Powerful Procedures and Strategies for Multiplication– Please note that students may use larger numbers or chunks once they are more confident with their understanding with number. Also, the recording of the numbers is to **explain** how they solved the problem and can look tedious. Many of the steps can be done **mentally** with some keeping track on paper if necessary.

*Multiplication by breaking numbers apart** (using landmarks)

12 x 14
10 x 14 = 140
2 x 14 = 28
140 + 28 = 168

*Multiplying each place, starting with the largest place** (related to the traditional partial product algorithm)

29 x 4	**29 x 12**
20 x 4 = 80	20 x 12 = 240
9 x 4 = 36	9 x 12 = (9 x 10) + (9 x 2) = 90 + 18 = 108
80 + 36 = 116	240 + 108 = 348

*Breaking up one of the numbers into parts that are easier to multiply** (landmarks other than 10's)

29 x 4	**128 x 32**
(25 x 4) + (4 x 4)	(125 x 32) + (3 x 32)
25 x 4 = 100	125 x 32 = (125 x 10) + (125 x 10) + (125 x 10) + (125 x 2)
4 x 4 = 16	= 1250 + 1250 + 1250 + 250 = 4000
100 + 16 = 116	3 x 32 = 96
	96 + 4000 = 4096

*Rounding the numbers up or down, then compensating**

29 x 12	**32 x 96**
29 x 12 = (30 x 12) – (1 x 12)	32 x 96 = (32 x 100) – (32 x 4)
30 x 12 = 360	= 3200 – 128 = 3072
360 – 12 = 348	

It is important that students eventually learn to read all common notations, including both vertical and horizontal notations for addition, subtraction, and multiplication, as well as the various notations for division. However, they need to be secure enough to interpret these notations correctly while still relying on their own mathematically sound procedures to solve problems notated in any of these ways.*

For example:

2 + 4 = 6 **32 – 27 = 5** **5 = 32 - 27**

2	**32**	**12**	**12 x 7 = 84**
+4	**- 27**	**x 7**	
6	**5**	**84**	

24 ÷ 4 = 6 **24/4 = 6** **4)24** (**6**)

*Relearning to Teach Arithmetic, Susan Jo Russell. 1999.
Everett Public Schools, 2005

Area/Array Model

X	20	7
30	600	210
4	80	28

34 x 27 = (600 + 200) + (80 + 10 + 28)
= 800 + 118
= 918

X	tens	ones
tens		
ones		

*Relearning to Teach Arithmetic, Susan Jo Russell. 1999.
Everett Public Schools, 2005