



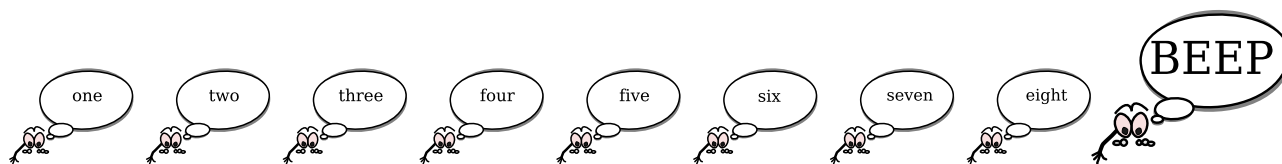
Problem of the Week

Problem C

Wait for the Beep

The game *Beep* is played by a group of people counting up through the positive integers starting at 1. The first person says “one”, the second “two”, and so on. However, every time a multiple of 9, or a number containing the digit 9 is encountered, to avoid losing, the person must say “beep” instead of stating the number. For example, one part of the game would sound like this: “twelve”, “thirteen”, “fourteen”, “fifteen”, “sixteen”, “seventeen”, “beep”, “beep”, “twenty”. “Eighteen” is replaced by “beep”, since it is a multiple of 9, and “nineteen” is replaced by “beep”, since it contains the digit 9.

If a group successfully makes it to 200, how many times has “beep” been said?



Did you know that a number is divisible by 9 exactly when the sum of its digits is divisible by 9? For example, the number 214578 is divisible by 9 since $2 + 1 + 4 + 5 + 7 + 8 = 27$, which is divisible by 9. In fact, $214578 = 9 \times 23842$.

