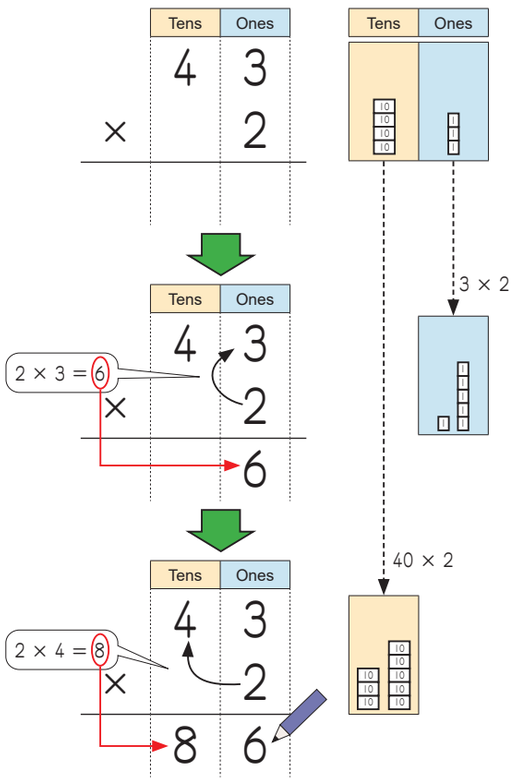
10 - 1 Multiplication Algorithm-1

2-Digit Number × 1-Digit Number (1)

Example Calculate 43 × 2 by using the algorithm.



Line up the numbers vertically in each place.

```
  4 3
×   2
    6 ◄-- 3 × 2
  8 0 ◄-- 40 × 2
  8 6
```

2 times 3 is 6.
(This is actually 3 × 2 = 6.)
Write a 6 in the ones place.

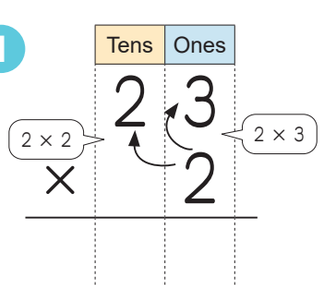
For convenience, the multiplicand and multiplier are reversed!

2 times 4 is 8.
(This is actually 40 × 2 = 80.)
Write a 8 in the tens place.

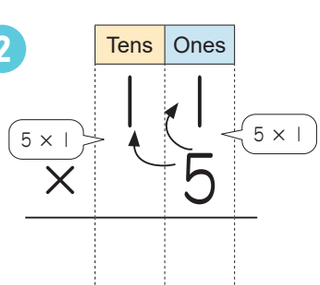
43 × 2 = 86

Calculate the following multiplication problems by using the algorithm.

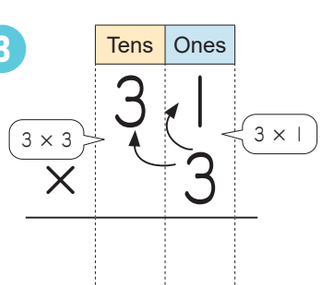
1



2



3



4 24 × 2 **5** 32 × 3 **6** 12 × 4 **7** 21 × 3

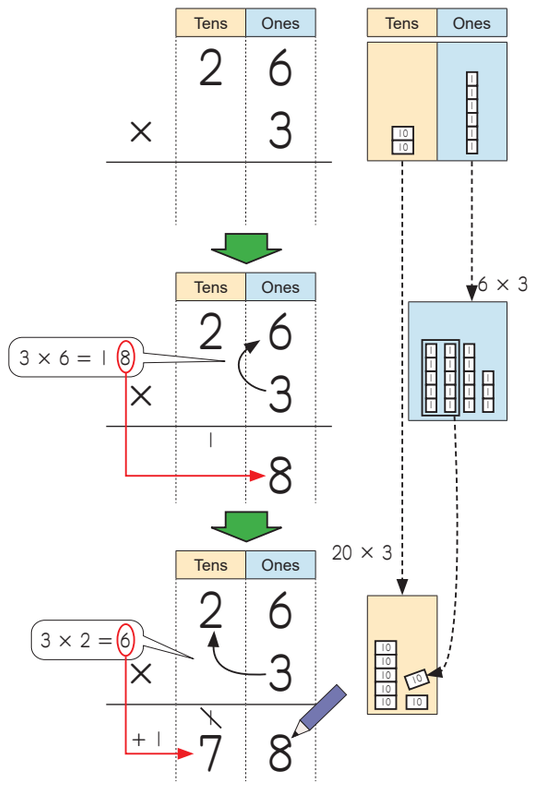
8 33 × 3 **9** 42 × 2 **10** 23 × 3 **11** 34 × 2

4		5		6		7	
8		9		10		11	

10 - 2 Multiplication Algorithm-1

2-Digit Number × 1-Digit Number (2)

Example Calculate 26 × 3 by using the algorithm.



