

Times tables Parent Workshop

Aims

- National expectations and wider importance.
- The teaching approach at school.
- Year 4 times tables check.
- Supporting pupils at home.
- Useful resources.
- Questions.

National Expectations

Year Group	Expectation
Year 1	Count in multiples of 2, 5 and 10 . Recall and use all doubles to 10 and corresponding halves.
Year 2	Recall and use multiplication and division facts for the 2, 5 and 10 times tables including recognising odd and even numbers .
Year 3	Recall and use multiplication and division facts for the 3, 4 and 8 times tables.
Year 4	Recall and use multiplication and division facts for tables up to 12 x 12
Year 5	Revision of all times tables and division facts up to 12 x 12
Year 6	Revision of all times tables and division facts up to 12 x 12

Why are times tables important?

- Times tables knowledge underpins much of the primary Maths curriculum.
- Mastering times tables and having the ability to quickly recall known facts is a necessary step to approaching more challenging topics as they progress through school.

Cognitive Load and Times tables

- Cognitive Load Theory states that learners have a limited capacity in their working memory and we must not over load this.
- This means that if pupils are having to work hard to recall or calculate times tables facts, they will have less capacity available to absorb new and more complex information.
- Secure times tables knowledge ensures more capacity and a higher level of success when approaching new concepts in mathematics.

KS2 topics which require times tables knowledge.

- Fractions.
- Decimals.
- Multiplication.
- Division.
- Area.
- Ratio.
- Square and cube numbers.
- Place value.
- Prime numbers.
- Common multiples.
- Factors.

Adding, subtracting, multiplying and dividing fractions

$\frac{3}{4} \times \frac{2}{3} = \frac{6}{12}$

$\frac{1}{3} + \frac{1}{6} = \frac{2}{6} + \frac{1}{6} = \frac{3}{6} = \frac{1}{2}$

$\frac{1}{3} - \frac{1}{5} = \frac{5}{15} - \frac{3}{15} = \frac{2}{15}$

$\frac{2}{6} + \frac{1}{6} = \frac{3}{6} = \frac{1}{2}$

Simplifying fractions

$\frac{9}{15} \div 3 = \frac{3}{5}$

$\frac{3}{5} \div 3 = \frac{1}{5}$

Using scale factors

2 people	1 person	5 people
6 eggs	$6 \div 2 = 3$ eggs	$3 \times 5 = 15$ eggs
100g flour	$100 \div 2 = 50$ g	$50 \times 5 = 250$ g

Finding a fraction or a percentage of a number

$\frac{3}{4}$ of 48

$48 \div 4 = 12$
dividing by 4 finds one quarter.

$12 \times 3 = 36$
multiplying by 3 finds 3 quarters

Calculating volume

5cm x 3cm x 2cm

Using algebraic rules

1st term: $5 \times 1 - 4 = 1$

2nd term: $5 \times 2 - 4 = 6$

3rd term: $5 \times 3 - 4 = 11$

4th term: $5 \times 4 - 4 = 16$

5th term: $5 \times 5 - 4 = 21$

Finding the area of rectangles, triangles and parallelograms.

Rectangle: $9 \times 4 = 36 \text{ cm}^2$

Parallelogram: $10 \times 7 = 70 \text{ cm}^2$

Triangle: $\frac{1}{2} \times 10 \times 7 = 35 \text{ cm}^2$

Calculating ratio

A prize is shared in a ratio of 3 : 4 between Jamie and Dan. If Jamie gets £21, how much will Dan get?

Jamie : Dan
3 : 4

$21 \div 3 = 7$

$7 \times 4 = 28$

Using known facts

If $3 \times 2 = 6$, then

$3 \times 20 = 60$

$30 \times 2 = 60$

$30 \times 20 = 600$

Converting between mixed and improper fractions

$1\frac{3}{4} = \frac{7}{4}$

Convert between miles and kilometres

To convert km to miles:

1) Divide by 8 ($48 \div 8 = 6$)

2) Multiply by 5 ($6 \times 5 = 30$)

5 miles = 8km
30 miles = 48km

Short and long division

$5 \overline{) 625}$

Why are times tables useful?

