Lesson 9

Objective: Multiply three- and four-digit numbers by one-digit numbers applying the standard algorithm.

Fluency Practice

Expanded Form

300 + 40 + 3 = 343

4,000 + 600 + 70 + 9 = 4,679

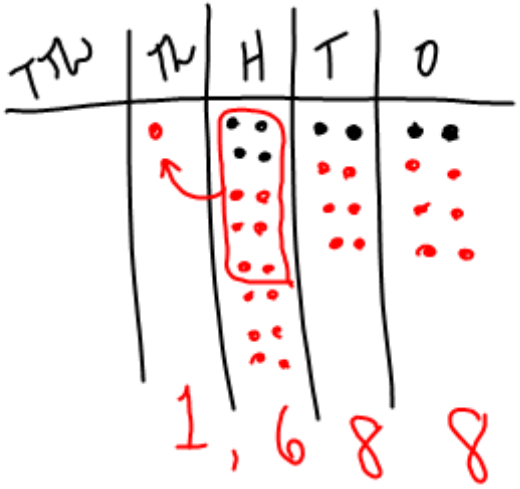
500 + 8 + 20 = 528

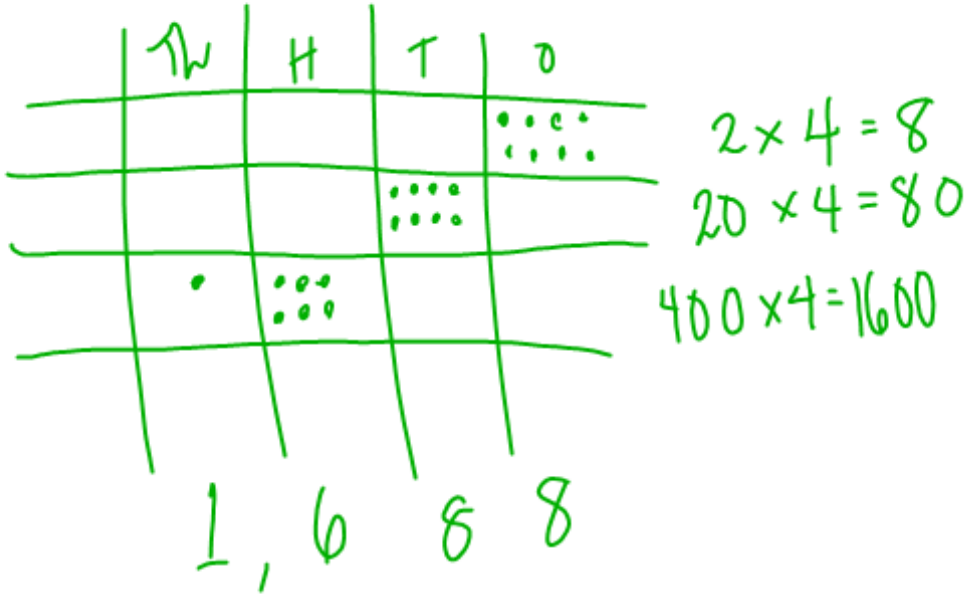
275 = 200 + 70 + 5

4,638 = 4,000 + 600 + 30 + 8

9,705 = 9,000 + 700 + 5

$422 \times 4 = 1,688$





Multiply Mentally

400 x 2 = 800

30 x 2 = 60

2 x 2 = 4

432 × 2 = 864

300 x 3 = 900

10 x 3 = 30

2 x 3 = 6

312 × 3 = 936

200 x 4 = 800

10 x 4 = 40

2 x 4 = 8

212 × 4 = 848

100 x 3 = 300

20 x 3 = 60

4 x 3 = 12

124 × 3 = 372

Multiply Using Disks

1 × 312 = 312

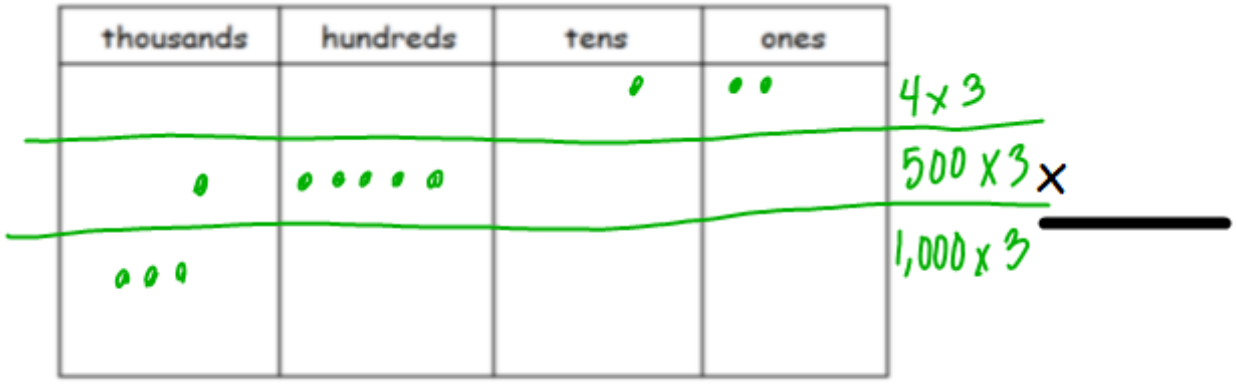
2 × 312 = 624

3 × 312 = 936

2 × 2,154 = 4,308

4 × 212 = 848

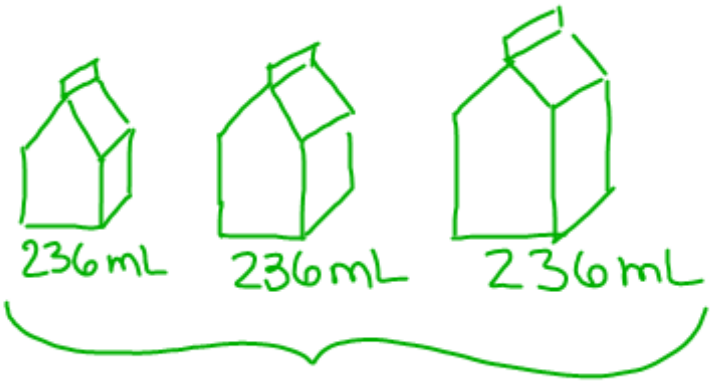
3 × 1,504 = 4,512

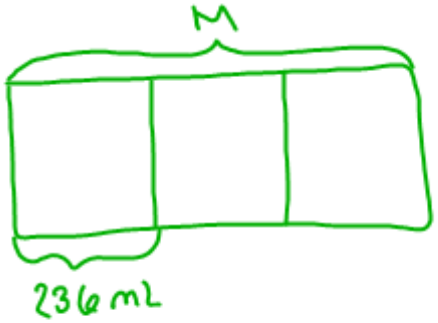


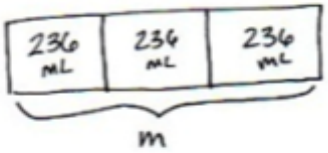
4, 5 1 2

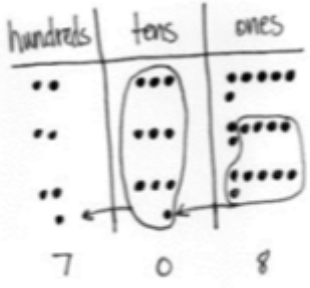
Application Problem

Calculate the total amount of milk in three cartons if each carton contains 236 mL of milk.









There are 708 mL in 3 cartons of milk.

Problem 1: Represent and solve 6 × 162 in the place value chart. Relate the process to solving using the standard algorithm.

Represent 6 × 162 on your place value chart using the repeated addition way.
Work with a partner to solve.
Was it necessary to regroup?

Write the expression 6 × 162 again vertically on your personal white boards. Let's find a faster way to express your answer.

Tell me what happened in the ones column of your place value chart.

Record the number of regrouped tens on the line under the tens column.
Record the number of ones in the ones place.

Tell me what happened in the tens column of your place value chart.

