!





Draw your child an array and ask them what they see?

Can you see all 4 facts?

The Distributive Property

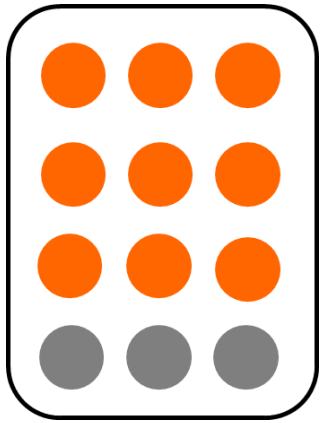
Numbers can be split up and recombined to multiply them.

7 x 6

7 can be decomposed into 5 and 2

(5 x 6) + (2 x 6) = 30 + 12 = 42

Again for certain facts this is a really powerful strategy, especially when multiplying by 11 and 12.

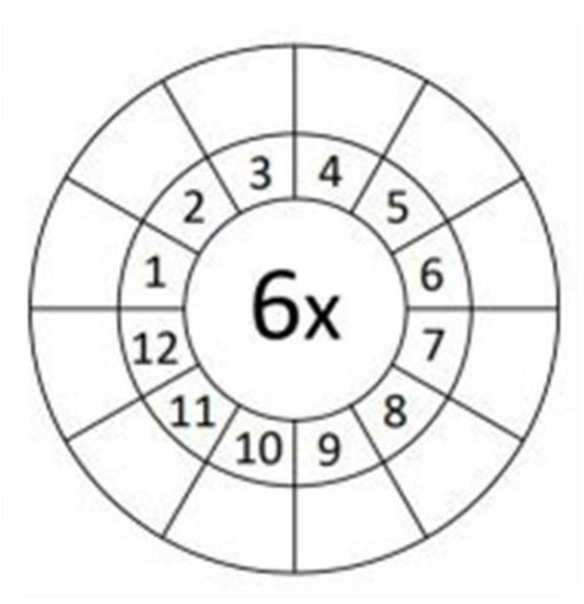


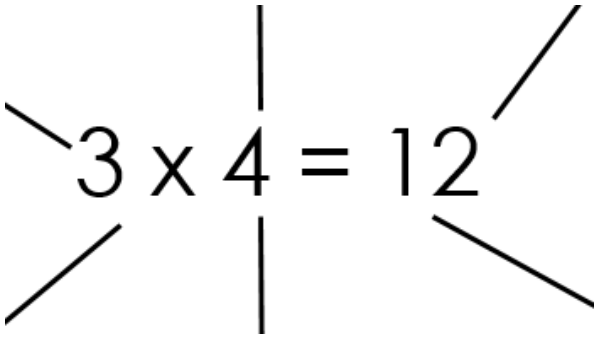
Draw your child an array with use of colours and ask what the distributed fact is.

Deriving Facts

This is all about using facts they already know to work out new ones. Using what children already know is a very powerful learning strategy.

		factor	
		X2	**X4**
factor	0		
	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	10		
	11		
	12		





