

## Be My Multiple, I'll be Your Factor

### Question 1:

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The hungry cat is trying to catch Kunjan the mouse. Kunjan is now on the 14th step and it can jump 2 steps at a time. The cat is on the third step. She can jump 3 steps at a time. If the mouse reaches 28 it can hide in the hole. Find out whether the mouse can get away safely!

- The steps on which the mouse jumps \_\_\_\_\_.
- The steps on which the cat jumps \_\_\_\_\_.
- The steps on which both the cat and the mouse jump \_\_\_.
- Can the mouse get away?

### Answer:

- a) The mouse is on the 14th step and it can jump 2 steps at a time.

Therefore, the mouse will jump on: 16th, 18th, 20th, 22nd, 24th, 26th, and 28th steps.

- b) The cat is on the 3rd step and she can jump 3 steps at a time.

Therefore, the cat will jump on: 6th, 9th, 12th, 15th, 18th, 21st, 24th, 27th, and 30th steps.

- c) The cat and the mouse both jump on the 18th and 24th steps.

- d) The cat will reach the 18th and 24th steps on her 5th and 7th jumps, respectively. The mouse will be on the 18th and 24th steps on its 2nd and 5th jumps, respectively. So,, the mouse can get away.

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### Question 2:

If the cat starts from the 5th step and jumps five steps at a time and the mouse starts from the 8th step and jumps four steps at a time, can the mouse get away?

**Answer:**

If the cat starts on the 5th step and jumps five steps at a time, she will jump on:

10th, 15th, 20th, 25th, and 30th steps.

If the mouse starts from the 8th step and jumps four steps at a time, it will jump on:

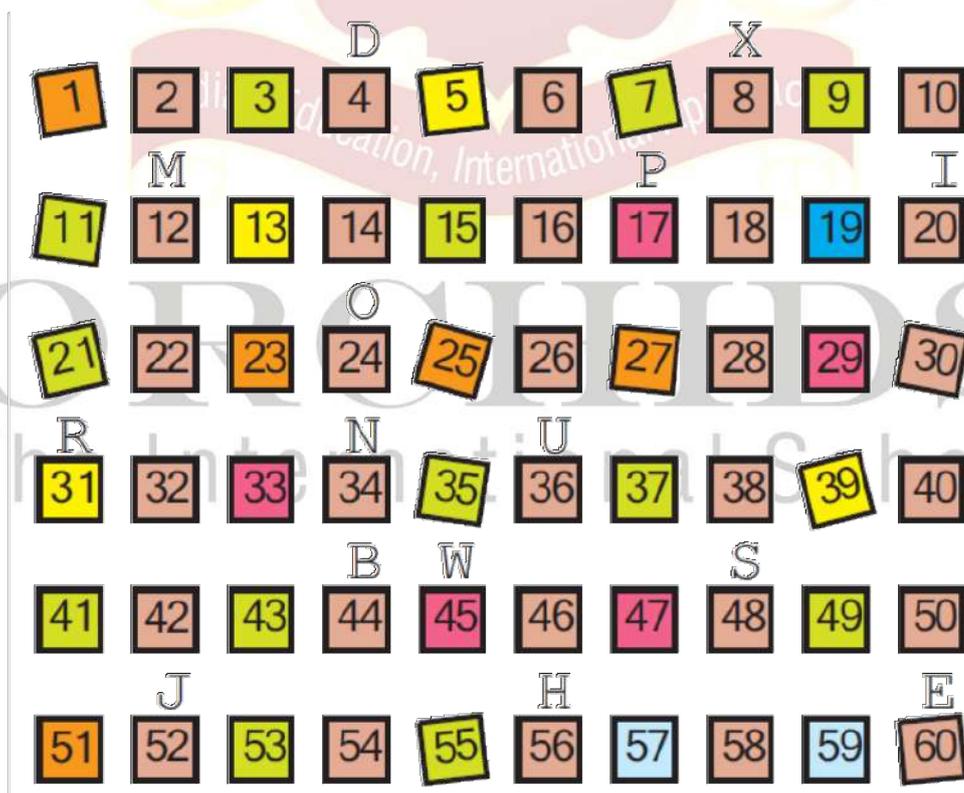
12nd, 16th, 20th, 24th, and 28th steps.

