Column Method for Multiplication

Starter

Simplify

1) $3x + 7y - 2x + y$
2) $3a \times 4b$
3) $5c \times 6c$
4) $2x + 3x \times 4x + x^2$
5) $2ab + 4ba - 5ab$
6) $2xyz \times 7xyz$

Starter Answers

1) $x + 8y$ 2) $12ab$ 3) $30c^2$ 4) $13x^2 + 2x$ 5) ab 6) $14x^2y^2z^2$

One method we can use to multiply whole numbers together is the **column method**.

Example 1

Work out 213 x 3

First write as a column, lining up the place value columns:

$$\begin{array}{r} 2\ 1\ 3 \\ \times\quad\ 3 \\ \hline \end{array}$$

Each digit must be multiplied by 3. We have 3 x 3 = 9 units, 3 x 1 = 3 tens and 3 x 2 = 6 hundreds

First, start with the units: 3 x 3 = 9

$$\begin{array}{r} 2\ 1\ 3 \\ \times\quad\ 3 \\ \hline \quad\quad 9 \end{array}$$

Next, we multiply the tens column: 3 x 1 = 3 tens

$$\begin{array}{r} 2\ 1\ 3 \\ \times\quad\ 3 \\ \hline 3\ 9 \end{array}$$

Finally, we multiply the hundreds column: 3 x 2 = 6 hundreds

$$\begin{array}{r} 2\ 1\ 3 \\ \times\quad\ 3 \\ \hline 6\ 3\ 9 \end{array}$$

So, the answer is 639

Example 2

Work out 172 x 5

Line up the place value columns:

$$\begin{array}{r} 1\ 7\ 2 \\ \times\quad 5 \\ \hline \end{array}$$

First multiply the units: 2 x 5 = 10
This time, we have zero units and one ten. So we write the zero in the units column and carry over the ten.

$$\begin{array}{r} 1\ 7\ 2 \\ \times\quad 5 \\ \hline 0 \\ \hline {\scriptstyle 1} \end{array}$$

Now work out 5 x 7 tens. 5 x 70 is 350, add the carried 1 ten to give 360. Write 6 in the tens column in the answer space and carry the 3 hundreds to the hundreds column.

$$\begin{array}{r} 1\ 7\ 2 \\ \times\quad 5 \\ \hline 6\ 0 \\ \hline {\scriptstyle 3\ 1} \end{array}$$

Next, we multiply the hundreds column. 5 x 100 = 500
Add on the 3 hundreds we carried over to get 800.

$$\begin{array}{r} 1\ 7\ 2 \\ \times\quad 5 \\ \hline 8\ 6\ 0 \\ \hline {\scriptstyle 3\ 1} \end{array}$$

So, the answer is 860

Your go

1) 23 x 4
2) 89 x 7
3) 176 x 4
4) 2632 x 6

Answers

1) 92 2) 623 3) 704 4) 15792

Example 3

Work out 46 x 35

First line up the digits. We will start by doing 6 x 35.

First, we do 6 x 5 = 30. We write the zero units in the units column and carry over the 3 tens to the tens column.

Next, we do 6 x 3 = 18 tens. We add the 3 tens we carried over to get 21 tens. This would be 2 hundreds and 1 ten.

Next, we move onto multiplying 35 by 40. As this is 4 tens, then we will not have any units. So we place a zero in the units column before we start.

Then, we do 4 x 5 = 20. This will be 20 tens, so we would have 0 tens and 2 hundreds. We carry over the 2 hundreds to the hundreds column.

Then, we do 4 x 3 = 12. This is 12 hundreds. We add on the 2 hundreds we carried over to get 14 hundreds.

Finally, we add the 210 and the 1400 together to get our answer.

Therefore, the answer is 1610.

Your go

1) 34 x 28
2) 12 x 46
3) 123 x 45
4) 2387 x 18

Answers

1) 952
2) 552
3) 5535
4) 42966