We can provide blanks of these ☺

We can provide blanks of these ☺

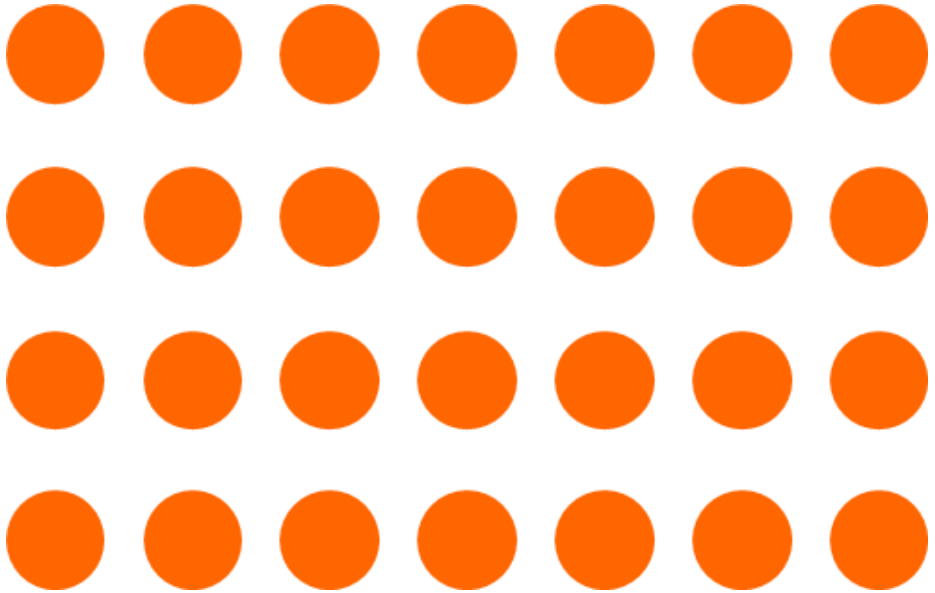
Inverse Facts

$4 \times 7 = 28$

$7 \times 4 = 28$

$28 \div 4 = 7$

$28 \div 7 = 4$



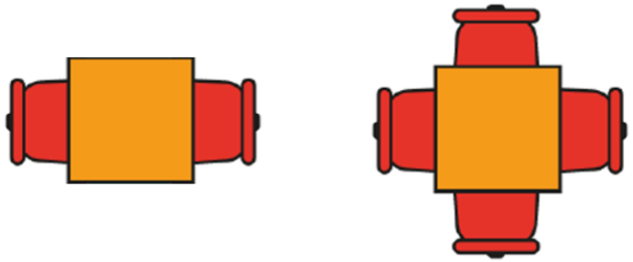
Application

Applying learned facts in varied fluency and/or simple problems.

Using other areas of maths to teach table facts.

$$\frac{3}{8} + \frac{1}{20}$$
$$= \frac{15}{40} + \frac{2}{40}$$
$$= \frac{7}{40}$$

'A class of children can sit around tables in twos *or in fours. If they sit round tables in* twos, *they need six tables. How many tables will they need if they sit in* fours *?'*



We can provide problem booklets ☺

Some facts lend themselves to certain ways of learning for recall

Suggested Learning Strategies

1 x 1	1 x 2	1 x 3	1 x 4	1 x 5	1 x 6	1 x 7	1 x 8	1 x 9	1 x 10	1 x 11	1 x 12
2 x 1	2 x 2	2 x 3	2 x 4	2 x 5	2 x 6	2 x 7	2 x 8	2 x 9	2 x 10	2 x 11	2 x 12
3 x 1	3 x 2	3 x 3	3 x 4	3 x 5	3 x 6	3 x 7	3 x 8	3 x 9	3 x 10	3 x 11	3 x 12
4 x 1	4 x 2	4 x 3	4 x 4	4 x 5	4 x 6	4 x 7	4 x 8	4 x 9	4 x 10	4 x 11	4 x 12
5 x 1	5 x 2	5 x 3	5 x 4	5 x 5	5 x 6	5 x 7	5 x 8	5 x 9	5 x 10	5 x 11	5 x 12
6 x 1	6 x 2	6 x 3	6 x 4	6 x 5	6 x 6	6 x 7	6 x 8	6 x 9	6 x 10	6 x 11	6 x 12
7 x 1	7 x 2	7 x 3	7 x 4	7 x 5	7 x 6	7 x 7	7 x 8	7 x 9	7 x 10	7 x 11	7 x 12
8 x 1	8 x 2	8 x 3	8 x 4	8 x 5	8 x 6	8 x 7	8 x 8	8 x 9	8 x 10	8 x 11	8 x 12
9 x 1	9 x 2	9 x 3	9 x 4	9 x 5	9 x 6	9 x 7	9 x 8	9 x 9	9 x 10	9 x 11	9 x 12
10 x 1	10 x 2	10 x 3	10 x 4	10 x 5	10 x 6	10 x 7	10 x 8	10 x 9	10 x 10	10 x 11	10 x 12
11 x 1	11 x 2	11 x 3	11 x 4	11 x 5	11 x 6	11 x 7	11 x 8	11 x 9	11 x 10	11 x 11	11 x 12
12 x 1	12 x 2	12 x 3	12 x 4	12 x 5	12 x 6	12 x 7	12 x 8	12 x 9	12 x 10	12 x 11	12 x 12