Line up the numbers vertically in each place.

```
  2 6
×   3
  1 8 ◄-- 6 × 3
  6 0 ◄-- 20 × 3
  7 8
```

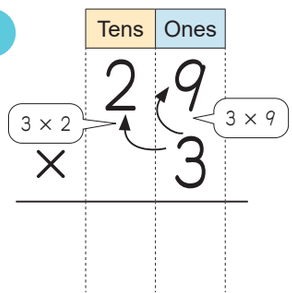
3 times 6 is 18.
(This is actually 6 × 3 = 18.)
Write an 8 in the ones place, and regroup 1 into the tens place.

3 times 2 is 6.
(This is actually 20 × 3 = 60.)
Add the 6 and the 1 that was regrouped to get 7.
Write a 7 in the tens place.

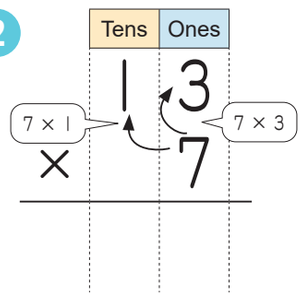
26 × 3 = 78

Calculate the following multiplication problems by using the algorithm.

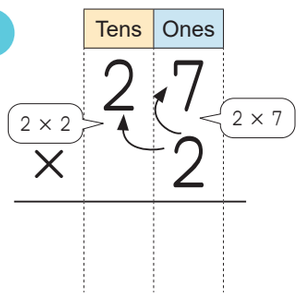
1



2



3



4 17 × 5 **5** 35 × 2 **6** 16 × 6 **7** 23 × 4

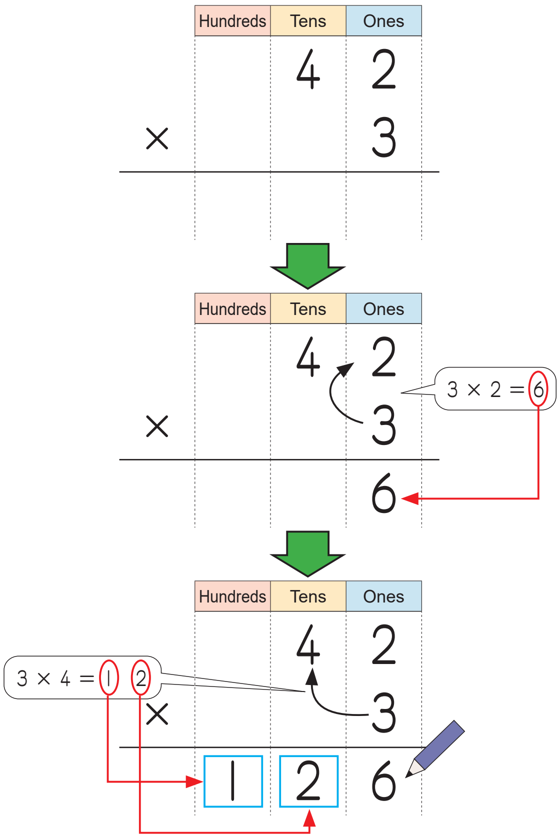
8 36 × 2 **9** 28 × 3 **10** 45 × 2 **11** 12 × 8

4		5		6		7	
8		9		10		11	

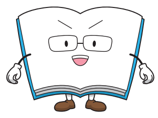
10 - 3 Multiplication Algorithm-1

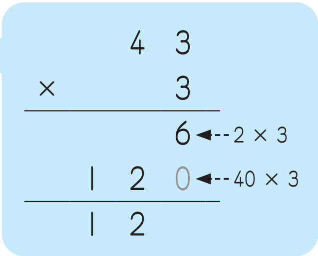
2-Digit Number × 1-Digit Number (3)

Example Calculate 42 × 3 by using the algorithm.



Line up the numbers vertically in each place.





3 times 2 is 6.
(This is actually 2 × 3 = 6.)
Write a 6 in the ones place.

