

NAME _____ DATE _____

**EXTENSION QUESTIONS FOR TEACHERS
(ACTUALLY CAME FROM GRADE 7-9 STUDENTS)**

1. A student asked "I am doing long division to convert a fraction to a decimal and I don't know how far I need to go. What is the maximum number of decimal places that I need to check before I know for sure that the decimal representation of a fraction will either repeat or terminate?" Your response/explanation to this question?

2. *A student says, "We learned that even number + even number = even number. Is it true that $R + R = R$? Or is it true that $T + T = T$? How do we know for sure?" Your response?

3. Let "R" stands for "Repeating" decimal. Let T stand for "Terminating" decimal.
 - a) What can you say about the nature of $R+T$? Repeating or Terminating? Can you show/prove it?

 - b) What can you say about the nature of R/T (division)? Repeating or Terminating? Can you show/prove it?

 - c) What can you say about the nature of T/R (division)? Repeating or Terminating? Can you show/prove it?

*Students here refer to the concept of *closure*. For example, "closure" means that when 2 elements of a set interact under a given operation, the result is a member of the original set. The student's example is a good one: the set of even numbers is closed under addition because when you add two even numbers - the result is also an even number. But the set of positive integers is not closed under subtraction because sometimes when we subtract two positive numbers we get a negative number as a result ($3 - 5 = -2$).