On their third jump, the mouse and the cat both will be on the 20th step, and hence the cat will catch the mouse easily.

**Question 3:**

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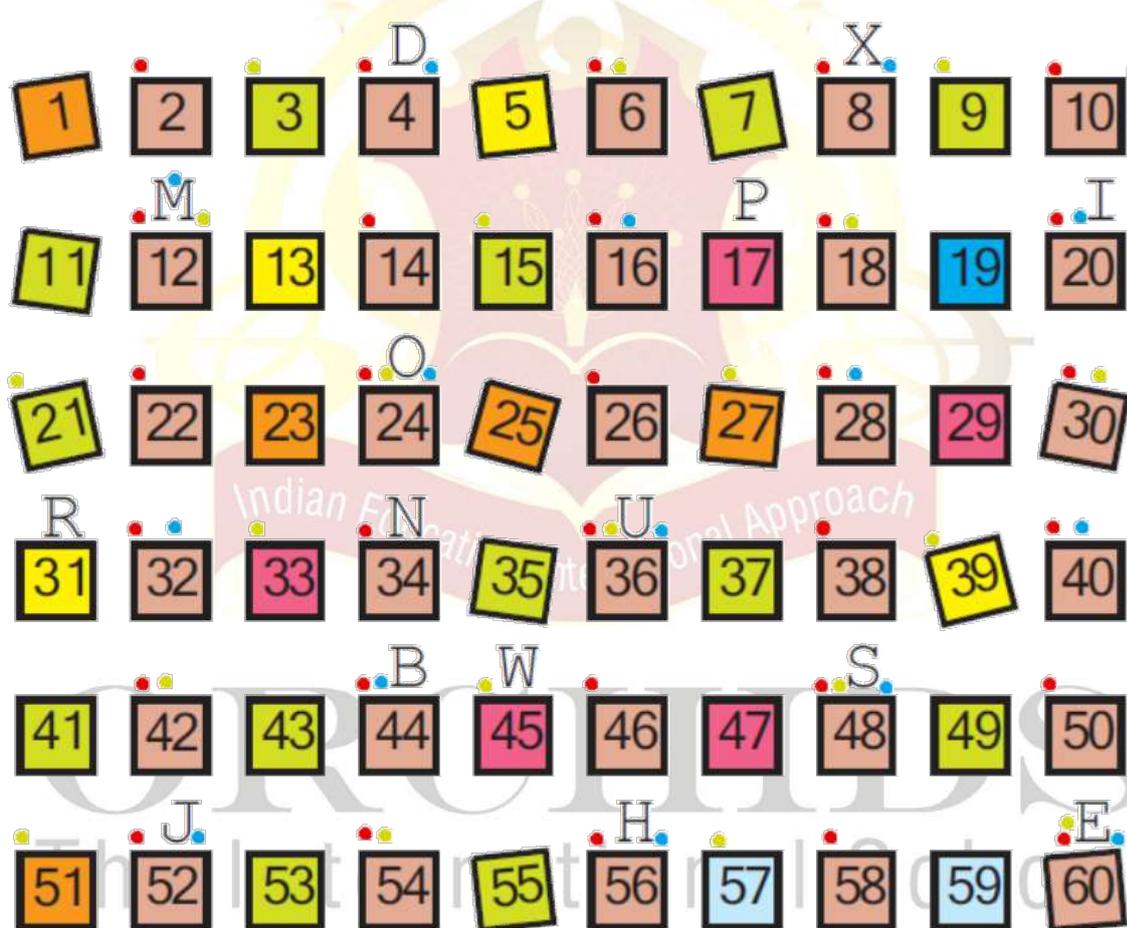
Monto cat is waiting for somebody. Do you know for whom he is waiting? There is a trick to find out.