3 times 4 is 12.
(This is actually 40 × 3 = 120.)
Write a 2 in the tens place and a 1 in the hundreds place.

42 × 3 = 126

Calculate the following multiplication problems by using the algorithm.

1

	Hundreds	Tens	Ones
		3	1
×			4

2

	Hundreds	Tens	Ones
		6	3
×			2

3

	Hundreds	Tens	Ones
		7	2
×			3

4

	Hundreds	Tens	Ones
		8	2
×			4

5 53 × 3　　6 92 × 2　　7 41 × 4　　8 54 × 2

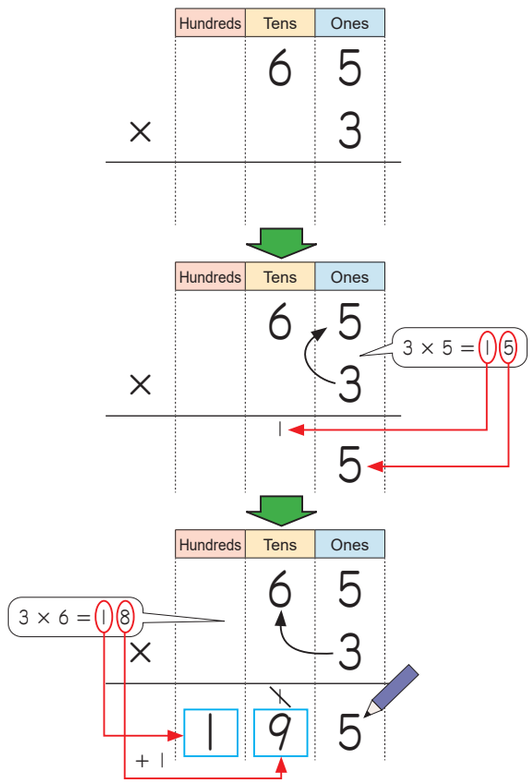
9 32 × 4　　10 52 × 4　　11 62 × 3　　12 31 × 8

5		6		7		8	
9		10		11		12	

10 - 4 Multiplication Algorithm-1

2-Digit Number × 1-Digit Number (4)

Example Calculate 65 × 3 by using the algorithm.



Line up the numbers vertically in each place.

3 times 5 is 15.
(This is actually 5 × 3 = 15.)
Regroup 1 into the tens place.
Write a 5 in the ones place.

3 times 6 is 18.
(This is actually 60 × 3 = 180.)
Add the 18 and 1 that was regrouped. It becomes 19.
Write a 9 in the tens place and a 1 in the hundreds place.

65 × 3 = 195

Calculate the following multiplication problems by using the algorithm.

1

	Hundreds	Tens	Ones
		6	4
×			3

2

	Hundreds	Tens	Ones
		7	6
×			3

3

	Hundreds	Tens	Ones
		4	7
×			4

4

	Hundreds	Tens	Ones
		9	9
×			9

5 55 × 6 **6** 38 × 5 **7** 42 × 8 **8** 68 × 7

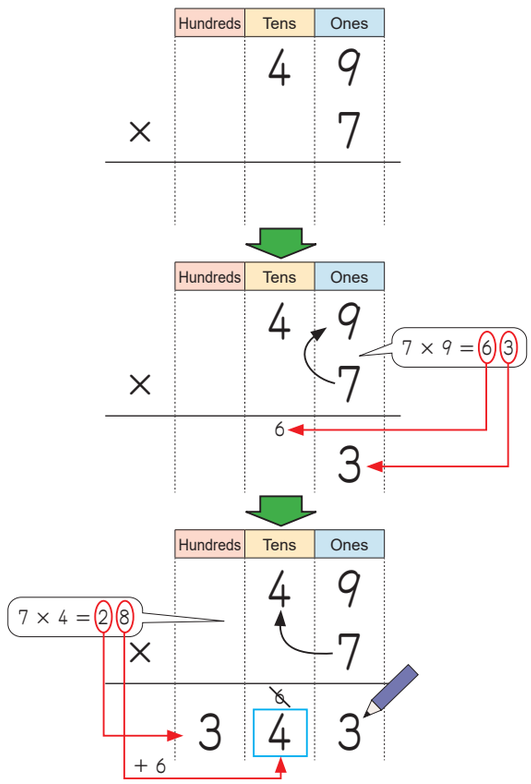
9 27 × 6 **10** 78 × 5 **11** 93 × 5 **12** 37 × 8

5		6		7		8	
9		10		11		12	

10 - 5 Multiplication Algorithm-I

2-Digit Number × 1-Digit Number (5)

Example Calculate 49 × 7 by using the algorithm.



