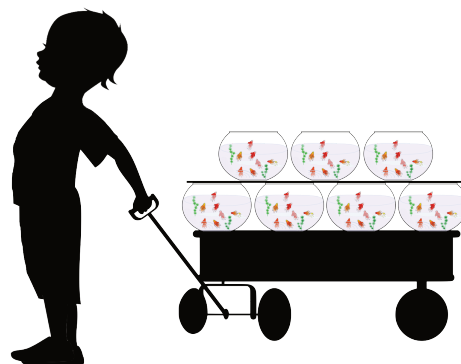


Lesson 5: Multiplication of Multi-digit Numbers

- Let's multiply multi-digit numbers.

Warm-up: Estimation Exploration: A Silly Riddle

- Seven teachers are going to the park.
- Each teacher is taking 7 students.
- Each student is bringing 7 fishbowls.
- Each fishbowl has 7 fish.



How many are going to the park?

Record an estimate that is:

too low	about right	too high

5.1: Two Methods Revisited

1. Earlier in the course, we used these two ways to multiply numbers:

A

$$\begin{array}{r}
 416 \\
 \times 2 \\
 \hline
 832 \\
 + 800 \\
 \hline
 832
 \end{array}$$

B

$$\begin{array}{r}
 1 \\
 416 \\
 \times 2 \\
 \hline
 832
 \end{array}$$

a. In method A, where do the 12, 20, and 800 come from?

b. In method B, where does the 1 above 416 come from?

2. Diego used both methods to find the value of 215×3 but ended up with very different results.

$$\begin{array}{r}
 215 \\
 \times 3 \\
 \hline
 645 \\
 + 600 \\
 \hline
 645
 \end{array}$$

$$\begin{array}{r}
 215 \\
 \times 3 \\
 \hline
 6,315
 \end{array}$$

a. Without calculating anything, can you tell which method shows the correct product? How do you know the other one is not correct?

b. For the incorrect result, explain what was correct and what was incorrect in his steps. Then, show the correct calculation using method B.

3. Use either way to find the value of each product. Show your reasoning.

a. 521×3

b. $6,121 \times 4$

c. 305×9

5.2: Two by Two

Here are two ways to find the value of 34×21 .

A

$$\begin{array}{r}
 34 \\
 \times 21 \\
 \hline
 4 \\
 30 \\
 80 \\
 + 600 \\
 \hline
 714
 \end{array}$$

B

$$\begin{array}{r}
 34 \\
 \times 21 \\
 \hline
 1 \\
 34 \\
 + 680 \\
 \hline
 714
 \end{array}$$

1. In method A, where do the 4, 30, 80, and 600 come from?

2. In method B, which two numbers are multiplied to get:

a. 34?

b. 680?

3. Use the two methods to show that each equation is true.

a. $44 \times 12 = 528$

$$\begin{array}{r}
 44 \\
 \times 12 \\
 \hline
 \\
 \\
 \\
 + \\
 \hline
 528
 \end{array}$$

$$\begin{array}{r}
 44 \\
 \times 12 \\
 \hline
 \\
 + \\
 \hline
 528
 \end{array}$$

b. $63 \times 21 = 1,323$

$$\begin{array}{r}
 63 \\
 \times 21 \\
 \hline
 \\
 \\
 \\
 + \\
 \hline
 1,323
 \end{array}$$

$$\begin{array}{r}
 63 \\
 \times 21 \\
 \hline
 \\
 + \\
 \hline
 1,323
 \end{array}$$