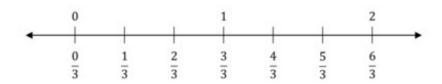


## 7.NS, 8.NS Repeating or Terminating?

## **Task**

Tiffany said,

*I know that 3 thirds equals 1 so*  $\frac{1}{3} + \frac{1}{3} + \frac{1}{3} = 1$ .



I also know that  $\frac{1}{3}=0.333\ldots$  where the 3's go on forever. But if I add them up as decimals, I get  $0.999\ldots$ 

$$0.333...$$
 $0.333...$ 
 $+0.333...$ 
 $0.999...$ 

I just added up the tenths, then the hundredths, then the thousands, and so on. What went wrong?

a. Write  $0.999\ldots$  in the form of a fraction  $\frac{a}{b}$  where a and b are whole numbers. Are Tiffany's calculations consistent with what you find? Explain.

b. Use Tiffany's idea of adding decimals to write  $\frac{1}{3} + \frac{1}{6}$  as a repeating decimal. Can this



## also be written as a terminating decimal?



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