Line up the numbers vertically in each place.

7 times 9 is 63.
(This is actually 9 × 7 = 63.)
Regroup 6 into the tens place.
Write a 3 in the ones place.

7 times 4 is 28.
(This is actually 40 × 7 = 280.)
Add the 28 and the 6 that was regrouped. It becomes 34.
Write a 4 in the tens place and a 3 in the hundreds place.

49 × 7 = 343

Calculate the following multiplication problems by using the algorithm.

1

	Hundreds	Tens	Ones
		5	9
×			7

2

	Hundreds	Tens	Ones
		3	8
×			9

3

	Hundreds	Tens	Ones
		6	7
×			8

4

	Hundreds	Tens	Ones
		7	6
×			7

5 66 × 8

6 89 × 6

7 79 × 9

8 36 × 6

9 58 × 9

10 47 × 7

11 68 × 9

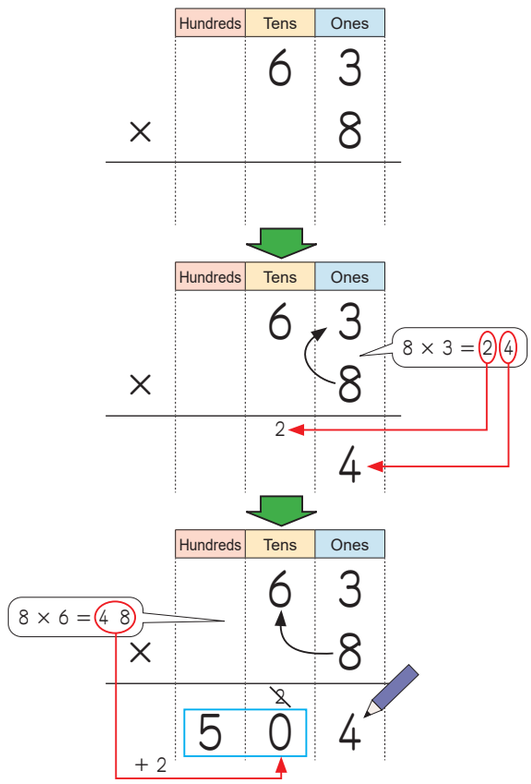
12 78 × 7

5		6		7		8	
9		10		11		12	

10 - 6 Multiplication Algorithm-I

2-Digit Number × 1-Digit Number (6)

Example Calculate 63 × 8 by using the algorithm.



Line up the numbers vertically in each place.

8 times 3 is 24.
(This is actually 3 × 8 = 24.)
Regroup 2 into the tens place.
Write a 4 in the ones place.

8 times 6 is 48.
(This is actually 60 × 8 = 480.)
Add the 48 and the 2 that was regrouped. It becomes 50.
Write a 0 in the tens place and a 5 in the hundreds place.

63 × 8 = 504

Calculate the following multiplication problems by using the algorithm.

1

	Hundreds	Tens	Ones
		7	6
×			4

2

	Hundreds	Tens	Ones
		8	6
×			7

3

	Hundreds	Tens	Ones
		1	7
×			6

4

	Hundreds	Tens	Ones
		7	5
×			8

5 45 × 9

6 69 × 3

7 75 × 4

8 67 × 9

9 67 × 3

10 87 × 7

11 67 × 6

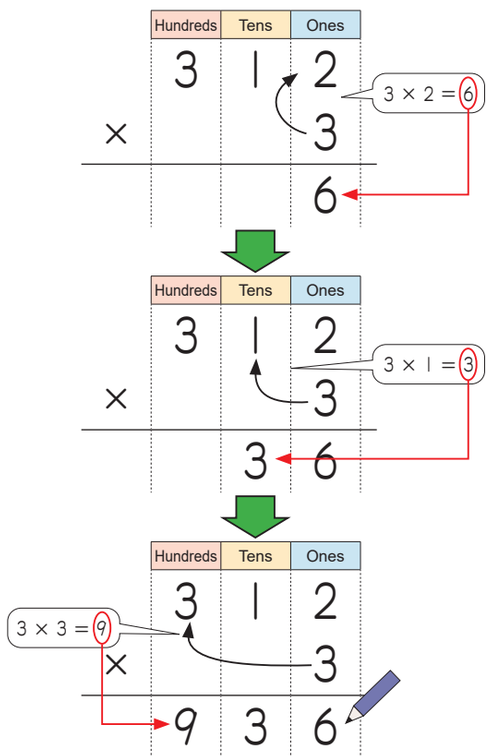
12 77 × 4

5		6		7		8	
9		10		11		12	

10 - 7 Multiplication Algorithm-1

3-Digit Number × 1-Digit Number (1)

Example Calculate 312 × 3 by using the algorithm.



