

Lesson 21: Using a Grid



Have you ever been in lots of traffic at an intersection? They call it gridlock. Cars coming from two directions meet under the traffic light, and no one moves! Reading a **grid** is easy. Numbers or letters from two different directions, (**horizontal**, across, and **vertical**, down) meet at their intersection. Let's look at this multiplication table. We know that $5 \times 4 = 20$. Find the 5 on the **horizontal** and the 4 on the **vertical**, follow the paths and they meet at 20. You can also try the 4 on the **horizontal**, and the 5 on the **vertical** and they still meet at the 20! Try using the Multiplication tables to prove these facts. $9 \times 5 = 45$, $11 \times 6 = 66$, $12 \times 12 = 144$.

Purpose of lesson: You will multiply one digit numbers by two and three places.
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Multiplication Table

X	0	1	2	3	4	5	6	7	8	9	10	11	12
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10	11	12
2	0	2	4	6	8	10	12	14	16	18	20	22	24
3	0	3	6	9	12	15	18	21	24	27	30	33	36
4	0	4	8	12	16	20	24	28	32	36	40	44	48
5	0	5	10	15	20	25	30	35	40	45	50	55	60
6	0	6	12	18	24	30	36	42	48	54	60	66	72
7	0	7	14	21	28	35	42	49	56	63	70	77	84
8	0	8	16	24	32	40	48	56	64	72	80	88	96
9	0	9	18	27	36	45	54	63	72	81	90	99	108
10	0	10	20	30	40	50	60	70	80	90	100	110	120
11	0	11	22	33	44	55	66	77	88	99	110	121	132
12	0	12	24	36	48	60	72	84	96	108	120	132	144

You can use this **grid** anytime you forget a fact in multiplication.

Now solve these problems using the chart.

Take Lesson 21 Quiz 1

Let's practice our skills!

Take Lesson 21 Quiz 2

Congratulations! Are you ready to go on to multiply one digit by a larger number?

Now let's try some multiplication examples. Start on the right, multiply and carry the tens place, adding it to the **product**, or answer in a multiplication problem.

Examples:

$$\begin{array}{r} 3 \\ 45 \\ \times 6 \\ \hline 270 \end{array}$$

$$\begin{array}{r} 1 \\ 72 \\ \times 8 \\ \hline 576 \end{array}$$

Solutions:

$6 \times 5 = 30$
Put down the 0 and carry
the 3 over the tens column.
 $6 \times 4 = 24$.
 $24 + 3 = 27$
Total = 270

Multiply $8 \times 2 = 16$.
Put down the 6 and
carry the 1 over the 7
in the tens place.
Multiply $8 \times 7 = 56$.
Add the 1 to $56 = 57$.
Total answer is 576.

Take Lesson 21 Quiz 3

Now are you ready to multiply ones by hundreds?
Just continue to multiply and carry to the hundreds place.
Ready, set, go!



Take Lesson 21 Quiz 4