## 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
* B
	1. In method A, where do the 12, 20, and 800 come from?
	2. In method B, where does the 1 above 416 come from?
1. Diego used both methods to find the value of $215×3$ but ended up with very different results.
* 
* 
	1. Without calculating anything, can you tell which method shows the correct product? How do you know the other one is not correct?
	2. For the incorrect result, explain what was correct and what was incorrect in his steps. Then, show the correct calculation using method B.
1. Use either way to find the value of each product. Show your reasoning.
	1. $521×3$
	2. $6,​121×4$
	3. $305×9$

### 5.2: Two by Two

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

A

B

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:
	1. 34?
	2. 680?
3. Use the two methods to show that each equation is true.
* a. $44×12=528$
* b. $63×21=1,​323$



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