Line up the numbers vertically in each place.

```
  3 1 2
×     3
-------
      6  <-- 2 × 3
  1 3 0  <-- 10 × 3
  9 0 0  <-- 300 × 3
-------
  9 3 6
```

3 times 2 is 6.
(This is actually 2 × 3 = 6.)
Write a 6 in the ones place.

3 times 1 is 3
(This is actually 10 × 3 = 30.)
Write a 3 in the tens place.

3 times 3 is 9
(This is actually 300 × 3 = 900.)
Write a 9 in the hundreds place.

312 × 3 = 936

Calculate the following multiplication problems by using the algorithm.

1

Hundreds	Tens	Ones
2	2	3
×		3

2

Hundreds	Tens	Ones
1	2	1
×		4

3

Hundreds	Tens	Ones
2	3	1
×		2

4

Hundreds	Tens	Ones
1	3	2
×		3

5 244 × 2 **6** 123 × 3 **7** 321 × 2 **8** 221 × 4

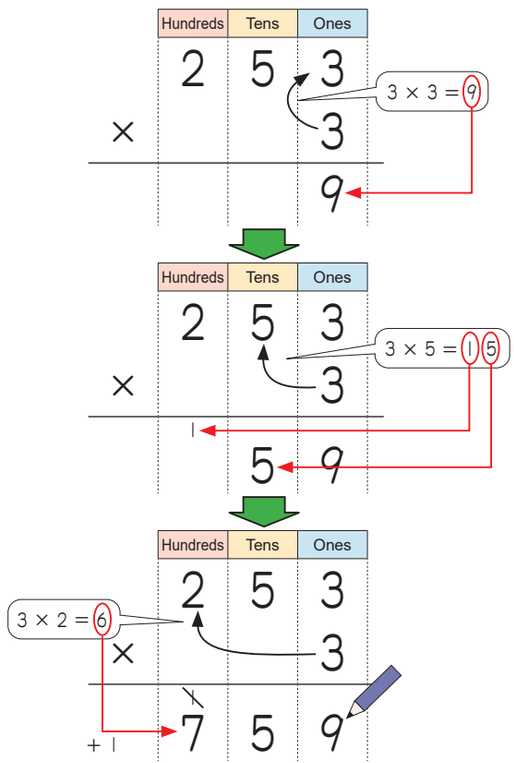
9 332 × 3 **10** 143 × 2 **11** 131 × 2 **12** 213 × 3

5		6		7		8	
9		10		11		12	

10 - 8 Multiplication Algorithm-1

3-Digit Number × 1-Digit Number (2)

Example Calculate 253 × 3 by using the algorithm.



Line up the numbers vertically in each place.

3 times 3 is 9.
(This is actually 3 × 3 = 9.)
Write a 9 in the ones place.

3 times 5 is 15.
(This is actually 50 × 3 = 150.)
Regroup 1 into the hundreds place.
Write a 5 in the tens place.

3 times 2 is 6.
(This is actually 200 × 3 = 600.)
Add the 6 and the 1 that was regrouped. It becomes 7.
Write a 7 in the hundreds place.

253 × 3 = 759

Calculate the following multiplication problems by using the algorithm.

