

Dr Fog Presents

Multiplying by 9

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



Resources

- 0 - 100 Number Line (Optional)
- 100-grid (Optional)



Mental Learning Objective

- I can tell you something about the properties of numbers.



Mental Learning Task

- Give me facts about this number.
- Write them around the number.

97



Mental Learning Objective

- I can tell you something about the properties of numbers.



Main Learning Objective

- I can multiply one- and two- digit numbers by 10.
- I can multiply by 10 and then adjust in order to multiply by 9.
- I can practise multiplying by 9.



Key idea

**I can record the process
of multiplying
by 10 and then adjusting.**



Main Learning Task

- Today you are going to learn more about multiplication and division.



Main Learning Task

- Today we are going to start with revision of multiplying by 10.



Main Learning Task

Solve these
multiplication
problems.

$$4 \times 10 =$$

$$3 \times 10 =$$

$$19 \times 10 =$$

$$24 \times 10 =$$

- What happens when a number is multiplied by 10?
- Multiplying by 10 moves all the digits one place left.

Main Learning Task

- Remember that you cannot multiply by adding a nought.
- This only works for whole numbers
- It does not work with decimals.



Main Learning Task

- We are now going to multiply numbers by 9.
- We are going to choose the same numbers as before.



Main Learning Task

$$4 \times 10 = 40$$

$$3 \times 10 = 30$$

$$19 \times 10 = 190$$

$$24 \times 10 = 240$$

$$4 \times 9 =$$

$$3 \times 9 =$$

$$19 \times 9 =$$

$$24 \times 9 =$$

- How can we use of our knowledge of the ten times table to help us with the nine times table.



Main Learning Task

$$4 \times 10 = 40$$

$$3 \times 10 = 30$$

$$19 \times 10 = 190$$

$$24 \times 10 = 240$$

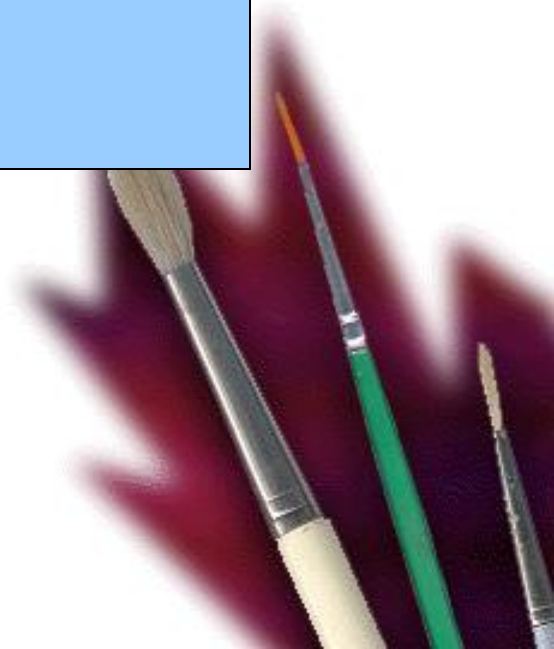
$$4 \times 9 =$$

$$3 \times 9 =$$

$$19 \times 9 =$$

$$24 \times 9 =$$

- To do the 4×9 , you can do 4×10 and then just subtract 4.



Main Learning Task

- Look at it using an empty number line.



Main Learning Task

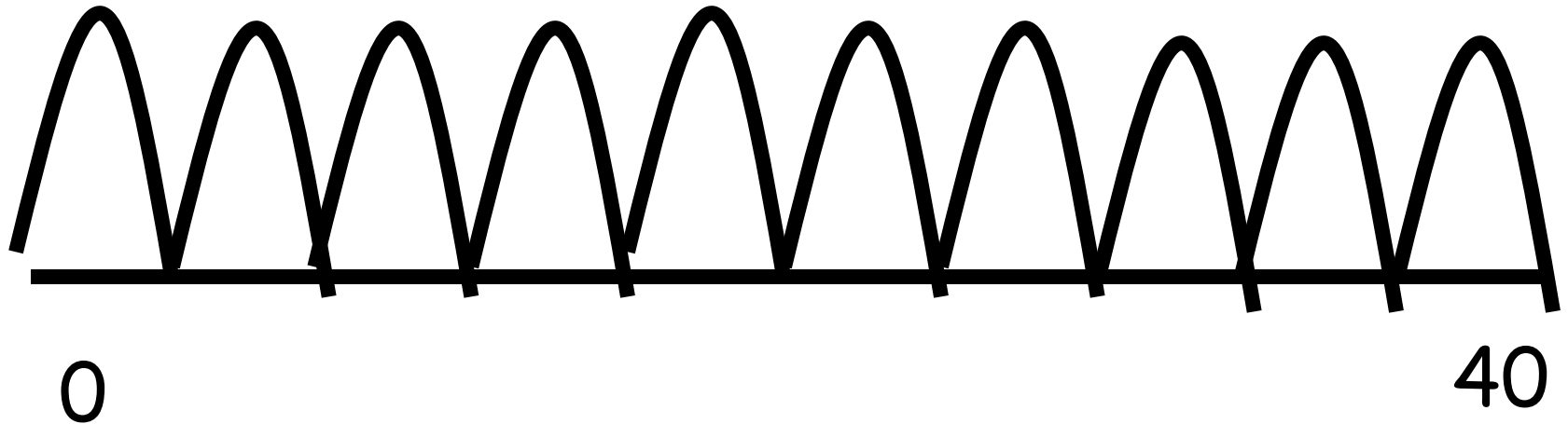
- Four 9s are the same as nine 4s.
- So if ten 4s are 40, then nine 4s are 4 less - that is 36

