



$$16 \times 5$$

$$92 \times 15$$

Multiplication – Written Methods

$$72 \times 3$$

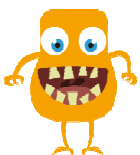
$$\begin{array}{r} 83 \\ \times 7 \\ \hline \\ \hline \end{array}$$



Multiplication – Written Methods

Contents

	Page Number
Times Tables Square	2
Written Method – Partitioning	3
Written Method – Grid Method	
- TU x T	4
- HTU x U	7
- TU x TU	9
- HTU x TU	12
- Multiplying Decimal Numbers	15
- Using the Grid Method, Revision	21
Written Method – Short Multiplication	
- Expanded Short Multiplication TU	24
- Short Multiplication TU x T	27
- Short Multiplication HTU x T	28
- Short Multiplication ThHTU x T	30
- Short Multiplication, Revision	31
Written Method – Long Multiplication	
- Expanded Long Multiplication TU x TU	33
- Expanded Long Multiplication HTU x TU	37
- Long Multiplication HTU x TU	41
- Long Multiplication , Revision	43
Answers	45



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Multiplication - Grid Method (HTU x U)



The grid method works by partitioning and then adding.

An approximate answer is found first, by rounding to the nearest 100. A grid is then drawn. The **partitioned number** is placed in the grid and **multiplied**. The **products (answers to the times sums in the grid)** are then added to find the **answer**. You can use any mental or written method for adding the product.

e.g. $326 \times 5 = 1304$ Approximate Answer: $300 \times 5 = 1500$

x	300	20	6	
4	1200	80	24	1304

$1200 + 80 + 24 = 1304$

Work out these multiplication sums using the grid method.

1) $243 \times 3 =$

Approx. Answer: $200 \times 3 =$

x	200	40	3	
3				

+ + =

2) $536 \times 5 =$

Approx. Answer: $500 \times 5 =$

x	500	30	6	
5				

+ + =

3) $671 \times 4 =$

Approx. Answer: $700 \times 4 =$

x	600	70	1	
4				

+ + =

4) $289 \times 6 =$

Approx. Answer: $300 \times 6 =$

x	200	80	9	
6				

+ + =

5) $361 \times 9 =$

Approx. Answer: $400 \times 9 =$

x	300	60	1	
9				

6) $723 \times 2 =$

Approx. Answer: $700 \times 2 =$

x	700	20	3	
2				

Short Multiplication (htu x t)



Short Multiplication - This is a quick way of multiplying larger numbers.

$$438 \times 4 = 1752$$

	H	T	U	
	4	3	8	
x				4
	1	7	5	2
	1	3		

- Work out 8×4 , carry any tens.
- Then work out 3×4 and add any numbers carried. **Remember** to carry any tens from you answer.
- Lastly work out 4×4 and add any numbers carried.

Use short multiplication to work out these sums.

1) 528×5	2) 417×4	3) 850×6
4) 291×8	5) 303×3	6) 726×9
7) 822×7	8) 669×8	9) 934×6

Expanded Long Multiplication (htu x tu)



When working out long multiplication sums, it is always good to find an approximate answer first. You don't have to put the sums in brackets, but it can help you whilst you are learning.

384×52 approx. answer: $400 \times 50 = 20000$

$$\begin{array}{r}
 3 8 4 \\
 \times 5 2 \\
 \hline
 1 0 0 0 \quad (300 \times 50) \\
 4 0 0 0 \quad (80 \times 50) \\
 2 0 0 \quad (4 \times 50) \\
 6 0 0 \quad (300 \times 2) \\
 1 0 0 \quad (80 \times 2) \\
 + 8 0 \quad (4 \times 2) \\
 \hline
 1 9 9 6 8
 \end{array}$$

Use expanded long multiplication to work out these sums.

1) 612×23

2) 563×42

3) 815×38

4) 189×45

5) 840×74

6) 308×52



Long Multiplication (htu x tu)



If you are confident with expanded long multiplication, you can have a go at using a more efficient way of completing long multiplication sums.

568×34 approx. answer: $600 \times 30 = 18000$

Expanded Long Multiplication

$$\begin{array}{r}
 5 0 0 \\
 \times 3 4 \\
 \hline
 1 5 0 0 \quad (500 \times 30) \\
 1 0 0 \quad (60 \times 30) \\
 \phantom{} 2 0 \quad (8 \times 30) \\
 \phantom{\phantom{}} 2 0 0 \quad (500 \times 4) \\
 \phantom{\phantom{\phantom{}}} 2 0 \quad (60 \times 4) \\
 + \phantom{\phantom{\phantom{\phantom{}}}} 3 \quad (8 \times 4) \\
 \hline
 1 3 2 \\
 \hline
 1
 \end{array}$$

Long Multiplication

$$\begin{array}{r}
 5 8 \\
 \times 4 \\
 \hline
 1 0 0 \quad (568 \times 30) \\
 2 7 \quad (568 \times 4) \\
 \hline
 1 3 2 \\
 1
 \end{array}$$

Try and use long multiplication to work out these sums.