1

	Hundreds	Tens	Ones
	2	6	3
×			3

2

	Hundreds	Tens	Ones
	1	8	1
×			5

3

	Hundreds	Tens	Ones
	4	6	3
×			2

4

	Hundreds	Tens	Ones
	2	3	1
×			4

5 492 × 2 **6** 242 × 4 **7** 172 × 3 **8** 141 × 6

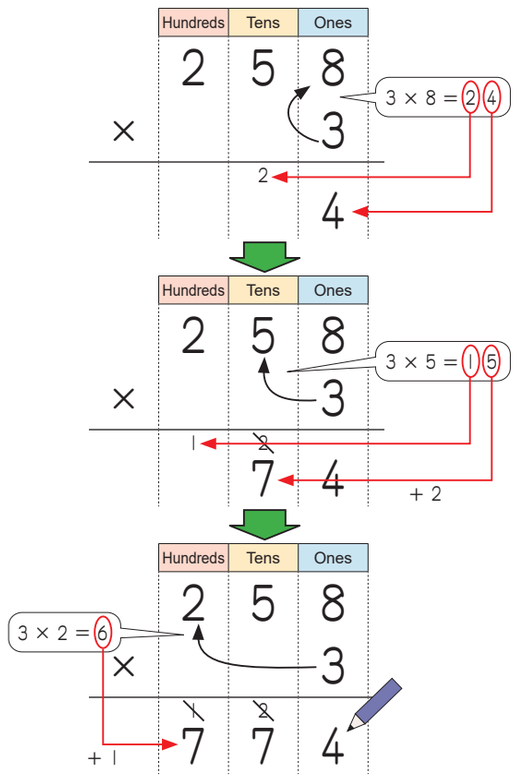
9 364 × 2 **10** 273 × 3 **11** 461 × 2 **12** 392 × 2

5		6		7		8	
9		10		11		12	

10 - 9 Multiplication Algorithm-1

3-Digit Number × 1-Digit Number (3)

Example Calculate 258 × 3 by using the algorithm.



Line up the numbers vertically in each place.
3 times 8 is 24.
Regroup 2 into the tens place.
Write a 4 in the ones place.

3 times 5 is 15.
The regrouped 2 and 5 make 7.
Write a 7 in the tens place.
Regroup 1 into the hundreds place.

3 times 2 is 6.
Add the 6 and the 1 that was regrouped. It becomes 7.
Write a 7 in the hundreds place.

258 × 3 = 774

Calculate the following multiplication problems by using the algorithm.

1

	Hundreds	Tens	Ones
	2	4	8
×			3

2

	Hundreds	Tens	Ones
	1	7	3
×			5

3

	Hundreds	Tens	Ones
	2	6	9
×			3

4

	Hundreds	Tens	Ones
	1	7	8
×			4

5 298 × 2

6 144 × 6

7 153 × 5

8 297 × 3

9 134 × 7

10 234 × 4

11 164 × 6

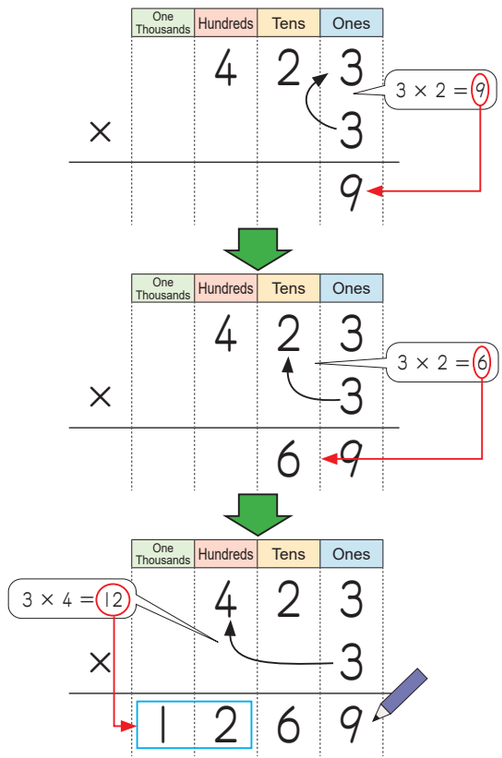
12 289 × 2

5		6		7		8	
9		10		11		12	

10 – 10 Multiplication Algorithm-1

3-Digit Number × 1-Digit Number (4)

Example Calculate 423 × 3 by using the algorithm.



Line up the numbers vertically in each place.

3 times 3 is 9.
Write a 9 in the ones place.

3 times 2 is 6.
Write a 6 in the tens place.

3 times 4 is 12.
Regroup 1 into the one thousands place.
Write a 2 in the hundreds place and a 1 in the one thousands place.

428 × 3 = 1269

Calculate the following multiplication problems by using the algorithm.