Mark with a red dot all the numbers which can be divided by 2. Mark a yellow dot on the numbers which can be divided by 3 and a blue dot on the numbers which can be divided by 4.

- Which are the boxes which have dots of all three colours?
- What are the letters on top of those boxes?
- Write those letters below in order.

**Answer:**



- The dots of all the three colours are on the boxes 12, 24, 36, 48, and 60.
- M, O, U, S, and E are the letters on top of these boxes.

c) By joining the letters, we get the word:

MOUSE

Therefore, the cat is looking for a mouse.

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**Question 4:**

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**Meow Game:** To play this game, everyone stands in a circle. One player calls out 'one'. The next player says 'two' and so on. A player who has to call out 3 or a number which can be divided by 3 has to say 'Meow' instead of the number. One who forgets to say 'Meow' is out of the game. The last player left is the winner.

Which numbers did you replace with 'Meow'?

**Answer:**

'Meow' can be replaced with the numbers that are divisible by 3. These numbers are called the multiples of 3. Following are some multiples of 3.

3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45, and so on.

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**Question 5:**

Write any ten multiples of 5

**Answer:**

Do it by yourself. Answers may vary. Following are some multiples 5.

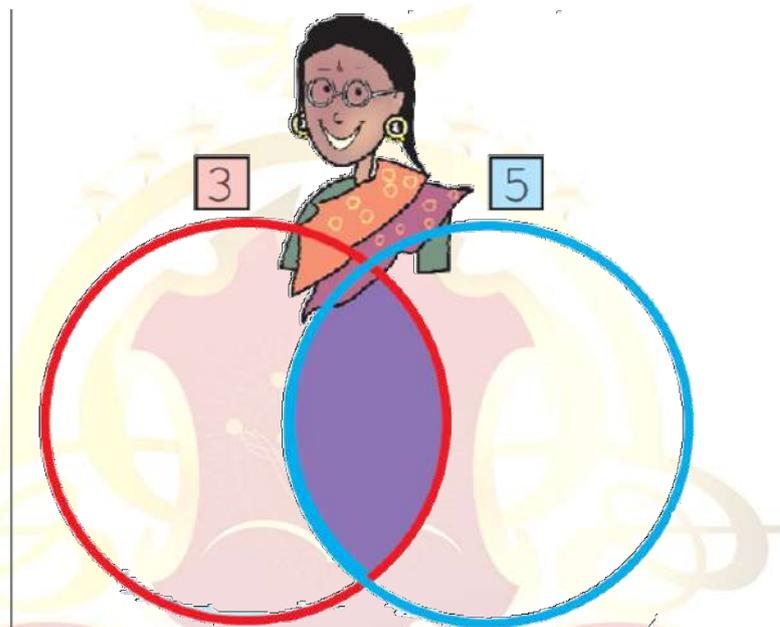
5, 10, 15, 20, 25, 30, 35, 40, 45, and 50.

