

## SMC Department of Mathematics

### Problem of the Week

**Lucky Number:** In a far away galaxy in a special little solar system on the ninth planet from the sun live humanoids that also use a base ten numeral system. On this planet, the inhabitants have a very lucky number which is the least positive multiple of nine such that each digit is even and each digit is a unique (different) digit. Find this very lucky number.

**Solution:** We had many correct submissions this week. The answer is  $9 * 52 = 468$ . One method to determine this is to write down the multiples of nine, and look for the smallest number satisfying the given conditions. This could take quite a while, so let's narrow down the possibilities.

Each digit is even, so our choices are 2, 4, 6 or 8. Each digit is also different. This implies the first digit must be 2 or 4 and the last is 6 or 8. There are only four numbers with this property: 246, 248, 268, and 468. The only one which is divisible by 9 is 468.