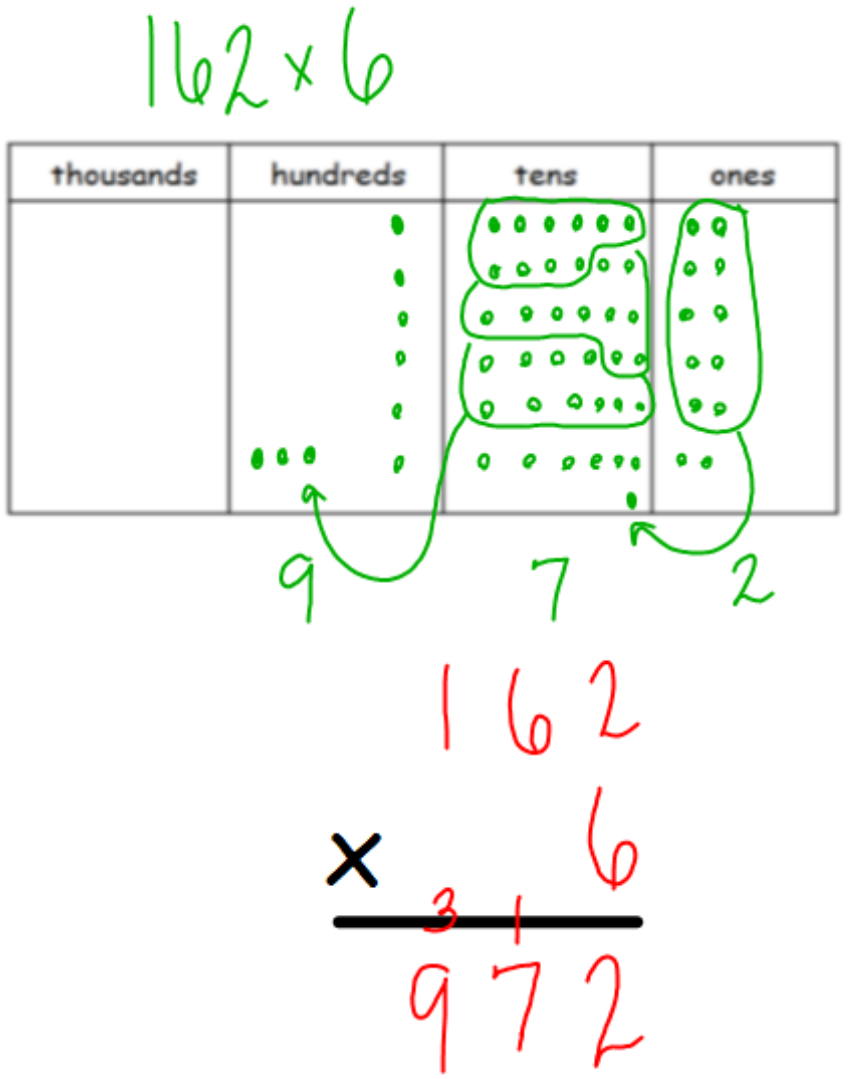
Record the number of hundreds on the line in the hundreds column.

Record the number of tens in the tens place. What about the 1 that was written on the line in the tens place, do I need it anymore?

Cross it out.
Now, let's look at the hundreds. What was the value of the hundreds?

Since there's no need to regroup, write the number of hundreds in the hundreds place. Have we already counted the 3 hundreds we regrouped?

Cross it out. What's the product?



Problem 2: Solve 5 × 237 using the partial products algorithm. Then solve using the standard algorithm and relate the two methods to each other.

Write the expression 5 × 237 vertically on your board. Draw and solve using partial products.

Now, let's solve using the standard algorithm. Starting in the ones column, what do we do?

