Multiplication Methods

Partial Products

You can use place-value to multiply. Find the product for 3 × 14.

What You Show	What You Write
 3 × 10 = 30 3 × 4 = 12 30 + 12 = 42	14 X 3 12 + 30 42 3 X 4 ones 3 X 1 ten

Open Array

You can use an open array to multiply. Find the product for 3 × 14.

	10	+	4
3	(3 x 10) **30**		(3 x 4) **12**

30
+ 12
42

These methods can be applied to multi-digit numbers.

Open Array:

	40	+	2
30	(30 x 40) **1200**		(30 x 2) **60**
+			
1	(1 x 40) **40**		(1 x 2) **2**

1200
60
40
+ 2
1302

Partial Products:

42
X 31
2 (1 x 2)
40 (1 x 40)
60 (30 x 2)
1200 (30 x 40)
1302

Division Methods

Ladder or Forgiving Method

The ladder method allows students to think about division by using factors that are easy for them to work with, such as tens or multiples of tens. Students' work using this method may vary, but they can efficiently get the same answer as the traditional algorithm. Here are two examples:

276	
3) 828	
- 600	200 × 3
228	
- 210	70 × 3
18	
- 18	6 × 3
0	276

3) 828	
-300	100x3
528	
-300	100x3
228	
-150	50x3
78	
-60	20x3
18	
-18	6x3
0	

100+100+50+20+6=276

Column Division

By dividing the problem into place-value columns, you can do a series of smaller division problems to find the answer.

	1	3	6
5)	6	8	3
	- 5	18	33
	1	-15	-30
		3	3

Multiplying Up

You can divide by thinking of the related multiplication fact. For example, 270 ÷ 18 = ? can be thought of as 18 x ? = 270. You can multiply up until you get to 270.

10 x 18 = 180 and 20 x 18 = 360, so the answer is between 10 and 20

5 x 18 = 90

90 + 180 = 270

so 18 x 15 = 270 and 270 ÷ 18 = 15

Here is an array model showing this method:

	18	
10	10 x 18 = 180	180
5	5 x 18 = 90	+90
		270