Finding prime factors

5, 2, 13, 7

Factors and common factors

4	8	3	6
1 x 4	8	1 x 3	6
2 x 2	4	2 x 1	8
3 x 1	6	3 x 1	6
4 x 1	2	4 x 1	6
6 x 1	8	6 x 1	6

Ordering and comparing fractions

$\frac{2}{3} < \frac{3}{4}$

Square and cube numbers

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

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

$3^3 = 3 \times 3 \times 3 = 27$

Identifying prime and composite numbers

A prime number is a whole number greater than 1 with no divisors except 1 and itself.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

Multiples and common multiples

Multiples of 3: 3, 6, 9, 12, 15, 18, 21, 24

Multiples of 4: 4, 8, 12, 16, 20, 24, 28, 32

Short and long multiplication

$853 \times 6 = 5118$

$32 \times 45 = 1440$

How we teach times tables

- Explicit teaching through the curriculum
- Regular review
- Multiplication lesson weekly
- Regular practice
- Times table rockstars

How we teach times tables

- [Calculation policy Sept 2023 Multiplication.pdf](#)
- Equal groups
- Doubling and halving
- Repeated addition
- Skip counting
- Part/whole
- Patterns and relationships

The Number Sense Approach

- Pupils who find times tables difficult, tend to choose inefficient methods to retrieve facts. This increases cognitive load and slows the pace of learning.
- E.g. 18×6
- 8×6 ... (unable to recall the fact)
- Begins to skip count from zero using their fingers (0, 8, 16 ...)
- They are unsure of 8×3 so they count in ones from 16 (16, 17, 18, 19, 20, 21, 22, 23, 24).
- This issue repeats until they have a correct answer.
- The number of steps increases the likelihood of making a mistake and makes a relatively simple question much more complex.

The Number Sense approach

- By teaching patterns and exploring the relationships between different times tables and by learning all the associated division facts, we aim to equip pupils with the most efficient methods.
- The order in which we teach times tables allows pupils to see the links between each times tables.

The order of the times tables is important.

When visualised, it can help children chunk their learning so that it is more manageable.

x	1	2	3	4	5	6	7	8	9	10	11	12
1	[Orange bar]											
2	[Green bar]											
3	[Blue bar]											
4	[Blue bar]											
5	[Green bar]											
6	[Orange]	[Green]	[Blue]	[Blue]	[Green]	36	42	[Blue]	54	[Green]	66	72
7	[Orange]	[Green]	[Blue]	[Blue]	[Green]	42	49	[Blue]	63	[Green]	77	84
8	[Blue bar]											
9	[Orange]	[Green]	[Blue]	[Blue]	[Green]	54	63	[Blue]	81	[Green]	99	108
10	[Green bar]											
11	[Orange]	[Green]	[Blue]	[Blue]	[Green]	66	77	[Blue]	99	[Green]	121	132
12	[Orange]	[Green]	[Blue]	[Blue]	[Green]	72	84	[Blue]	108	[Green]	132	144

Using known facts as bridging steps.

Square numbers can be an excellent bridging step.

The 10 x tables are also excellent bridging steps.

Using this strategy helps speed pupils up and avoids overloading their working memory.

E.g. $6 \times 12 = 60 + 12 = 72$

Instead of 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 66, 72.

X	0	1	2	3	4	5	6	7	8	9	10	11	12
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10	11	12
2	0	2	4	6	8	10	12	14	16	18	20	22	24
3	0	3	6	9	12	15	18	21	24	27	30	33	36
4	0	4	8	12	16	20	24	28	32	36	40	44	48
5	0	5	10	15	20	25	30	35	40	45	50	55	60
6	0	6	12	18	24	30	36	42	48	54	60	66	72
7	0	7	14	21	28	35	42	49	56	63	70	77	84
8	0	8	16	24	32	40	48	56	64	72	80	88	96
9	0	9	18	27	36	45	54	63	72	81	90	99	108
10	0	10	20	30	40	50	60	70	80	90	100	110	120
11	0	11	22	33	44	55	66	77	88	99	110	121	132
12	0	12	24	36	48	60	72	84	96	108	120	132	144