Partial Products

237

× 5

35 7 x 5

150 30 x 5

+ 1000 200 x 5

1,185

Standard Algorithm

237

× 5

1 3

1,185

6×716

Partial Products

716

× 6

36 = 6 × 6

60 = 10 × 6

+ 4200 = 700 × 6

4,296

Standard Algorithm

716

× 6

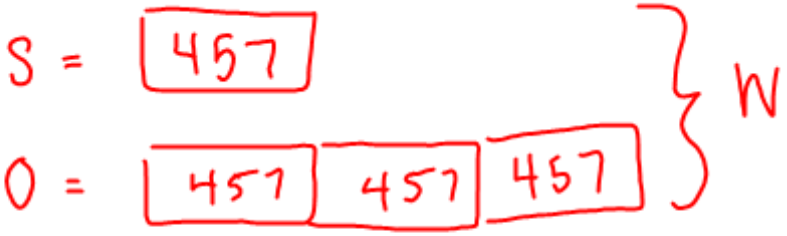
3

4,296

Problem 3: Multiply three- and four-digit numbers by one-digit numbers applying the standard algorithm.

Shane measured 457 mL of water in a beaker. Olga measured 3 times as much water.
How much water did they measure altogether?

Draw a tape diagram and discuss with a partner how you would solve this problem.



457
x 4
2 2
1,828 mL

Name _____ Date _____

1. Solve using each method.

Partial Products	Standard Algorithm
a. 34 × 4 16 120 136	34 × 4 136

Partial Products	Standard Algorithm
b. 224 × 3 12 60 +600 672	224 × 3 672

2. Solve. Use the standard algorithm.

a. 251 × 3 = 753	b. 135 × 6 = 810	c. 304 × 9 = 2,736
d. 405 × 4 = 1,620	e. 316 × 5 = 1,580	f. 392 × 6 = 2,352

3. The product of 7 and 86 is 602.

$$\begin{array}{r} 86 \\ \times\ 7 \\ \hline 602 \end{array}$$

4. 9 times as many as 457 is 4,113.

$$\begin{array}{r} 457 \\ \times\ 9 \\ \hline 4{,}113 \end{array}$$

5. Jashawn wants to make 5 airplane propellers. He needs 18 centimeters of wood for each propeller. How many centimeters of wood will he use?

$$\begin{array}{r} 18 \\ \times\ 5 \\ \hline 90 \text{ cm} \end{array}$$

6. One game system costs $238. How much will 4 game systems cost?

238	238	238	238

$$\begin{array}{r} 238 \\ \times \quad 4 \\ \hline \$952 \end{array}$$

7. A small bag of chips weighs 48 grams. A large bag of chips weighs three times as much as the small bag. How much will 7 large bags of chips weigh?

S | 48 |

L | 48 | 48 | 48 |

$$\begin{array}{r} 48 \\ \times \quad 3 \\ \hline 144 \text{ g} \end{array}$$

$$\begin{array}{r} 144 \\ \times \quad 7 \\ \hline 1{,}008 \text{ grams} \end{array}$$

Lesson 9 Homework

Name _____ Date _____

1. Solve using each method.

Partial Products	Standard Algorithm
a. 4 6 × 2	4 6 × 2

Partial Products	Standard Algorithm
b. 3 1 5 × 4	3 1 5 × 4

2. Solve using the standard algorithm.

a. $\begin{array}{r} 232 \\ \times \quad 4 \\ \hline \end{array}$	b. $\begin{array}{r} 142 \\ \times \quad 6 \\ \hline \end{array}$	c. $\begin{array}{r} 314 \\ \times \quad 7 \\ \hline \end{array}$
d. $\begin{array}{r} 440 \\ \times \quad 3 \\ \hline \end{array}$	e. $\begin{array}{r} 507 \\ \times \quad 8 \\ \hline \end{array}$	f. $\begin{array}{r} 384 \\ \times \quad 9 \\ \hline \end{array}$

3. What is the product of 8 and 54?

4. Isabel earned 350 points while she was playing Blasting Robot. Isabel's mom earned 3 times as many points as Isabel. How many points did Isabel's mom earn?

5. To get enough money to go to on a field trip, every student in a club has to raise $53 by selling chocolate bars. There are 9 students in the club. How much money does the club need to raise to go on the field trip?

6. Mr. Meyers wants to order 4 tablets for his classroom. Each tablet costs $329. How much will all four tablets cost?

7. Amaya read 64 pages last week. Amaya's older brother, Rogelio, read twice as many pages in the same amount of time. Their big sister, Elianna, is in high school and read 4 times as many pages as Rogelio did. How many pages did Elianna read last week?