## Common Multiples

### Question 6:

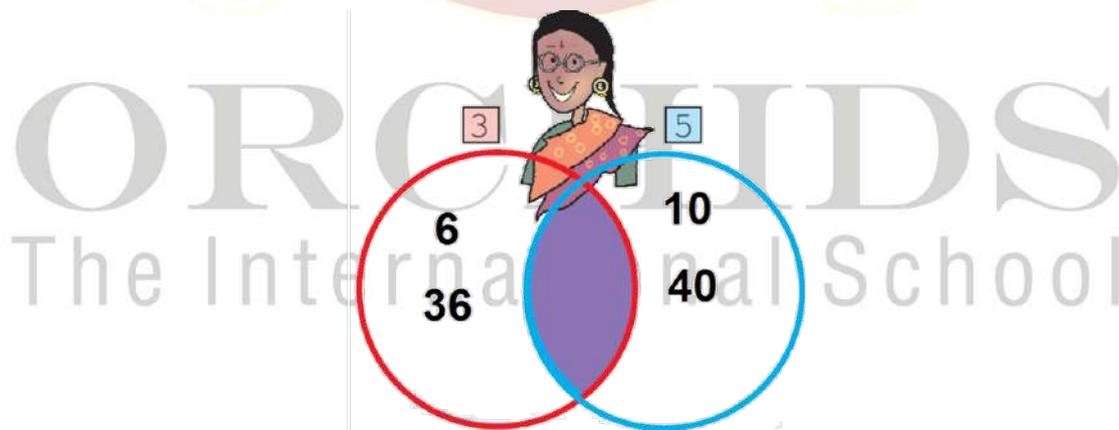
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Think of a number. If it is a multiple of 3 write it in the red circle. If it is a multiple of 5 write it in the blue circle.



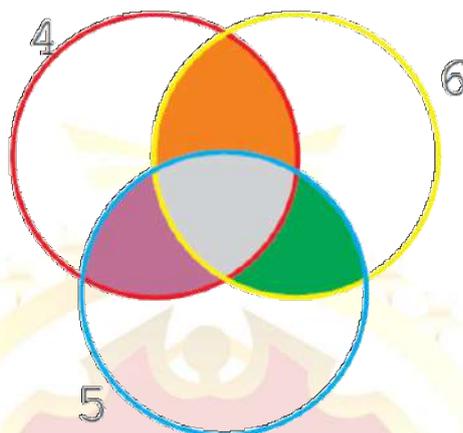
### Answer:

Do it by yourself. Answers may vary. Following is a sample answer.



### Question 7:

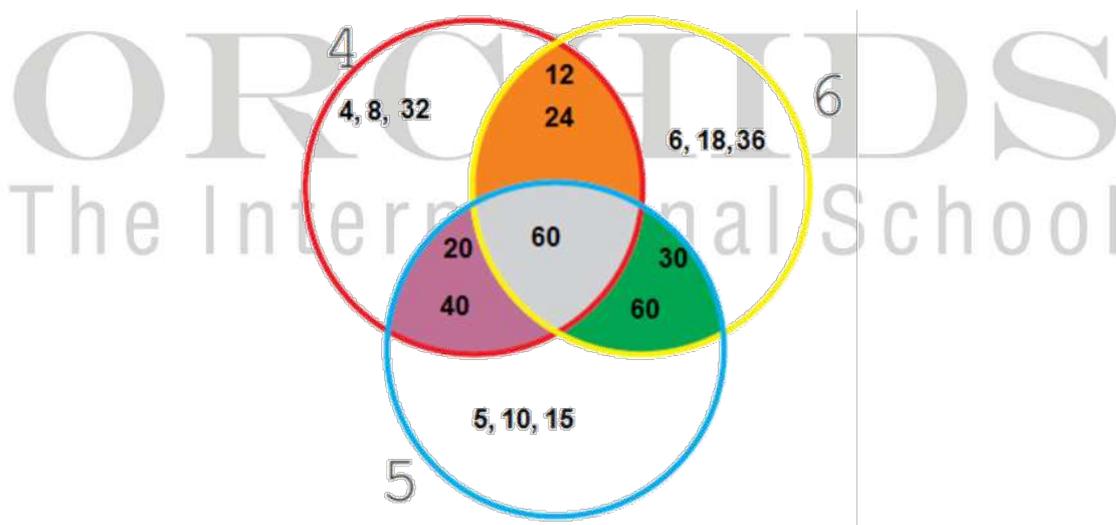
Repeat the game by putting the multiples of 4, 6 and 5 in the circles.



- What common multiples of 5 and 6 did you write in the green part?
- What common multiples of 4 and 6 are written in the orange part?
- In which coloured part did you write the common multiples of 4, 6 and 5?
- What is the smallest common multiple of 4, 6 and 5?