- double
- known fact
- commutativity
- commutativity then distributive
- derived fact
- x10 take one of the amount
- Commutativity then x10 take one of the amount
- distributive property

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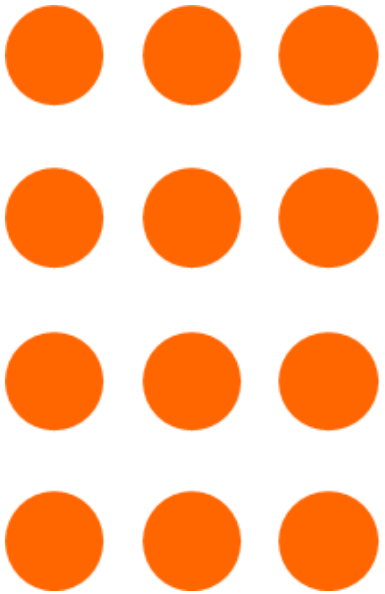
Awesome Arrays

CPA



Counting
Repeated Addition
Commutativity
Distribution
Inverse Relationships

Prime Numbers
Factors

Practice It!

Variation before Variety

Conceptual Variation

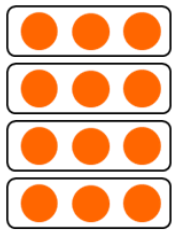
Table Fact 4 x 3 = 12	**Draw An Array** 
Language *four lots of three is twelve*	**Repeated Addition** 3 + 3 + 3 + 3 = 4 x 3 = 12
Commutative Property 4 x 3 = 3 x 4 = 12	**Distributive Property** (3 x 3) + (1 x 3) = 4 x 3 = 12
Division Facts (Inverse) 12 ÷ 3 = 4 12 ÷ 4 = 3	**Derived Facts** 40 x 3 = 120 40 x 30 = 1200 ¼ of 12 = 3

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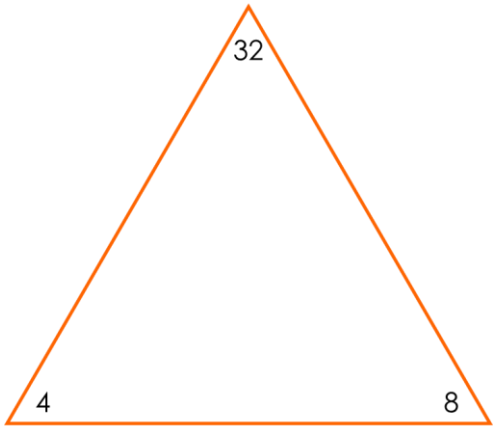
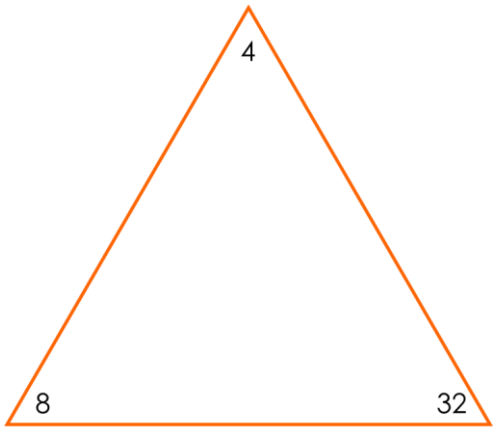
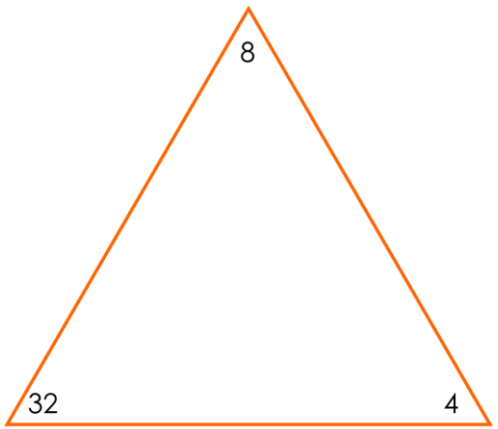
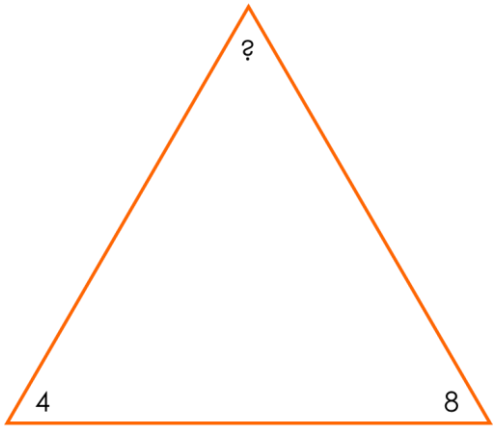
Table Fact	**Draw An Array**
Language	**Repeated Addition**
Commutative Property	**Distributive Property**
Division Facts (Inverse)	**Derived Facts**