1

One Thousands	Hundreds	Tens	Ones
	6	3	1
×			3

2

One Thousands	Hundreds	Tens	Ones
	7	4	3
×			2

3

One Thousands	Hundreds	Tens	Ones
	5	2	3
×			3

4 621 × 4 **5** 814 × 2 **6** 822 × 4 **7** 412 × 4

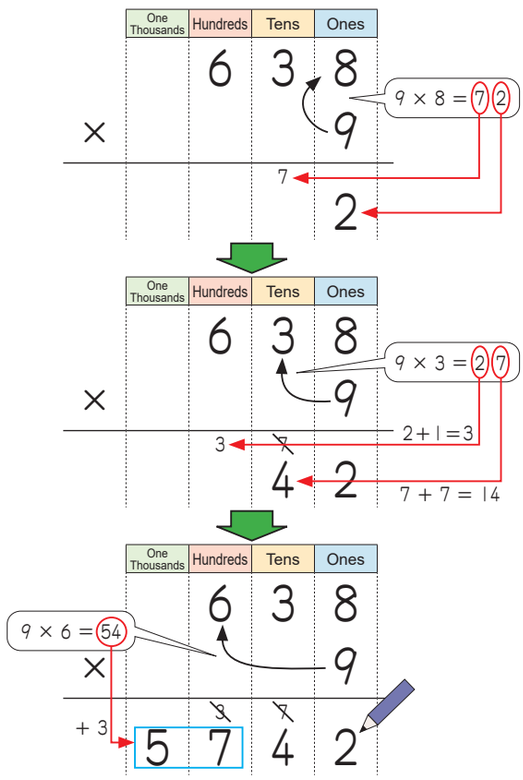
8 711 × 7 **9** 542 × 2 **10** 923 × 3 **11** 723 × 3

4		5		6		7	
8		9		10		11	

10 - 11 Multiplication Algorithm-I

3-Digit Number × I-Digit Number (5)

Example Calculate 638 × 9 by using the algorithm.



Line up the numbers vertically in each place.

9 times 8 is 72.
Write a 2 in the ones place.
Regroup 7 into the tens place.

9 times 3 is 27.
The regrouped 7 and 7 make I4.
Write a 4 in the tens place and regroup I into the hundreds place.
The regrouped I and 2 make 3.
Regroup 3 into the hundreds place.

9 times 6 is 54.
The regrouped 3 and 4 make 7.
Write a 7 in the hundreds place.
Regroup I into the one thousands place.
Write a 2 in the hundreds place and a I in the one thousands place.

638 × 9 = 5742

Calculate the following multiplication problems by using the algorithm.

1

One Thousands	Hundreds	Tens	Ones
	6	2	7
×			8

2

One Thousands	Hundreds	Tens	Ones
	7	5	2
×			7

3

One Thousands	Hundreds	Tens	Ones
	4	6	3
×			8

4 378 × 4 **5** 472 × 7 **6** 237 × 9 **7** 567 × 6

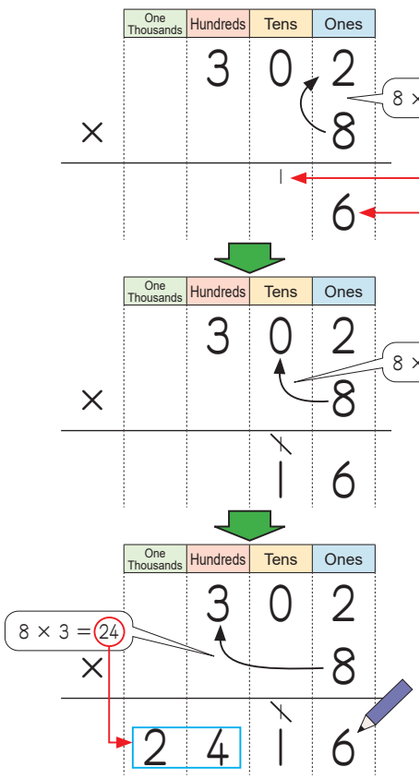
8 763 × 5 **9** 286 × 8 **10** 589 × 4 **11** 346 × 7

4		5		6		7	
8		9		10		11	

10 - 12 Multiplication Algorithm-1

3-Digit Number × 1-Digit Number (6)

Example Calculate 302 × 8 by using the algorithm.



Line up the numbers vertically in each place.

8 times 2 is 16.
Write a 6 in the ones place.
Regroup 1 into the tens place.

8 times 0 is 0.
The regrouped 1 and 0 make 1.
Write a 1 in the tens place.

8 times 3 is 24.
Write a 4 in the hundreds place.
Regroup 2 into the one thousands place.
Write a 2 in the one thousands place.

302 × 8 = 2416

Calculate the following multiplication problems by using the algorithm.

