St Chads Primary School

Multiplication / Division (X tables)

Contents

1. Which x tables should children learn?
2. What does Mastery of facts look like?
3. Why is it important to teach / learn these facts?
4. Timetable for teaching the facts
5. Characteristics of effective practice
6. Strategies for teaching facts (for teachers)
7. FAQs for parents
8. Activities / Online resources for parents

1. Which x tables should children learn?

The national curriculum states that children should *"recall multiplication and division facts for multiplication tables up to 12 × 12"* by the end of Year 4. Section 4 sets out which times tables are learned in each year group.

2. What does Mastery of facts look like?

There are generally a few stages that children move through when learning times-table facts. They start "skip" counting (eg in twos 0,2,4,6,8…) and they become familiar with the numbers that are in the times table (multiples). At this stage when tackling a question like 7 x 2 the chid may count up in twos using their fingers. This first stage is a necessary prerequisite of good times tables knowledge.

The second stage may involve the child using some facts to work out other facts. For example, I can use 5 x 2 = 10 to help me to calculate 6 x 2 because I know that it will be 2 more or I can use 10 x 2 =20 to work out what 9 x 2 is by taking 2 away. This is a "clever" way of calculating x tables and will help children with bigger x tables like 17 x 2 because I could do 10 x 2 + 7 x 2 mentally. There is much educational research to show that pupils that develop this mental dexterity go on to make advanced progress with mathematics.

The third stage is when children become fluent with recall of times tables so they *just* know the answer because they are so familiar. A rule of thumb is that children should be able to recall these facts in 3 seconds. Notice that the curriculum says "division facts"! This means that children should be able to answer 56 ÷ 7 = ? or ? ÷ 7 = 8 or 56 ÷ ? = 8. If they cannot do this, they are not yet fluent.

3. Why is it important to teach / learn x table facts?

Knowing the multiplication and division facts helps child to be able to solve problems more efficiently than if they were to work them out each time. Working them out as they go uses extra brain power and many children forget their line of thought which is frustrating and slows them down.

4. Timetable for learning facts

Facts	Time
Year 1	
Children to be able to skip count in 2s, 5s and 10s from 0 and back to 0 from 10 x the number. (so without help a child should be able to chant 0,2,4,6,8 etc)	September - June
Review all	July
Knowing these facts by the end of Year 1 will set them up for learning x tables in year 2	
Year 2	
Children to know 2s, 5s and 10 x tables to 12 x (They should be able to chant x tables, recall the x tables out of order and know corresponding division facts for these times tables 35 ÷ 5 = 7). They should be able to notice the relationship between the 5 and 10 times tables.	September - June
Review all and assess	July
Year 3	
Review all Y2 multiplication facts	September
Know the 4 x table and division facts. They understand that it is double the 2 x table. They should also notice patterns including that the multiples of 4 are all even numbers.	OCT - Dec
Know the 8 x table and division facts. They understand that it is double the 4 x table and that if I double a number three times I multiply it by 8/ They should also notice patterns including that the multiples of 8 are also even numbers.	Jan - Mar
Know the 3 x table and division facts. They should notice patterns including that the multiples of 3 are even then odd.	April - May
Review all and assess – <u>all children must be fluent at these times tables before entering Year 4 otherwise their future progress may be compromised</u>.	**July**
Year 4	
Review all Y3 multiplication facts	September
Know the 6 x table and division facts. They understand that it is double the 3 x table.	**October**
Know the 9 x table and division facts. They recognise the pattern that we are adding one ten and subtracting one one each time.	**November**
Know the 7 x table and division facts.	**December**
Review all x tables to 10 x 10	**January**
Know the 11 x table and division facts.	**February**
Know the 12 x table and division facts.	**March**
Review all and assess – <u>all children must be fluent at these times tables before entering Year 5</u>	
Year 5	
Review all multiplication facts	**Throughout Year 5 to ensure continued fluency**
Years 4 / 5/ 6	
Use related facts. For example if I know my 3 x tables I know my 30 times tables (4 x 3 = 12 so 4 x 30 = 120 and 4 x 300 = 1200 and 4 x 0.3 = 1.2 etc)	