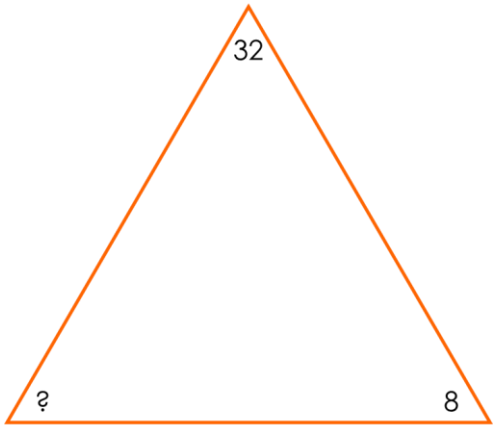
Tables in Triangles

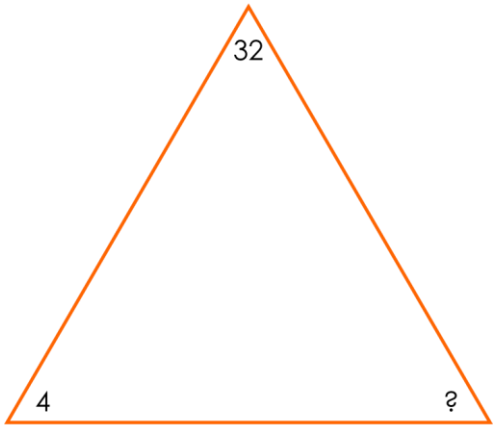












Procedural Variation

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Multiplication Tables Variation Theory Intervention: x9

