



## Long multiplication

Study Development Worksheet

### Example

What is  $345 \times 67$ ?

### Answer

We begin by placing the numbers into the long multiplication style grids:

×	300	40	5
60			
7			

We then fill in the squares:

×	300	40	5
60	18,000	2,400	300
7	2,100	280	35

Finally, we sum the numbers in the squares:

$$\begin{array}{r}
 18000 \\
 24000 \\
 21000 \\
 3000 \\
 2800 \\
 + 350 \\
 \hline
 23115 \\
 \hline
 444
 \end{array}$$

Therefore, we have found that  $345 \times 67 = 23,115$

## Questions

1. What is  $32 \times 17$ ?
2. What is  $24 \times 4 \times 9$ ?
3. What is the area of a rectangle with sides of length 13 and 55?
4. What is  $109 \times 12.5$ ?
5. What is  $580 \times 165$ ?

## Answers

1. Begin by setting up the grid:

×	30	2
10		
7		

Fill in the squares:

×	30	2
10	300	20
7	210	14

Sum these values:

$$\begin{array}{r} 300 \\ 210 \\ 20 \\ + 14 \\ \hline 544 \end{array}$$

So, we have found that  $32 \times 17 = 544$ .

2. We will do this calculation in two steps. Begin by setting up the first grid:

×	20	4
4		

Fill in the blank squares:

×	20	4
4	80	16

Add the values you have found:

$$\begin{array}{r}
 80 \\
 + 16 \\
 \hline
 96
 \end{array}$$

Now, we use this value for our second table:

×	90	6
9		

Fill in the blank squares:

×	90	6
9	810	54

Add these values:

$$\begin{array}{r}
 810 \\
 + 54 \\
 \hline
 864
 \end{array}$$

Therefore, we have found that  $24 \times 4 \times 9 = 864$ .

3. The area of a rectangle is equal to its longer side length multiplied by its shorter side length.

So, we want to calculate  $13 \times 55$ . Again, we set up the grid and fill in the blank squares:

$\times$	10	3
50	500	150
5	50	15

The sum of these values is:

$$\begin{array}{r} 500 \\ 150 \\ 50 \\ + \quad 15 \\ \hline 715 \\ \hline 4 \end{array}$$

Therefore, the area of the rectangle is 715 (units<sup>2</sup>).

4. Set up the grid:

×	100	9
10		
2		
0.5		

Fill in the blank squares:

×	100	9
10	1000	90
2	200	18
0.5	50	4.5

Sum these values:

$$\begin{array}{r}
 1000.0 \\
 200.0 \\
 90.0 \\
 50.0 \\
 18.0 \\
 + 4.5 \\
 \hline
 1362.5 \\
 \hline
 44
 \end{array}$$

Therefore, we have that  $109 \times 12.5 = 1,362.5$

5. Set up the grid and fill in the blanks:

×	500	80
100	50,000	8,000
60	30,000	4,800
5	2,500	400

Add up the values:

$$\begin{array}{r}
 50000 \\
 30000 \\
 8000 \\
 4800 \\
 2500 \\
 400 \\
 \hline
 95700 \\
 44 \\
 \hline
 \end{array}$$

So, we have found that  $580 \times 165 = 95,700$ .

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