Quantitative Reasoning 28:
The Magic of Numbers

Homework 14

Assigned on Friday October 24th
Due at 12 noon Monday October 27th

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 11

Problems:

Please explain your reasoning and show your work.

1. (a) Is $\binom{19}{7}$ divisible by 10?

   (b) Is $\binom{19}{7}$ divisible by 6?

2. Find the GCD of 18000 and 10935 by factoring these numbers.

   (Don't use the Euclidean Algorithm.)

3. Let $a = 2^3 \times 3^4 \times 11^2$ and $b = 2^2 \times 3^2 \times 5$.

   (a) Compute $\gcd(a, b)$.

   (b) Compute $\mathrm{lcm}(a, b)$.

   Hint: Don't multiply out a and b, and don't use the Euclidean Algorithm.