

## Math Elem Ed Exam 2

**Do the problems in order in your bluebook. Show all your work. Guessing followed by checking is not worth any points.**

1. Show that  $1.761\overline{761}$  is rational by expressing it as an appropriate fraction.
2. Solve  $|3 - x| = 5$ .
3. For what values of the digit  $a$ , is the number  $75234a7141924$  divisible by three ?
4. Using the Euclidean algorithm, find the g.c.d of 684 and 1944
5. If you allow modulo 12, then is it possible to have  $a \cdot b = 0$  with  $a \neq 0$  and  $b \neq 0$  ?
6. In a cost cutting measure, MicroEvil laid off  $1/5$  of its employees. If 3616 employees are left, then how many were there before the layoff ?
7. Explain how you can quickly determine, using mental mathematics, a fifteen percent tip. Do *not* use an example.
8. Due to an accounting error, Professor Lew Zer recently had his salary lowered by 10%. The department chair agreed to make it up to him by giving him a 10% raise. How should Lew feel about this solution ?
9. Explain how you can use mental mathematics to decide whether or not  $42\frac{5}{11}$  divided by  $6\frac{1}{11}$  is greater than or less than 7 ?
10. What model would you use to explain to a hungry student how to compare  $\frac{1}{5}$  with  $\frac{1}{8}$  ?