

Dr Fog Presents

**Number patterns
in multiplication
tables.**

Year 4 (National Numeracy Strategy)
(Based on DFEE Sample Lessons)



Resources

- [Worksheet](#)



Mental Learning Objective

- I can extend the operations of multiplication and division.



Mental Learning Task

- Today's lesson focuses on the number patterns that can be found in the multiplication tables.
- What is the missing number in these sequences?



Mental Learning Task

3, 6, 9, _____, 15, _____, 21



Mental Learning Task

4, 8, ..., 16, ..., 24, 28



Mental Learning Task

6, 12, 18, 24,  ,  , 



Mental Learning Task

25, 20, [10 bars], [15 bars], [20 bars]



Mental Learning Task

90, 80, 70, ..., 50, 40, ..., 20, ..., 0

Could it go below 0?

How would it go?



Mental Learning Task

- Hold these three numbers in your head.

8, 15, 12

- I am now going to ask you questions on them.



Mental Learning Task

- Which of the numbers are multiples of 2?
- Which ones are multiples of 5?
- Which ones are in the 4 times table?



Mental Learning Task

- This time we are going to try division questions.
- Hold these numbers in your head.

8, 11, 20



Mental Learning Task

- Which of the numbers could you divide by 2?
- Which of the numbers was in the fives times table?



Mental Learning Task

- This time we are going to try division questions.
- Hold these numbers in your head.

15, 21, 20



Mental Learning Task

- Which of the numbers are divisible by three?
- What are some of their factors?



Mental Learning Objective

- I can extend the operations of multiplication and division.



Main Learning Objective

- I can use addition to discover multiplication facts.
- I can extend my understanding of the operations of multiplication and division.



Key idea

**You can sometimes find a new
multiplication
fact by doubling
one you already know**



Main Learning Task

- Today we are going to look at multiplication grids.
- You shall see one with all the numbers, and then one with numbers missing.



Main Learning Task

1	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50
6	12	18	24	30	36	42	48	54	60
7	14	21	28	35	42	49	56	63	70
8	16	24	32	40	48	56	64	72	80
9	18	27	36	45	54	63	72	81	90
10	20	30	40	50	60	70	80	90	100

- Here is a multiplication grid which has been completed.

Main Learning Task

1	2	3	4	5	6	7		9	10
2	4	6	8	10	12	14		18	20
3	6		12	15	18			27	30
4	8			20	24	28	32		40
5	10	15				35	40		50
6	12		24	30	36	42	48	54	60
7	14	21			42		56		70
8	16	24		40	48	56			80
9	18	27	36		54	63			
10	20			50		70	80		100

- Can you fill in this grid?
- You will need to look for patterns in the numbers.

Main Learning Task

1	2	3	4	5	6	7		9	10
2	4	6	8	10	12	14		18	20
3	6		12	15	18			27	30
4	8			20	24	28	32		40
5	10	15				35	40		50
6	12		24	30	36	42	48	54	60
7	14	21			42		56		70
8	16	24		40	48	56			80
9	18	27	36		54	63			
10	20			50		70	80		100

- If you are getting the idea, then we shall move on.

Main Learning Task

1	2	3	4	5	6	7		9	10
2	4	6	8	10	12	14		18	20
3	6		12	15	18			27	30
4	8			20	24	28	32		40
5	10	15				35	40		50
6	12		24	30	36	42	48	54	60
7	14	21			42		56		70
8	16	24		40	48	56			80
9	18	27	36		54	63			
10	20			50		70	80		100

- What is $30 \div 6$?
- What is $42 \div 6$?

Main Learning Task

- Now complete the worksheet.



Main Learning Task

- **Simplifications:**- Provide a number line for pupils to make jumps along, either with their fingers or with felt-tipped pens.
- **Challenges:**- Part 3 of the worksheet is suited for faster and more able pupils.



Main Learning Objective

- I can use addition to discover multiplication facts.
- I can extend my understanding of the operations of multiplication and division.



Plenary

- Can you count in twos.
- Can you count in fours?
- Can you count in eights.



Plenary

2	4	6	8	10	12	14	16	18	20
4	8	12	16	20	24	28	32	36	40
8	16	24	32	40	48	56	64	72	80

- These are the numbers you have just said.
- What patterns do you see horizontally?
- What patterns do you see vertically?

Plenary

2	4	6	8	10	12	14	16	18	20
4	8	12	16	20	24	28	32	36	40
8	16	24	32	40	48	56	64	72	80

- What is the relationship between the 2, 4, and 8 times tables?
- They are each double the one before it.

Plenary

2	4	6	8	10	12	14	16	18	20
4	8	12	16	20	24	28	32	36	40
8	16	24	32	40	48	56	64	72	80

- Would this work for other tables?
- Which ones?

Plenary

2	4	6	8	10	12	14	16	18	20
4	8	12	16	20	24	28	32	36	40
8	16	24	32	40	48	56	64	72	80

- How is doubling and halving useful in multiplication and division?

Plenary

2	4	6	8	10	12	14	16	18	20
4	8	12	16	20	24	28	32	36	40
8	16	24	32	40	48	56	64	72	80

- I am now going to remove some of the numbers in the bottom row...
- Can you say which numbers are missing by doubling and halving other numbers?

Review of Key Idea

- You can sometimes find a multiplication fact by doubling one you already know.
- Did you learn this in this lesson?



Worksheet Complete each Multiplication Grid

1	2	3	4	5	6	7		9	10
2	4	6	8	10	12	14		18	20
3	6		12	15	18			27	30
4	8			20	24	28	32		40
5	10	15				35	40		50
6	12		24	30	36	42	48	54	60
7	14	21			42		56		70
8	16	24		40	48	56			80
9	18	27	36		54	63			
10	20			50		70	80		100

25	30	35		
30	36			
		49		

9	12	15		
			24	28

		14	16	18	
			24		
			32		

	28	35		
	32			
	36			

Easy

	48	
45	54	

	30	
	36	

		40		
42				70

		63		
	60			

Hard

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