5. Characteristics of effective practice

1. **Spacing** (rather than massing) practice: information that is presented repeatedly over spaced intervals is learned much better than information that is repeated without intervals.
2. **Interleaving:** although people think that they learn better when content is blocked, rather than interleaved, people actually learn content better when it is interleaved with other content.
3. **Testing:** using our memory improves our memory: the act of retrieval helps us remember the things we recall. When information is successfully retrieved from memory, its representation in memory is changed such that it becomes more recallable in the future (Bjork, 1975); and this improvement is often greater than the benefit resulting from additional study (Roediger & Karpicke, 2006).
4. **Overlearning:** keep pupils learning after they know the material to prevent forgetting: 'a good rule of thumb is to put in another 20 percent of the time it took to master the material'. (Willingham, 2008)

6. Strategies for teaching the x tables (for teachers)

It is not just learning a set of facts by rote although it will hopefully get to the point where children "just know" these facts. Children must be taught strategies and look at relationships and structures. Here is a list of ideas to help.

- Use relational knowledge – if I know that 5 x 4 = 20 then I know that 6 x 4 is 4 more than 20 and I know that 4 x 4 is 4 less then 20. (see section 2)
- Use the commutative law (3 x 4 = 4 x 3). This will literally halve the number of times tables that we need to learn.
- Relate multiplication to division so 4 x 3 = 12 and 12 ÷ 3 = 4.
- Reasoning about answers 4 x 5 must be smaller than 8 x 5. Why?

7. FAQs for parents

It is a struggle to get my child to practice their number facts.

You're not alone! The next section gives you ideas to help.

My child has fallen behind. What can I do?

If you are worried, you should speak to your child's class teacher. The secret to learning times tables is little and often. …

My child knew them and now they've forgotten them. Why is that?

There may be various reasons. It could be that your child has learned them as a series of unrelated numbers (like a telephone number). If we recognise patterns and relationships we are more likely the remember. That's why the 2s, 5s and 10s are easy to remember. The patterns are more obvious. Keep learning and don't give up!

My child has grasped the multiplication/subtraction facts quickly. How can I push him/her to do more?

We don't encourage parents to push their children to learn number facts that are not in their age group because we believe it is much more effective for children to know them confidently and be able to recall them at a reasonable speed. Therefore, if your child has mastered the times tables for their age group it is best to ensure they can apply these to real life situations.

8. Activities / Online resources for parents

What you can do at home

Chanting

When on a walk, say a multiplication fact every time you see a white car.

Singing

There are lots of multiplication and division songs online that can be sung along to. Alternatively, make up your own times tables to a favourite tune. Try singing "3, 6, 9. 12, 15. 18, 21" to the tune of Jingle Bells!

On the go

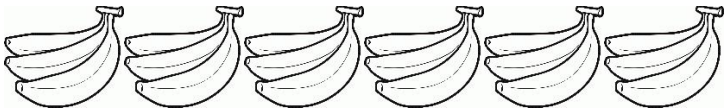
In the car, ask each other to answer multiplication and division facts. As an alternative, take turns to say a number sentence, e.g. "6 x 7 = 46" and those in the car should say if it is true or false.

Games

Spend some time together playing games with multiplication and division cards such as Memory or Snap.

Drawing

Draw pictures with your child about what the facts might look like to them. Visualising tables is a good way to remember them. Perhaps use different items for each fact. E.g.



6 x 3 = 18

Shopping

When you are shopping with your child, look out for opportunities to discuss when items are packaged into groups. Ask questions such as, "How many packets of croissants would be needed for 48 people?" "How many eggs would there be in 6 cartons?"

Stick at it

Use PostIt notes to display times tables around the home in places children will spend time each day such as on the bathroom mirror to look at while they are brushing their teeth, or on the edge of the television. Change the PostIts once your child can give you the answers quickly.

Online resources

There are a number of online resources. As a school we subscribe to *Times table rock stars*.