

### Dr. Z.'s Number Theory Homework assignment 12

1. Using divisibility tests, determine which of the following integers (written in the usual, base 10, way) is divisible by (i) 9 (ii) 11 (iii) 7.

a. 6844430439

b. 178888708386

c. 1391356620

2. Using divisibility tests determine which of the following integers are divisible by 99 (i.e. by **both** 9 and 11)

a. 976865076

b. 976865076

c. 171928253381

3. Using divisibility tests determine which of the following integers, written in base 7 are divisible (i) by 6 (ii) 11 (base 7) (alias 8 base 10)

a. 316653313

b. 35145

c. 610040033223

4. Using the Perpetual calendar algorithm, find out on what day of the week

(i) were you born?

(ii) you will turn 60-years-old

(iii) turn 200-years-old

5. Using the Perpetual calendar algorithm, find out on what day of the week

(i) was your mother born?

(ii) was your father born?

(iii) for each brother and sister find out the day of the week that they were born.