1 x 9 = 9	10 x 9 = 90	5 x 9 = 45	2 x 9 = 18	4 x 9 = 36	8 x 9 = 72
1 x 9 =	90 ÷ 9 =	5 x 9 =	2 x 9 =	36 ÷ 4 =	9 x 8 =
9 x 1 =	___ = 90 ÷ 10	9 x 5 =	9 x 2 =	___ = 36 ÷ 9	8 x 9 =
___ = 1 x 9	10 = 90 ÷ ___	___ = 5 x 9	___ = 9 x 2	4 = 36 ÷ ___	___ = 8 x 9
9 ÷ 1 =	9 = ___ ÷ 10	45 ÷ 9 =	18 ÷ 2 =	9 = ___ ÷ 4	72 ÷ 8 =
___ = 9 ÷ 9	10 x 9 =	___ = 45 ÷ 5	___ = 18 ÷ 9	4 x 9 =	___ = 72 ÷ 9
9 = 9 ÷ ___	9 x 10 =	5 = 45 ÷ ___	9 = 18 ÷ ___	9 x 4 =	8 = 72 ÷ ___
1 = ___ ÷ 9	___ = 10 x 9	9 = ___ ÷ 5	2 = ___ ÷ 9	___ = 4 x 9	9 = ___ ÷ 8
1 x 9 =	10 x 9 =	5 x 9 =	2 x 9 =	4 x 9 =	8 x 9 =
10 x 9 =	100 x 9 =	50 x 9 =	20 x 9 =	40 x 9 =	80 x 9 =
100 x 9 =	1000 x 9 =	500 x 9 =	200 x 9 =	400 x 9 =	800 x 9 =
3 x 9 = 27	**6 x 9 = 54**	**12 x 9 = 108**	**9 x 9 = 81**	**11 x 9 = 99**	**7 x 9 = 63**
3 x 9 =	54 ÷ 6 =	12 x 9 =	9 x 9 =	99 ÷ 9 =	9 x 7 =
9 x 3 =	___ = 54 ÷ 9	9 x 12 =	9 x 9 =	___ = 99 ÷ 11	7 x 9 =
___ = 3 x 9	6 = 54 ÷ ___	___ = 12 x 9	___ = 9 x 9	11 = 99 ÷ ___	___ = 9 x 7
27 ÷ 3 =	8 = ___ ÷ 9	108 ÷ 9 =	81 ÷ 9 =	9= ___ ÷ 11	63 ÷ 7 =
___ = 27 ÷ 9	6 x 9 =	___ = 108 ÷ 12	___ = 81 ÷ 9	11 x 9 =	___ = 63 ÷ 9
3 = 27 ÷ ___	9 x 6 =	12 = 108 ÷ ___	9 = 81 ÷ ___	9 x 11 =	7 = 63 ÷ ___
9 = ___ ÷ 3	___ = 6 x 9	9 = ___ ÷ 12	9 = ___ ÷ 9	___ = 11 x 9	9 = ___ ÷ 7
3 x 9 =	6 x 9 =	12 x 9 =	9 x 9 =	11 x 9 =	7 x 9 =
30 x 9 =	60 x 9 =	120 x 9 =	90 x 9 =	110 x 9 =	70 x 9 =
300 x 9 =	600 x 9 =	1200 x 9 =	900 x 9 =	1100 x 9 =	700 x 9 =

Variety

Fact Retrieval

Y4 Times Tables Level 3

You have **10 minutes ONLY** to beat your own score!

Name: _____ Class: _____ Date:_____

1 x 1 =	5 x 8 =	4 x 11 =	2 x 4 =	5 x 11 =	8 x 3 =	10 x 3 =
1 x 2 =	5 x 1 =	3 x 4 =	6 x 11 =	7 x 3 =	5 x 4 =	6 x 4 =
1 x 10 =	2 x 2 =	11 x 8 =	5 x 3 =	4 x 4 =	12 x 11 =	11 x 3 =
1 x 5 =	2 x 10 =	3 x 10 =	8 x 1 =	9 x 1 =	8 x 8 =	9 x 8 =
1 x 4 =	2 x 5 =	6 x 8 =	5 x 2 =	10 x 1 =	11 x 11 =	12 x 3 =
1 x 8 =	6 x 5 =	7 x 1 =	6 x 3 =	6 x 2 =	11 x 1 =	12 x 1 =
1 x 11 =	3 x 2 =	4 x 2 =	5 x 10 =	4 x 5 =	7 x 2 =	7 x 5 =
1 x 3 =	4 x 8 =	7 x 4 =	3 x 5 =	6 x 10 =	5 x 5 =	10 x 11 =
2 x 3 =	6 x 1 =	4 x 10 =	8 x 2 =	8 x 4 =	7 x 10 =	10 x 4 =
3 x 3 =	12 x 4 =	11 x 4 =	10 x 5 =	8 x 10 =	9 x 4 =	10 x 2 =
4 x 1 =	9 x 10 =	12 x 5 =	11 x 5 =	7 x 8 =	8 x 11 =	11 x 2 =
4 x 3 =	8 x 5 =	10 x 8 =	12 x 8 =	12 x 2 =	9 x 3 =	9 x 11 =
Total:	**Total:**	**Total:**	**Total:**	**Total:**	**Total:**	**Total:**