0

40

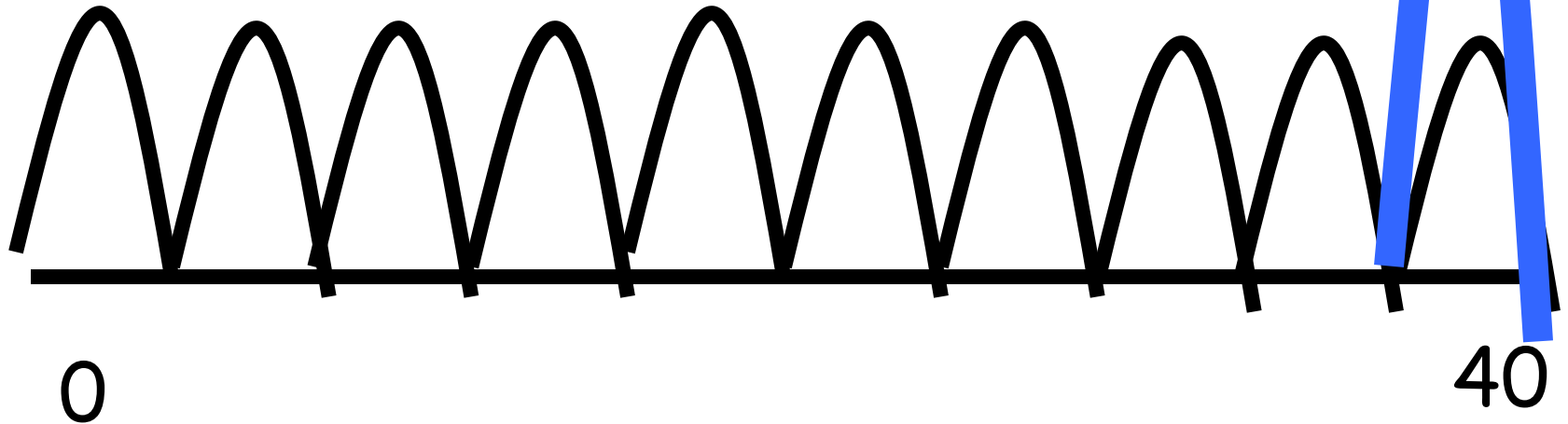
Main Learning Task

- First we make 10 jumps
 $10 \times 4 = 40$



Main Learning Task

- Then we make 1 jump backwards
 $10 \times 4 = 40$
Go back 4



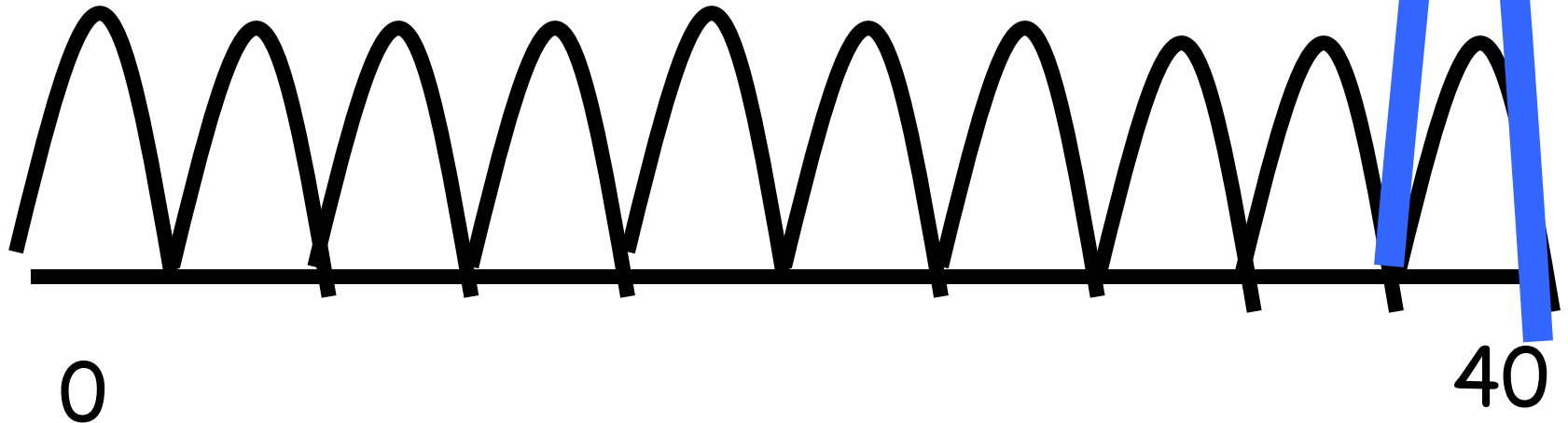
Main Learning Task

- Then we make 1 jump backwards

$$10 \times 4 = 40$$

Go back 4

$$9 \times 4 = 40 - 4 =$$



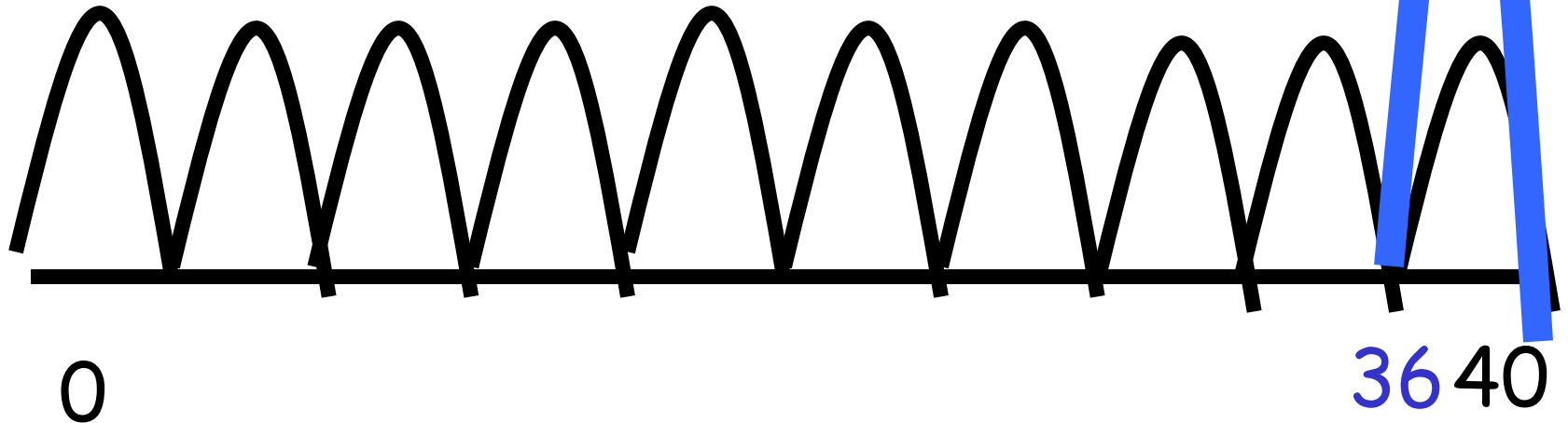
Main Learning Task

- Then we make 1 jump backwards

$$10 \times 4 = 40$$

Go back 4

$$9 \times 4 = 40 - 4 = 36$$



Main Learning Task

- Sally runs a 'Roll a penny' stall at the Summer Fair every year.
- She has to count up her takings (all in pennies) at the end of the day.
- She makes this easier by putting all her pennies into piles.



Main Learning Task

- She likes to make piles of 9 pennies.
- Her friend says it would be easier if each pile was 10 pennies high.
- If she made 18 piles of 9 coins, how many pennies did she take altogether?



Main Learning Task

- So she has 18 piles of 9 pennies.
- Discuss in pairs how you can solve this problem?
- Talk about the mental methods used .



Main Learning Task

- The next screen shows how many piles of 9 pennies Sally made over the last few years.
- Work out the total takings for each year, using the method introduced in the lesson.



Main Learning Task

1990	16	1995	12
1991	19	1996	42
1992	15	1997	18
1993	27	1998	17
1994	15	1999	49

- How did she make each year?



Main Learning Objective

- I can multiply one- and two-digit numbers by 10.
- I can multiply by 10 and then adjust in order to multiply by 9.
- I can practise multiplying by 9.



Plenary

- Ask children to volunteer their answers for particular years.
- Start with people who tackled smaller numbers.



Plenary

- Record the workings on the board.
- Make sure you interpret the answers into pounds and pence.
- Why is counting in tens easier?



Plenary

- Using this 100-square, count up to 100 in 9. Colour in each square as it is counted.

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

Plenary

- For homework ask children to write out the times table as high as 20×9 and note down any patterns they see.
- Add together all the digits in each answer.
- What do you notice?



Review of Key Idea

- I can record the process of multiplying by 10 and then adjusting.
- Did you learn this in today's lesson?



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