1

One Thousands	Hundreds	Tens	Ones
	4	0	3
×			8

2

One Thousands	Hundreds	Tens	Ones
	6	0	8
×			7

3

One Thousands	Hundreds	Tens	Ones
	7	0	9
×			6

4 207 × 5 **5** 308 × 4 **6** 506 × 9 **7** 807 × 4

8 209 × 8 **9** 908 × 6 **10** 409 × 7 **11** 605 × 8

4		5		6		7	
8		9		10		11	

10 – 13 Multiplication Algorithm-1

Properties of Multiplication

Example Devise a way to calculate the following multiplication problem and then calculate it.

$75 \times 5 \times 2 =$ $75 \times (5 \times 2) = 75 \times 10 = 750$

If you calculate 5×2 first, it becomes 10.
Then it is easier to calculate 75×10.

When you multiply 3 numbers, whether you start by calculating the first 2 numbers or the last 2 numbers, the answer is the same.

Devise a way to calculate the following multiplication problems and then calculate them.

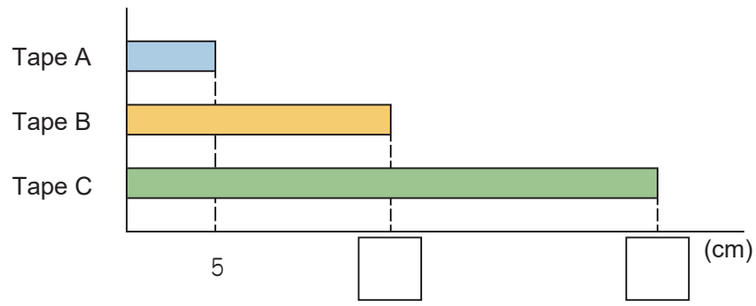
1. $90 \times 3 \times 2 =$
2. $80 \times 3 \times 3 =$
3. $70 \times 4 \times 2 =$
4. $20 \times 3 \times 3 =$
5. $102 \times 2 \times 3 =$
6. $125 \times 2 \times 5 =$
7. $328 \times 5 \times 2 =$

Try to find the easiest way to calculate these! You can calculate the last 2 numbers first, so it is easier to solve.

10 - 14 Multiplication Algorithm-I

Calculation with Times as Much

Example There are 3 tapes. The length of tape A is 5 cm. The length of tape B is 3 times as long as tape A. The length of tape C is 2 times as long as tape B. How long are tapes B and C ?



Calculate the length of tape B.

$5 \times 3 = 15$ Tape B is 15 cm

Calculate the length of tape C.

$15 \times 2 = 30$ Tape C is 30 cm

Answer Tape B [15] cm Tape C [30] cm

1 There are 3 ropes. The length of rope A is 80 cm. The length of rope B is 3 times as long as rope A. The length of rope C is 2 times as long as rope B. How long are ropes B and C?

Answer Rope B [ ] cm Rope C [ ] cm

2 There are 3 boxes with oranges. There are 20 oranges in box A.

A. The number of oranges in box B is 2 times as many as box A.

A. The number of oranges in box C is 3 times as many as box B.

B. How many oranges are there in boxes B and C?

Answer [ ] oranges in box B, [ ] oranges in box C

10 - 15 Multiplication Algorithm-1

Review

1 Calculate these multiplication problems by using the algorithm.

① 41 × 2

	4	1
×		2

② 12 × 3

③ 21 × 2

④ 25 × 3

⑤ 38 × 2

⑥ 16 × 4

⑦ 74 × 2

		7	4
×			2

⑧ 93 × 3

2 Calculate these multiplication problems by using the algorithm.

① 56 × 6

		5	6
×			6

② 39 × 5

③ 69 × 8

④ 78 × 8

⑤ 68 × 3

⑥ 26 × 4

⑦ 36 × 3

⑧ 25 × 4

3 Calculate these multiplication problems by using the algorithm.

① 243 × 2

	2	4	3
×			2

② 261 × 3

③ 231 × 4

④ 142 × 6

⑤ 173 × 5

⑥ 753 × 7

		7	5	3
×				7

⑦ 309 × 8

4 Devise a way to calculate the following multiplication problems and then calculate them.

① 90 × 4 × 2 = ☐

② 60 × 3 × 3 = ☐

③ 253 × 2 × 5 = ☐

④ 87 × 5 × 2 = ☐

5 There are 3 wooden sticks. The length of stick A is 60 cm. The length of stick B is 3 times as long as stick A. The length of stick C is 2 times as long as stick B. How long are sticks B and C?

Answer stick B ☐ cm stick C ☐ cm