2 x 8 =	1 x 6 =	1 x 12 =	8 x 7 =	10 x 12 =	2 x 3 =	6 x 6 =
3 x 1 =	1 x 9 =	2 x 6 =	12 x 7 =	3 x 7 =	= 5 x 1	6 x 7 =
3 x 8 =	1 x 7 =	2 x 9 =	8 x 12 =	4 x 6 =	2 x 6 =	4 x 9 =
9 x 2 =	8 x 9 =	9 x 7 =	3 x 4 =	5 x 7 =	9 x 4 = 9 x 4	5 x 9 =
9 x 5 =	2 x 12 =	11 x 7 =	9 x 6 =	5 x 6 =	= 7 x 5	6 x 12 =
2 x 1 =	9 x 9 =	3 x 6 =	3 x 9 =	4 x 9 =	9 x 12 =	11 x 6 =
2 x 11 =	10 x 9 =	7 x 9 =	11 x 12 =	9 x 12 =	7 x 2 =	10 x 7 =
11 x 10 =	2 x 7 =	3 x 12 =	12 x 12 =	10 x 6 =	= 11 x 10	12 x 6 =
12 x 10 =	7 x 6 =	7 x 12 =	8 x 6 =	7 x 7 =	7 x 11 =	11 x 9 =
10 x 10 =	11 x 9 =	3 x 7 =	4 x 12 =	5 x 12 =	6 x 8 =	2 x 8 =
3 x 11 =	6 x 9 =	10 x 7 =	4 x 7 =	9 x 3 =	9 x 7 =	11 x 11 =
7 x 11 =	12 x 9 =	5 x 7 =	9 x 8 =	6 x 5 =	= 8 x 9 =	3 x 7 =
Total:	**Total:**	**Total:**	**Total:**	**Total:**	**Total:**	**Total:**

Score:		**Time Taken:**	

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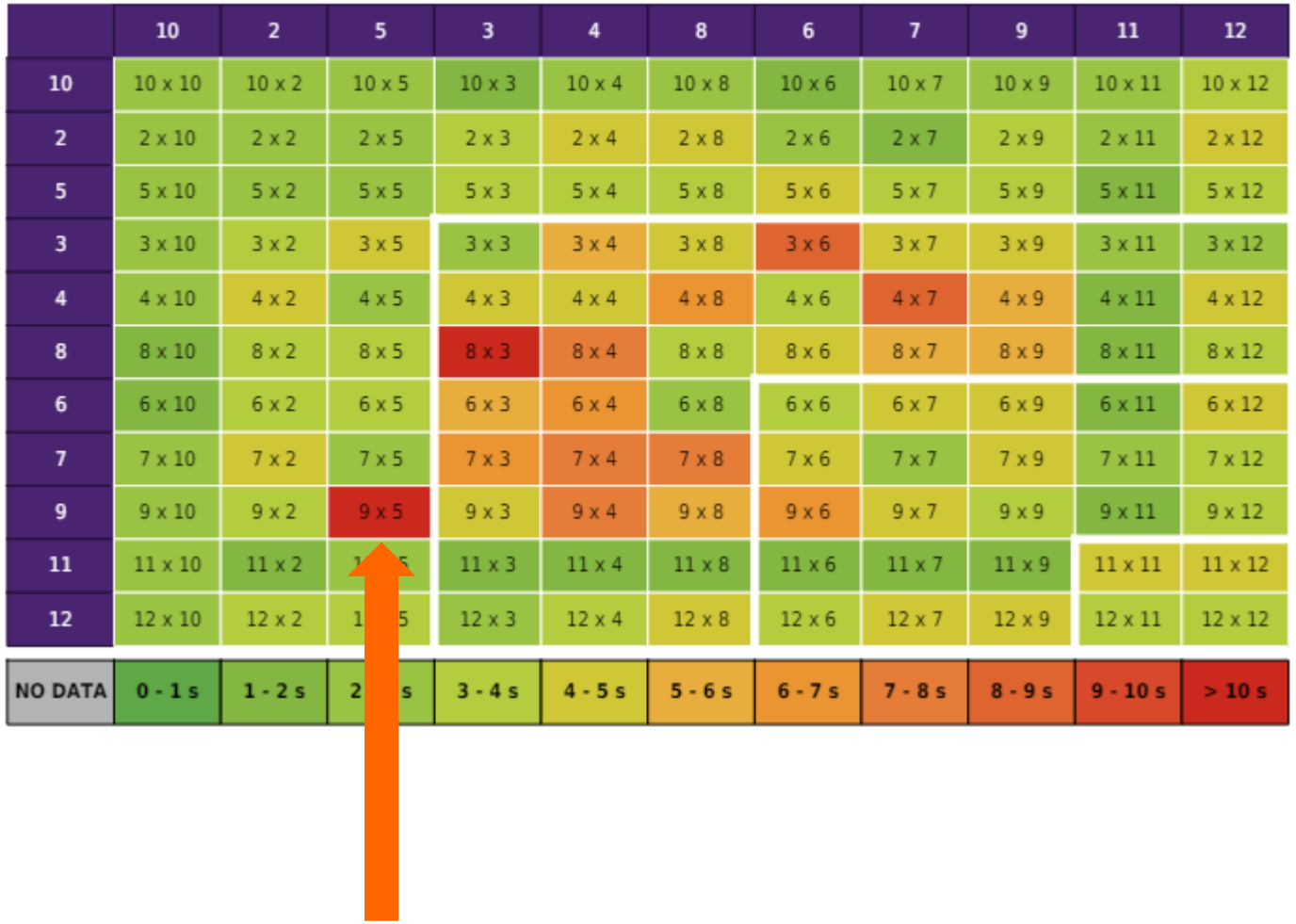
Test It!

