

NBT. 5 Expanded Algorithm

Steps to Success for Expanded Algorithm

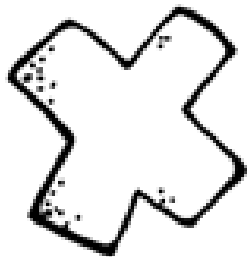
1. Cross out the digits in each place value of the top number and write their values.
2. Cross out the digits in each place value of the bottom number and write their values.
3. Multiply the bottom ones digit by the top ones digit, write the complete number below as a partial product. **"DO NOT CARRY"**
4. Continue the process by multiplying the bottom ones digit by the top value of the tens, hundreds, and thousands. Each time write the complete number below the previous partial product. **"DO NOT CARRY"**
5. Now multiply the value of the bottom tens digit but the top ones digit, write the complete number below as a partial product. **"DO NOT CARRY"**
6. Continue the process by multiplying the bottom value of the tens digit by the top value of the tens, hundreds, and thousands. Each time write the complete number below the previous partial product. **"DO NOT CARRY"**
7. Repeat process if need to multiply the value of the bottom hundreds digit.
8. Add all partial products making sure each are aligned by place value.

$$\begin{array}{r}
 \begin{array}{r}
 \text{300} \\
 \text{70} \\
 \text{2}
 \end{array} \\
 \times \begin{array}{r}
 \text{5} \\
 \text{60} \\
 \text{1}
 \end{array} \\
 \hline
 \text{1500} \\
 \text{4200} \\
 \text{1800} \\
 \hline
 \text{24,180}
 \end{array}$$

= 5 x 2
 = 5 x 70
 = 5 x 300
 = 60 x 2
 = 60 x 70
 = 60 x 300

Solve the multiplication problem under the flap.

$$689 \times 342 =$$



Handwritten multiplication problem and partial products:

$$\begin{array}{r}
 \overset{600}{\cancel{600}} \quad \overset{80}{\cancel{80}} \quad 9 \\
 \times \overset{300}{\cancel{300}} \quad \overset{40}{\cancel{40}} \quad 2 \\
 \hline
 \textcircled{1} \quad \textcircled{2} \quad \textcircled{3} \quad \textcircled{4} \quad \textcircled{5} \quad \textcircled{6} \quad \textcircled{7} \quad \textcircled{8} \\
 \begin{array}{r}
 1 \\
 2 \\
 0 \\
 0 \\
 0 \\
 0 \\
 0 \\
 0
 \end{array}
 \end{array}$$

Partial products (written vertically):

- $2 \times 9 = 18$
- $2 \times 80 = 160$
- $2 \times 600 = 1200$
- $40 \times 9 = 360$
- $40 \times 80 = 3200$
- $40 \times 600 = 24000$
- $300 \times 9 = 2700$
- $300 \times 80 = 24000$
- $300 \times 600 = 180000$

Field Trip Funds

Mrs. White is planning a field trip for the 5th grade students at Sunshine Elementary School. There are 95 students in the 5th grade. The trip costs \$35 per student.

How much money will Mrs. White collect?

expanded

\$3,325

$$\begin{array}{r}
 905 \\
 \times 35 \\
 \hline
 4525 \\
 27150 \\
 \hline
 31675
 \end{array}$$

① 425 = 5 × 85
 ② 2700 = 5 × 540
 ③ 3300 = 30 × 110
 ④ 3300 = 30 × 110

If 87 third graders and 92 fourth graders also come on the trip, how much money will Mrs. White collect? \$35.00/student

expanded

$$\begin{array}{r}
 + 87 \\
 + 92 \\
 \hline
 179 \times \$35
 \end{array}$$

$$\begin{array}{r}
 10070 \\
 \times 19 \\
 \times 305 \\
 \hline
 \end{array}$$

$$\textcircled{1} 45 = 5 \times 9$$

$$350 = 5 \times 70$$

$$500 = 5 \times 100$$

$$\textcircled{1} 270 = 30 \times 9$$

$$2100 = 30 \times 70$$

$$+ 3000 = 30 \times 100$$

$$\$6,265$$

$$+ \$3,325$$

$$\boxed{\$9,590}$$

$$\begin{array}{r}
 66,265 \\
 \hline
 \end{array}$$

Standard

Carry

add
partial
products
multiply

Expanded

Expand
factors

Do NOT
carry

Practice Problem - Expanded Algorithm

①

9	2	→	90		2
x 5	3	→	50		3
<hr/>					
	2	7	0	=	3x2
	1	0	0	=	3x90
			0	=	50x2
+	4	5	0	=	50x90
<hr/>					
	4	8	7	6	

②

5	6	2
x 3	1	5
<hr/>		