

Math Activity: Multiplying by 10

Object of the activity: We often hear students say, “When you multiply by ten, you just put a zero at the end of the number, and when you multiply by one hundred, you put two zeros at the end of the number.” What does this mean? How does it work? Keep these questions in mind as you explore this set of problems.

1. Create a representation for each of these multiplications, using a base-ten model. If you have time, create a different kind of representation. Examine your representations to answer this question: How do you explain the relationship between the digits in the problem and the result of the multiplication?
(a) 23×1 (b) 23×10 (c) 23×100 (d) $23 \times 1,000$ (e) $23 \times 10,000$
2. I have a collection of 462 monetary objects.
 - (a) If these objects are pennies, how much is the collection worth? How many dimes worth of coins is this? How many dollars worth?
 - (b) If these objects are dimes, how much is the collection worth? How many pennies worth is this? How many dollars worth?
 - (c) If these objects are dollar bills, how much is the collection worth? How many pennies worth is this? How many dimes worth?
3. Consider the number 43,678. How many tens are in this number? How many hundreds? How many thousands? How many ten-thousands? What connections are you noticing between this arithmetic and the way large numbers are read?
4. Explain what happens when you multiply a number such as 43,678 by 10 and why it works that way. Use representations such as base-ten models, story contexts, and arrays to develop your explanations. What connections can you make between the representations you made and arithmetic methods for calculating $43,678 \times 10$?