

Times table puzzler

Activity 1

Focus of activity: Finding multiples and factors.

Working together: conceptual understanding

- Give each pair of children a multiplication grid (see child instructions). Ask children to ring 20 wherever it appears in the grid. Explain that 20 appears more than once because it is in more than one times table. *Which tables is it in?*
- Say that 20 is a multiple of 2, 4, 5 and 10. It is also a multiple of 1 and 20 but we'd need a bigger multiplication table to see that! Explain that 1, 2, 4, 5, 10 and 20 are factors of 20, they go into 20 exactly.
- Ask children to ring 36 wherever it appears in the grid. Ask them to work in pairs to list the times tables that the number 36 is in: 3, 4, 6, 9 and 12. *These numbers are factors of 36. Can you think of any other numbers which multiply together to make 36? (1 and 36, 2 and 18). 36 is a multiple of 1, 2, 3, 4, 6, 9, 12, 18 and 36!*
- *Which number has more factors 20 or 36? Why?* Because 36 is in more times tables than 20.
- *Which do you think has more factors, 12 or 15?* Ask children to work in pairs to list the factors for each, using the multiplication grid to help them. Make sure they include 1 and 12 for 12 and 1 and 15 for 15. Point out that bigger numbers don't always have more factors.

Up for a challenge?

Find a number on the grid which only has two factors. We call numbers which only have themselves and 1 as factors, prime numbers.

Now it's the children's turn:

- Children work in pairs to try and find numbers which fit in every cell in a table (the headings are about multiples and factors). They use the multiplication grid to help.
- Go round the group and mark their tables as they fill them in. Are they clear about the vocabulary of factors and multiples?

S-t-r-e-t-c-h:

If children cope well, ask them to find a number on the multiplication grid with more than six factors.

Things to remember

Remember that we call a pair of numbers which multiply together to make a given number, factors of that number. These are the numbers round the outside of the multiplication grid. We call the number that they go into a multiple. These are the numbers inside the multiplication grid. Ask children to share a few of their answers.

You may want to add something that has emerged from the activity. This may refer to misconceptions or mistakes made.

Resources	Outcomes
<ul style="list-style-type: none">• Multiplication grid (see child instructions)	<ol style="list-style-type: none">1. Children can find factors of numbers and multiples within known times tables.2. Children begin to realise what sorts of numbers have many factors.

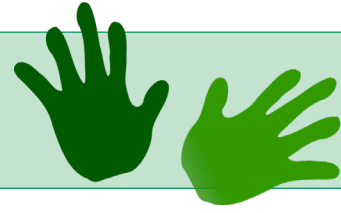
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Work in pairs

Things you will need:

- A multiplication grid



What to do:

- Work together to try and find a number to fit in each cell of this table. Use the multiplication grid to help.

	Factor of 36	Multiple of 5	Factor of 54	Multiple of 7
Odd				
Even				
Multiple of 3				

S-t-r-e-t-c-h:

Find a number on the multiplication grid with more than six factors.

Learning outcomes:

- I can find factors of numbers and multiples within known times tables.
- I am beginning to realise what sorts of numbers have many factors.



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Activity 1

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