**Answer:**

Do it by yourself. Answers may vary. Following is a sample answer.



- a) The common multiples of 5 and 6 are 30 and 60, which are written in the green part.
  - b) The common multiples of 4 and 6 are 12 and 24, which are written in the orange part.
  - c) The common multiples of 4, 6, and 5 is 60, which is written in the grey part.
  - d) The smallest common multiple of 4, 6, and 5 is 60.
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## Tamarind seeds

### Question 8:

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Sunita took some tamarind (*imli*) seeds. She made groups of five with them, and found that one seed was left over. She tried making groups of six and groups of four. Each time one seed was left over. What was the smallest number of seeds that Sunita had?

### Answer:

Sunita is forming groups of 4, 5, and 6, and every time one seed remains. We can find the smallest number of seeds by following these steps.

**Step 1:** Write the multiples of 4, 5, and 6, until there is a common multiple.

Multiples of 4: 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48, 52, 56, 60

Multiples of 5: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60

Multiples of 6: 6, 12, 18, 24, 30, 36, 42, 48, 54, 60

**Step 2:** Find the smallest common multiple. The smallest common multiple of 4, 5, and 6 is 60.

Since one seed remains every time, add 1 to the smallest common multiple.

$$60 + 1 = 61.$$

Therefore, she had at least 61 seeds.

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### Question 9:

- a) Ammini is arranging 12 tamarind seeds in the form of different rectangles. Try to make more rectangles like this using 12 tamarind seeds. How many different rectangles can you make?
- b) If there are 15 tamarind seeds how many rectangles can you make?

### Answer:

- a) You can make 4 such rectangles.



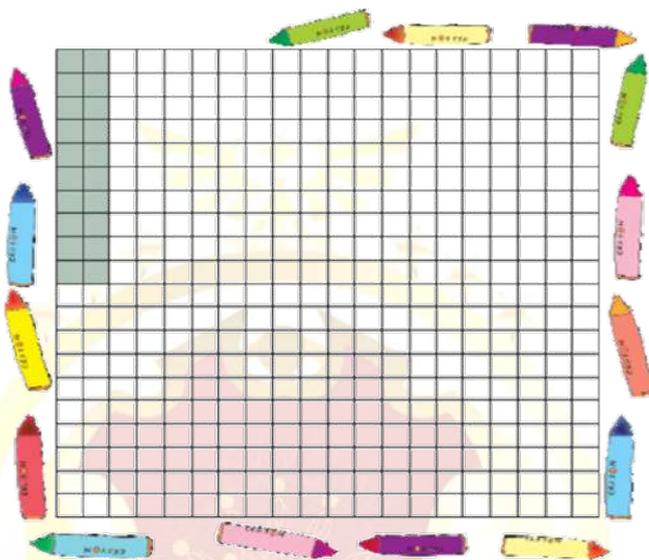
- b) You can make 2 such rectangles.

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## Colouring the Grid

Question 10:

