## Unit 3 Lesson 18: Using Long Division

### 1 Using Base-Ten Diagrams to Calculate Quotients (Warm up)

#### Student Task Statement

Elena used base-ten diagrams to find $372÷3$. She started by representing 372.



She made 3 groups, each with 1 hundred. Then, she put the tens and ones in each of the 3 groups. Here is her diagram for $372÷3$.



Discuss with a partner:

* Elena’s diagram for 372 has 7 tens. The one for $372÷3$ has only 6 tens. Why?
* Where did the extra ones (small squares) come from?

### 2 Using the Partial Quotients Method to Calculate Quotients

#### Images for Launch



#### Student Task Statement

1. Andre calculated $657÷3$ using a method that was different from Elena’s.
* 
	1. Andre subtracted 600 from 657. What does the 600 represent?
	2. Andre wrote 10 above the 200, and then subtracted 30 from 57. How is the 30 related to the 10?
	3. What do the numbers 200, 10, and 9 represent?
	4. What is the meaning of the 0 at the bottom of Andre’s work?
1. How might Andre calculate $896÷4$? Explain or show your reasoning.

### 3 Lin Uses Long Division

#### Student Task Statement

Lin has a method of calculating quotients that is different from Elena’s method and Andre’s method. Here is how she found the quotient of $657÷3$:



1. Discuss with your partner how Lin’s method is similar to and different from drawing base-ten diagrams or using the partial quotients method.
	* Lin subtracted $3⋅2,$ then $3⋅1$, and lastly $3⋅9$. Earlier, Andre subtracted $3⋅200,$ then $3⋅10$, and lastly $3⋅9$. Why did they have the same quotient?
	* In the third step, why do you think Lin wrote the 7 next to the remainder of 2 rather than adding 7 and 2 to get 9?
2. Lin’s method is called **long division**. Use this method to find the following quotients. Check your answer by multiplying it by the divisor.
	1. $846÷3$
	2. $1,​816÷4$
	3. $768÷12$

#### Activity Synthesis



### 4 Dividing Whole Numbers (Optional)

#### Student Task Statement

1. Find each quotient.
	1. $633÷3$
	2. $1001÷7$
	3. $2996÷14$
2. Here is Priya’s calculation of $906÷3$.
* 
	1. Priya wrote 320 for the value of $906÷3$. Check her answer by multiplying it by 3. What product do you get and what does it tell you about Priya’s answer?
	2. Describe Priya’s mistake, then show the correct calculation and answer.



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