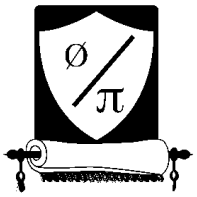

Master Coaching

Master Long Multiplication

Long Multiplication

There are two main problems students encounter when first attempting **Long multiplication**.

1 Vertical alignment of numerals with the same place value.

2 How many zeros to be used when the multiplicand represents tens, hundreds, thousands, etc.

Complete the first three questions of short multiplication. (ie. a, b, c)

Check your answers.

Now complete the next three questions (d, e, f).

Start by placing a zero in the answer row in the same column as the zero in the multiplying number.

Note : We have already done this for you in the first question.
You will note that the answers in this row are exactly the same answer as in row one, except they all have a zero on the end.

The next three questions (g, h, i) are critical. This is where the algorithm makes sense.

When you multiply a number by 22, you first find 2 × number,
then underneath you have 20 × number (note you still have only multiplied by 2).

When you add the two rows $(1+2)$ together you have 22 × number.

See if you can finish the rest of these examples.

If you are having problems check the answers and rewrite the questions and answers on your own paper.

Set 1

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a

2	3	1	4	×
			2	

b

2	3	1	4	×
			3	

c

2	3	1	4	×
			4	

d

2	3	1	4	×
		2	0	

e

2	3	1	4	×
		3	0	

f

2	3	1	4	×
		4	0	

g

2	3	1	4	×
		2	2	
				× 2
				× 20

h

2	3	1	4	×
		3	3	
				× 3
				× 30

i

	2	3	1	4	×
			4	4	
				0	

j

	2	3	1	4	×
			4	3	

k

	2	3	1	4	×
		4	0	3	
			0	0	

l

	2	3	1	4	×
		3	0	4	
			0	0	

m

	2	3	1	4	×
		4	3	0	
				0	
			0	0	

n

	2	3	1	4	×
		3	0	2	
			0	0	

o

	2	3	1	4	×
		4	0	4	

Set 2

Complete as per previous page.
We have done the first question in the first three rows for you to use as as example.

a

	3	5	4	2 ×
				4
1	4	1	6	8

b

	3	5	4	2 ×
				5

c

	3	5	4	2 ×
				6

d

		3	5	4	2 ×
				4	0
1	4	1	6	8	0

e

		3	5	4	2 ×
				5	0

f

		3	5	4	2 ×
				6	0

g

		3	5	4	2 ×
				4	4
	1	4	1	6	8
1	4	1	6	8	0
1	5	5	8	4	8

h

		3	5	4	2 ×
				5	5
					0

i

		3	5	4	2 ×
				6	6
					0

j

		3	5	4	2 ×
				4	5

k

			3	5	4	2 ×
				4	0	5

l

			3	5	4	2 ×
				5	0	4

m

			3	5	4	2 ×
					6	5

n

			3	5	4	2 ×
				6	5	0

o

			3	5	4	2 ×
				5	0	6

p

		2	1	6	7 ×	
				6	4	

q

		3	0	8	9 ×	
				4	7	

r

		5	6	8	3 ×	
			2	0	6	

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Set 3

Use the examples from the previous page to help with these questions.
Placement of zeros is important and we have helped with some questions.

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a

5	6	2	4	×
			4	

b

	5	6	2	4 ×
			4	0
				0

c

		5	6	2	4 ×
			4	0	0
				0	0

d

5	6	2	4	×
			6	

e

	5	6	2	4 ×
			6	0

f

		5	6	2	4 ×
			6	0	0

g

5	6	2	4	×
			7	

h

5	6	2	4	×
		7	0	

i

5	6	2	4	×
	7	0	0	

Everything is easy – once you know how.

j

	5	6	2	4 ×
			4	4

k

		5	6	2	4 ×
			4	0	4

l

		5	6	2	4 ×
				6	4
					× 4
					× 60

m

		5	6	2	4 ×
				4	6
					× 6
					× 40

n

			5	6	2	4 ×
				6	7	4

o

			5	6	2	4 ×
				7	4	6

Long Multiplication Answers

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Set 1

a 4628	**b** 6942	**c** 9256
d 46280	**e** 69420	**f** 92560
g 50908	**h** 76362	**i** 101816
j 99502	**k** 932542	**l** 703456
m 995020	**n** 698828	**o** 934856

Set 2

a 14168	**b** 17710	**c** 21252
d 141680	**e** 177100	**f** 212520
g 155848	**h** 194810	**i** 233772
j 159390	**k** 1434510	**l** 1785168
m 230230	**n** 2302300	**o** 1792252
p 138688	**q** 145183	**r** 1170698

Set 3

a 22496	**b** 224960	**c** 2249600
d 33744	**e** 337440	**f** 3374400
g 39368	**h** 393680	**i** 3936800
j 247456	**k** 2272096	
l 359936	**m** 258704	
n 3790576	**o** 4195504	