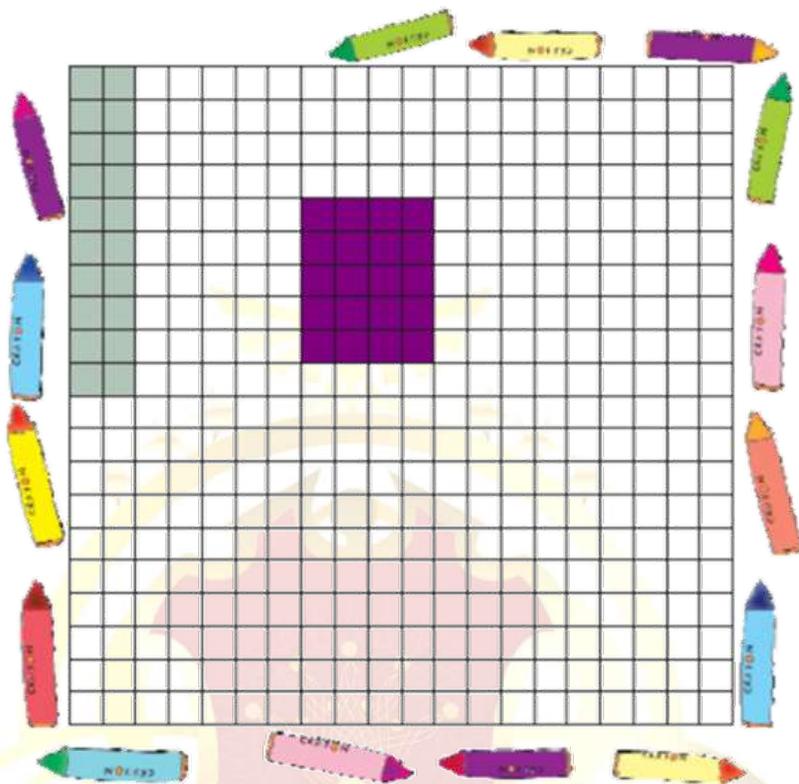
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- In the grid here, a rectangle made of 20 boxes is drawn. The width of this rectangle is 2 boxes. What is its length?
- Colour a rectangle made of 20 boxes in some other way.
- What is the length and width of the rectangle you coloured?
- In how many ways can you colour a rectangle of 20 boxes?
- Colour them all in the grid, and write the length and width of each rectangle you have coloured.

**Answer:**

- The length of the rectangle is 10 boxes.
- Do it by yourself. Answers may vary. A sample answer is shown below.



- c) The length is 5 boxes, and the width is 4 boxes.
- d) Do it by yourself.
- e) Do it by yourself.

**Question 11:**

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- a) There are 18 bangles on the rod. Meena is trying to group them. She can put them in groups of 2, 3, 6, 9 and 18 — without any bangle being left. How many groups will she have if she makes groups of 1 bangle each?
- b) Now complete the table, for different numbers of bangles. For each number see what different groups can be made.

Number of bangles	Different groups we can make
18	1, 2, 3, 6, 9, 18
24	1, 2, .....
5	
9	
7	
2	
10	
1	
20	
13	
21	

**Answer:**

- a) If there is 1 bangle in each group, there will be 18 such groups.  
b)

Number of bangles	Different groups we can make
18	1, 2, 3, 6, 9, 18
24	1, 2, 3, 4, 6, 8, 12, 24
5	1, 5
9	1, 3, 9
7	1, 7
2	1, 2
10	1, 2, 5, 10
1	1
20	1, 2, 4, 5, 10, 20
13	1, 13
21	1, 3, 7, 21

## Fill the chart

### Question 12:

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Complete the multiplication chart given here.

×	1	2	3	4	5	6	7	8	9	10	11	12
1												12
2						12						
3				12			21					
4			12							40		
5				20								
6		12										
7												
8									72			
9												
10												
11						66						
12	12											

Look at the green boxes in the chart. These show how we can get 12 by multiplying different numbers.

$12 = 4 \times 3$ , so 12 is a multiple of both 4 and 3. 12 is also a multiple of 6 and 2, as well as 12 and 1.

We say 1, 2, 3, 4, 6, 12 are factors of 12.

12
$4 \times 3$
$6 \times 2$
$1 \times 12$

- What are the factors of 10? Can you do this from the chart?
- What are the factors of 36?
- Find out all the factors of 36 from the multiplication chart.
- What is the biggest number for which you can find the factors from this chart?
- What can you do for numbers bigger than that?

**Answer:**

The complete multiplication chart is:

×	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

- The factors of ten are 1, 2, 5, and 10.
- All the factors of 36 are 1, 2, 3, 4, 6, 9, 12, 18, and 36.
- The factors of 36 from the given multiplication chart are 1, 2, 3, 4, 6, and 9.
- The biggest number of which factors can be found from the given chart is 144.
- The multiplication chart can be extended to find the factors of bigger numbers.