1) 256×24

2) 388×37

3) 232×41

4) 187×54

5) 372×46

6) 243×25

Use a calculator to check your answers. If you have got any wrong, try and figure out where you went wrong.

Answers

Times tables Square

x	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

Written Methods - Partitioning

$$\begin{array}{l}
 1) 25 \times 2 = (20 \times 2) + (5 \times 2) \\
 = 80 + 10 \\
 = 90
 \end{array}
 \quad
 \begin{array}{l}
 2) 32 \times 5 = (30 \times 5) + (2 \times 5) \\
 = 150 + 10 \\
 = 160
 \end{array}
 \quad
 \begin{array}{l}
 3) 29 \times 4 = (20 \times 4) + (9 \times 4) \\
 = 80 + 36 \\
 = 116
 \end{array}
 \quad
 \begin{array}{l}
 4) 16 \times 3 = (10 \times 3) + (6 \times 3) \\
 = 30 + 18 \\
 = 48
 \end{array}$$

$$\begin{array}{l}
 5) 41 \times 4 = (40 \times 4) + (1 \times 4) \\
 = 160 + 4 \\
 = 164
 \end{array}
 \quad
 \begin{array}{l}
 6) 39 \times 2 = (30 \times 2) + (9 \times 2) \\
 = 60 + 18 \\
 = 78
 \end{array}
 \quad
 \begin{array}{l}
 7) 62 \times 5 = (60 \times 5) + (2 \times 5) \\
 = 300 + 10 \\
 = 310
 \end{array}
 \quad
 \begin{array}{l}
 8) 31 \times 12 = (30 \times 12) + (1 \times 12) \\
 = 360 + 12 \\
 = 372
 \end{array}$$

$$\begin{array}{l}
 9) 86 \times 3 = (80 \times 3) + (6 \times 3) \\
 = 90 + 18 \\
 = 108
 \end{array}
 \quad
 \begin{array}{l}
 10) 54 \times 12 = (50 \times 12) + (4 \times 12) \\
 = 600 + 48 \\
 = 648
 \end{array}$$

Multiplication - Grid Method (tu x u)

1) $34 \times 2 = 68$ approx ans: $30 \times 2 = 60$	2) $63 \times 5 = 315$ approx ans: $60 \times 5 = 300$	3) $47 \times 3 = 141$ approx ans: $50 \times 3 = 150$	4) $29 \times 4 = 116$ approx ans: $30 \times 4 = 120$
5) $61 \times 5 = 305$ approx ans: $60 \times 5 = 300$	6) $85 \times 2 = 170$ approx ans: $90 \times 2 = 180$	7) $78 \times 3 = 234$ approx ans: $80 \times 3 = 240$	8) $45 \times 5 = 225$ approx ans: $50 \times 5 = 250$
9) $28 \times 3 = 84$ approx ans: $30 \times 3 = 90$	10) $52 \times 2 = 104$ approx ans: $50 \times 2 = 100$	11) $84 \times 5 = 420$ approx ans: $80 \times 5 = 400$	12) $17 \times 4 = 68$ approx ans: $20 \times 4 = 80$
13) $66 \times 2 = 132$ approx ans: $70 \times 2 = 140$	14) $59 \times 4 = 236$ approx ans: $60 \times 4 = 240$	15) $34 \times 3 = 102$ approx ans: $30 \times 3 = 90$	16) $15 \times 5 = 75$ approx ans: $20 \times 5 = 100$

Grid Method Multiplication - Ribbons

Answers will vary - use a calculator to check the answers. If any are incorrect, go back and check where you went wrong in your working out.

Multiplication - Grid Method htu x u (approx answers can vary depending on how the number is rounded)

1) Approx. Ans: $200 \times 3 = 600$ Answer: $600 + 120 + 9 = 729$	2) Approx. Ans: $500 \times 5 = 2500$ Answer: $2500 + 150 + 30 = 2680$	3) Approx. Ans: $700 \times 4 = 2800$ Answer: $2400 + 280 + 4 = 2684$
4) Approx. Ans: $300 \times 6 = 1800$ Answer: $1200 + 480 + 54 = 1734$	5) Approx. Ans: $400 \times 9 = 3600$ Answer: $2700 + 540 + 9 = 3249$	6) Approx. Ans: $700 \times 2 = 1400$ Answer: $1400 + 40 + 6 = 1446$
7) Approx. Ans: $500 \times 3 = 1500$ Answer: 1530	8) Approx. Ans: $600 \times 9 = 5400$ Answer: 5481	9) Approx. Ans: $500 \times 7 = 3500$ Answer: 3773
10) Approx. Ans: $200 \times 8 = 1600$	11) Approx. Ans: $300 \times 4 = 1200$	12) Approx. Ans: $400 \times 5 = 2000$