

Find the Patterns! Multiplication

Similar to addition facts, multiplication facts follow patterns, too. Observe the multiplication table below.

	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

Review the three multiplication rules and complete the exercise.

Rule One.

When you multiply any number by an even number the product is always even.
 $3 \times 4 = 12$ 3 is an odd number, but 4 is even. Notice that the product, 12, is even.

$2 \times 6 = 12$ 2, 6, and 12 are all even.

Rule Two.

When you multiply any number by 3, the digits of the product always add up to a multiple of 3.

The multiples of 3 up to 100 are as follows:

3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 48, 51,
54, 57, 60, 63, 66, 69, 72, 75, 78, 81, 84, 87, 90, 93, 96, 99.

EX:

$$3 \times 4 = 12.$$

$$\text{Add: } 1 + 2 = 3.$$

3 is a multiple of 3 because $3 \times 1 = 3$

$$3 \times 12 = 36.$$

$$\text{Add: } 3 + 6 = 9.$$

9 is a multiple of 3 because $3 \times 3 = 9$

Rule Three.

When you multiply any number by 5, the last digit of the answer has to be either 5 or 0.

EX:

$$5 \times 3 = 15 \text{ The last digit of the product is 5.}$$

$$5 \times 12 = 60, \text{ and notice that the last digit of the answer is 0.}$$

Based on the three rules above, put a check next to the answers that have to be wrong:

1. $6 \times 8 = 48$ _____

2. $24 \times 14 = 336$ _____

3. $16 \times 28 = 447$ _____

4. $30 \times 32 = 960$ _____

5. $146 \times 86 = 12,556$ _____

6. $152 \times 92 = 13,985$ _____

7. $3 \times 11 = 33$ _____

8. $3 \times 12 = 35$ _____

9. $3 \times 21 = 63$ _____

10. $3 \times 13 = 38$ _____

11. $3 \times 25 = 75$ _____

12. $3 \times 30 = 91$ _____

13. $5 \times 4 = 20$ _____

14. $5 \times 12 = 72$ _____

15. $5 \times 17 = 85$ _____

16. $5 \times 18 = 88$ _____

17. $5 \times 20 = 100$ _____

18. $5 \times 22 = 106$ _____