

Long Multiplication Algorithm

ian.mcloughlin@gmit.ie

Long multiplication

			1	0	2	4
×				1	2	8
			8	1	9	2
		2	0	4	8	0
+	1	0	2	4	0	0
	1	3	1	0	7	2

Algorithm

```
right align
```

```
for each bottom digit:
```

```
new line, append zeros
```

```
for each top digit:
```

multiply

```
if carried digit:
```

add

```
if greater than 9:
```

carry tens digit

```
print units digit
```

add

Long multiplication

				1	0	2	4
×				1	2	8	
				8	1	9	2
			2	0	4	8	0
+	1	0	2	4	0	0	
	1	3	1	0	7	2	

Algorithm

right align

for each bottom digit:

new line, append zeros

for each top digit:

multiply

if carried digit:

add

if greater than 9:

carry tens digit

print units digit

add

Long multiplication

<hr/>						
			1	0	2	4
				1	2	8
<hr/>						
			8	1	9	2
			2	0	4	8
			0	0	0	0
+	1	0	2	4	0	0
<hr/>						
			1	3	1	0
			7	2		
<hr/>						

Algorithm

right align

for each bottom digit:

new line, append zeros

for each top digit:

multiply

if carried digit:

add

if greater than 9:

carry tens digit

print units digit

add

Long multiplication

3				1	0	2	4
×					1	2	8
<hr/>							
				8	1	9	2
		2	0	4	8	0	
+	1	0	2	4	0	0	
<hr/>							
	1	3	1	0	7	2	

Algorithm

```
right align
```

```
for each bottom digit:
```

```
new line, append zeros
```

```
for each top digit:
```

multiply

```
if carried digit:
```

add

```
if greater than 9:
```

carry tens digit

```
print units digit
```

add

Long multiplication

<hr/>						
3			1	0	2	4
×				1	2	8
<hr/>						
			8	1	9	2
		2	0	4	8	0
+	1	0	2	4	0	0
<hr/>						
	1	3	1	0	7	2
<hr/>						

Algorithm

right align

for each bottom digit:

new line, append zeros

for each top digit:

multiply

if carried digit:

add

if greater than 9:

carry tens digit

print units digit

add

Long multiplication

<hr/>						
1			1	0	2	4
×				1	2	8
<hr/>						
			8	1	9	2
		2	0	4	8	0
+	1	0	2	4	0	0
<hr/>						
	1	3	1	0	7	2
<hr/>						

Algorithm

right align

for each bottom digit:

new line, append zeros

for each top digit:

multiply

if carried digit:

add

if greater than 9:

carry tens digit

print units digit

add

Long multiplication

<hr/>						
1			1	0	2	4
×				1	2	8
<hr/>						
			8	1	9	2
		2	0	4	8	0
+	1	0	2	4	0	0
<hr/>						
	1	3	1	0	7	2
<hr/>						

Algorithm

right align

for each bottom digit:

new line, append zeros

for each top digit:

multiply

if carried digit:

add

if greater than 9:

carry tens digit

print units digit

add

Long multiplication

<hr/>						
			1	0	2	4
×				1	2	8
<hr/>						
			8	1	9	2
			2	0	4	8
			0	0	0	0
+	1	0	2	4	0	0
<hr/>						
			1	3	1	0
			7	2		
<hr/>						

Algorithm

right align

for each bottom digit:

new line, append zeros

for each top digit:

multiply

if carried digit:

add

if greater than 9:

carry tens digit

print units digit

add

Long multiplication

				1	0	2	4
×					1	2	8
				8	1	9	2
		2	0	4	8	0	
+	1	0	2	4	0	0	
	1	3	1	0	7	2	

Algorithm

```
right align
```

```
for each bottom digit:
```

```
new line, append zeros
```

```
for each top digit:
```

multiply

```
if carried digit:
```

add

```
if greater than 9:
```

carry tens digit

```
print units digit
```

add

Long multiplication

				1	0	2	4
×					1	2	8
				8	1	9	2
		2	0	4	8	0	
+	1	0	2	4	0	0	
	1	3	1	0	7	2	

Algorithm

```
right align
```

```
for each bottom digit:
```

```
new line, append zeros
```

```
for each top digit:
```

multiply

```
if carried digit:
```

add

```
if greater than 9:
```

carry tens digit

```
print units digit
```

add

Long multiplication

				1	0	2	4
×				1	2	8	
				8	1	9	2
			2	0	4	8	0
+	1	0	2	4	0	0	
	1	3	1	0	7	2	

Algorithm

right align

for each bottom digit:

new line, append zeros

for each top digit:

multiply

if carried digit:

add

if greater than 9:

carry tens digit

print units digit

add

Long multiplication

				1	0	2	4
×				1	2	8	
				8	1	9	2
			2	0	4	8	0
+	1	0	2	4	0	0	
	1	3	1	0	7	2	

Algorithm

right align

for each bottom digit:

new line, append zeros

for each top digit:

multiply

if carried digit:

add

if greater than 9:

carry tens digit

print units digit

add

Long multiplication

			1	0	2	4
×				1	2	8
			8	1	9	2
		2	0	4	8	0
+	1	0	2	4	0	0
	1	3	1	0	7	2

Algorithm

```
right align
```

```
for each bottom digit:
```

```
new line, append zeros
```

```
for each top digit:
```

multiply

```
if carried digit:
```

add

```
if greater than 9:
```

carry tens digit

```
print units digit
```

add