Jamming: timer-free
Gig: monthly progress check
Garage: practice per table
Studio: speed
Soundcheck: MTC mirror

Festival: against anyone
Arena: against class mates
Rockslam: competitions (e.g. LET)



	10	2	5	3	4	8	6	7	9	11	12
10	10 x 10	10 x 2	10 x 5	10 x 3	10 x 4	10 x 8	10 x 6	10 x 7	10 x 9	10 x 11	10 x 12
2	2 x 10	2 x 2	2 x 5	2 x 3	2 x 4	2 x 8	2 x 6	2 x 7	2 x 9	2 x 11	2 x 12
5	5 x 10	5 x 2	5 x 5	5 x 3	5 x 4	5 x 8	5 x 6	5 x 7	5 x 9	5 x 11	5 x 12
3	3 x 10	3 x 2	3 x 5	3 x 3	3 x 4	3 x 8	3 x 6	3 x 7	3 x 9	3 x 11	3 x 12
4	4 x 10	4 x 2	4 x 5	4 x 3	4 x 4	4 x 8	4 x 6	4 x 7	4 x 9	4 x 11	4 x 12
8	8 x 10	8 x 2	8 x 5	8 x 3	8 x 4	8 x 8	8 x 6	8 x 7	8 x 9	8 x 11	8 x 12
6	6 x 10	6 x 2	6 x 5	6 x 3	6 x 4	6 x 8	6 x 6	6 x 7	6 x 9	6 x 11	6 x 12
7	7 x 10	7 x 2	7 x 5	7 x 3	7 x 4	7 x 8	7 x 6	7 x 7	7 x 9	7 x 11	7 x 12
9	9 x 10	9 x 2	9 x 5	9 x 3	9 x 4	9 x 8	9 x 6	9 x 7	9 x 9	9 x 11	9 x 12
11	11 x 10	11 x 2	11 x 5	11 x 3	11 x 4	11 x 8	11 x 6	11 x 7	11 x 9	11 x 11	11 x 12
12	12 x 10	12 x 2	12 x 5	12 x 3	12 x 4	12 x 8	12 x 6	12 x 7	12 x 9	12 x 11	12 x 12

NO DATA	0 - 1 s	1 - 2 s	2 - 3 s	3 - 4 s	4 - 5 s	5 - 6 s	6 - 7 s	7 - 8 s	8 - 9 s	9 - 10 s	> 10 s

Back into teach – practise – test cycle