Multiplication and Division: Finding Patterns

Aim:	Success Criteria:	Resources:
To recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. I can explore patterns in the multiplication tables.	I can find multiples of 2, 3, 4 and 8. I can predict and continue patterns. I can explain the patterns I see. I can investigate what happens when multiples of numbers are added together.	Lesson Pack Coloured pens

	Key/New Words:	Preparation:
	Double, halve, multiple, sequence, pattern, predict, investigate.	Hundred Squares - many Differentiated Finding Patterns Challenge Activity Sheets - as required

Prior Learning:	It will be helpful if the children knew the multiplication and division facts for the 2x, 3x, 4x, 5x, 8x, 10x multiplication tables.

Learning Sequence

Fact Maps: You need something to write on and something to write with (paper, individual whiteboards, tablets, chalkboards, pens, pencils, chalk). Group the class either in pairs or small groups. Give each group a number fact, differentiated according to their ability. They write this in the middle of their board/paper (e.g. 4 x 3 = 12). The first child writes a number fact that they know based on the fact that you gave them (e.g. 3 x 4 = 12) and then pass it on to the next child in their group. This will build up into a mind map of related facts. You could increase the challenge by adding a time limit.

Patterns in the 3s: Share the slide on the **Lesson Presentation** that shows a hundred square with the multiples of three shaded up to 9 x 3. Give children a moment to look at the pattern and think about it. What patterns do they see? Continue to the next slide, showing the multiples of three shaded up to 12 x 3. Can the children use the pattern to predict the next 10 multiples of 3? Count on in threes to check that this is correct. Share the next slide to show the hundred square with all multiples of three shaded up to 99.

Patterns in the 2s and 4s: Share the slide on the **Lesson Presentation** that shows a hundred square with the multiples of twos shaded up to 100. Give children a minute to look at the pattern and think about it. What patterns do they see? As a class, circle the multiples of four up to 12 x 4. Can children explain the pattern using mathematical vocabulary e.g. double, half? On the next slide, complete the modelled sentences encouraging children to explain their ideas clearly.

Finding Patterns: Children complete differentiated **Finding Patterns Challenge Activity Sheets**, investigating patterns in multiplication tables.

★	★★	★★★
Children investigate patterns in the 4s and 8s. Do children make the connection that the 2s, 4s and 8s can be generated through doubling?	Children investigate patterns in the 2s, 4s, 6s and 8s, explaining their ideas. Do children make the connection that the 2s, 4s and 8s can be generated through doubling?	If you double the 4s do you get the 8s? What happens if you add tables together? Children investigate these questions and prepare to report back at the end of the lesson.

What Did You Find Out? HA pupils feed back their ideas about what happens when multiplication tables are added together. What do the class think might happen if we added other tables facts together? Encourage them to make predictions that they can test.

Master*it*

***Investigate*it:** Ask children to think up some more questions about multiplication table patterns and investigate them, presenting their findings in the form of a video, PowerPoint or poster.

Present*it*: Remind children about multiplication patterns with this **Multiplication Table Patterns Starter Presentation.**

Practice*it*: Practise quick recall of multiplication facts with this **Multiplication Wheel Work Sheet.**

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