Quantitative Reasoning 28:
The Magic of Numbers

Homework 17

Assigned on Friday, November 2
Due at 12 noon, Monday, November 5

Please submit problem sets at the end of the relevant lecture, or leave in the box labeled QR28 outside the Math Department's main office, on the third floor of the Science Center (Room 325).

Reading:

Gross-Harris, Chapter 16 and 17

Problems:

Please explain your reasoning and show your work.

1. Do the following computations in the given modulus.

   (a) $6 - 4$ (mod 7).
   (b) $80 + 21$ (mod 101).
   (c) $3 - 12$ (mod 15).
   (d) 456×450 (mod 457).

2. Do the following computations in the given modulus.

   (a) 457×458 (mod 459).
   (b) 13×44 (mod 5).
   (c) 13×44 (mod 15).

   (Can you explain what is going on here?)

3. Use the Euclidean algorithm to compute the following.

   (a) $1/13$ (mod 97).
   (b) $1/73$ (mod 17).