7×6

$6 \times 6 = 36$

$36 + 6 = 42$

Spotting Patterns

$$6 \times 2 = 12$$

- $6 \times 4 = 24$

- $6 \times 6 = 36$

- $6 \times 8 = 48$

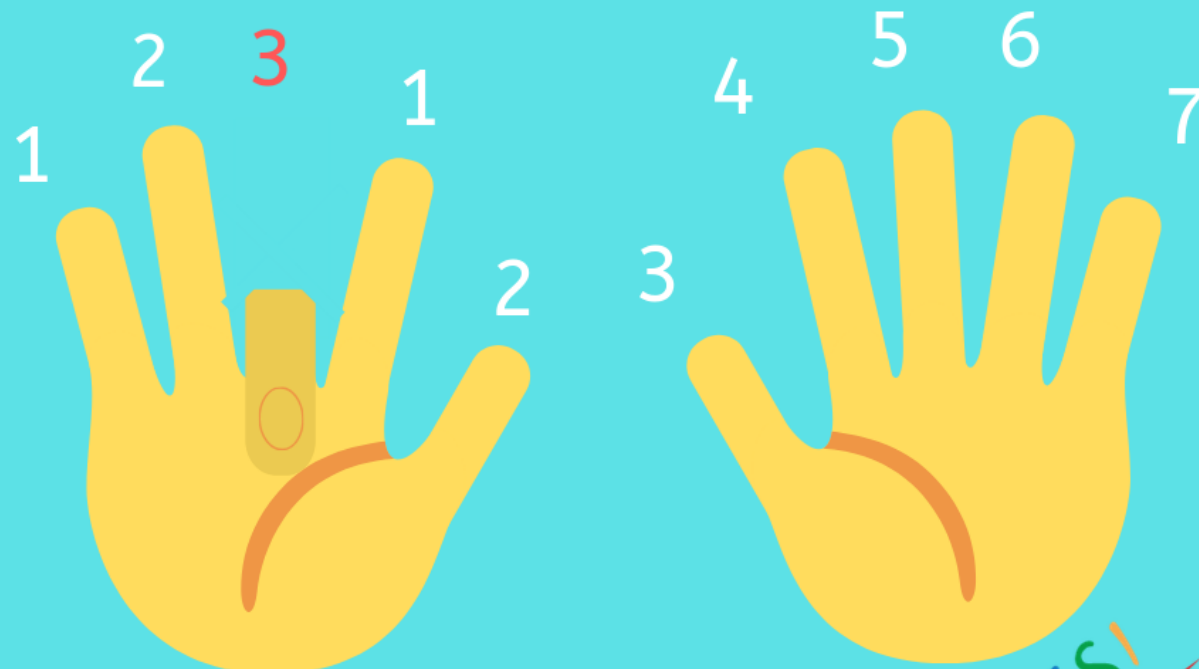
- $6 \times 10 = 60$

- $6 \times 12 = 72$

9 Times Tables on fingers

9 Times Table trick

3x9




1. Hold your hands out as shown
2. Put down the finger you are multiplying by (3)
3. Count the fingers on either side (2 and 7)
4. You have the answer! (27)

The Multiplication Tables Check (MTC)

- The Multiplication Tables Check (MTC) will be administered to children in Year 4, in June. It is a statutory assessment for most pupils.
- The purpose of the MTC is to determine whether Year 4 pupils can recall their multiplication tables up to 12×12 fluently as outlined in the National Curriculum.
- Children will be tested using a computer, where they will have to answer multiplication questions against a clock.
- The test will last no longer than 5 minutes; children will have 6 seconds to answer each question in a series of 25.
- The results will be reported to the Department of Education. Results are sent to the school as a score out of 25. There is no 'pass' or 'fail'.
- Practice website: [Maths frame – multiplication check](#)

How can you help?

- Daily practise – little and often.
- Regular use of TTR 
- Other online learning tools – Hit the button, Maths frame, BBC games, PurpleMash.
- Make it part of your day rather than explicit learning.
- Make it competitive – can they beat their own score, siblings, you etc.
- All the strategies shown are used to build up fluency and get pupils to a point where they can **recall** all the times tables facts (12 x 12).

How can you help?

- Ensure pupils practise being flexible with their facts.
- Skip count backwards and forwards.
- Start from different points in the times tables.
- Mix in related division facts.
- You could use flash cards.
- Vary the activities they use to practise. This will help keep it fresh and will help ensure they develop number sentence.
- Ask your child about Maths lessons, about what they are studying and about their weekly times tables assessment.

Tricky facts

- Pupils will often struggle on a few facts.
- You can use TTrackstars to help spot the facts they are regularly getting wrong.
- Display these facts around the house (fridge, bedroom, living room).
- Revise that fact as regularly as possible over the period of a few weeks.
- Intensive focus on one fact will help it stick in their memories. E.g. ask on the way to and from school, before dinner, after brushing teeth, waiting to cross the road etc.
- When they get more confident revisit it less regularly but don't forget about it.
- You can also help them create a rhyme or saying to help them remember it.

I ate and I ate until I was sick on the floor (8×8 is 64)

- 5678 Consecutive numbers - $56 = 7 \times 8$

Times Table rockstars

- Gig: Assessment
- Garage: Practice Personalised tables based on knowledge
- Jamming: Timer free game with choice of tables
- Studio: 1 minute game across all tables – improves recall and gives rock status
- Festival: Take on pupils from around the world (12x12)
- Rock slam: 1 minute game allowing pupils to challenge other children in school
- Soundcheck: Similar to multiplication check
- Arena: Live classroom game adapted to each child's level
- Battle: Set up between groups of children as a competition

Questions?