

Quantitative Reasoning 28: The Magic of Numbers

Homework 12

Assigned on March 9
Due at 5:00 p.m. March 11

Please submit problem sets to the boxes outside the Math Department's main office, on the third floor of the Science Center (Room 325).

Reading:

Gross-Harris, Chapter 10

Problems:

Please explain your reasoning and show your work.

1. Determine if each of the following numbers is prime or composite. Remember, you only need to check for factors up to the square root of the number.
 - (a) 681;
 - (b) 739;
 - (c) 729;
 - (d) 683.
2. Which of the numbers between 300 and 325 are prime? (Hint: you can test them simultaneously using the Sieve of Eratosthenes.)
3. Two prime numbers that differ by 2 are called "twin primes." Use the Sieve of Eratosthenes to find a pair of twin primes greater than 200. (Note: As mentioned in lecture, a famous unsolved problem in mathematics is whether or not there are infinitely many pairs of twin primes.)