



Math Olympiad and Problem Solving Programs
E210 - Introductory Math Competitions
Problem Set 3.1 - Primes

Name:

Date:

1. 2011 is .
2. $2 = 2, 2 + 3 = 5, 2 + 3 + 5 + 7 = 17, 2 + 3 + 5 + 7 + 11 + 13 = 41$. There are numbers in this list that are prime.
3. Since all two digit primes are odd, if we want $digit - digit = even$, we need the two digits to be odd. So we do not check primes that are in the 20's or 40's. We count the numbers in the 10's and 30's: 11, 13, 17, 19, 31, 37. There are .
4.
5.
6.
7. When we count positive divisors, we do not count repeat divisors. The prime factorization of 2009 is $7 \times 7 \times 41$. There are three primes, but 7 is repeated. So there are only prime divisors.
8.
9. $113 - 13 = 100, 113 + 13 = 126$.
10. $3^{11} + 5^{13} = odd + odd = even$. Since 2 divides all even numbers, the smallest prime divisor of $3^{11} + 5^{13}$ is 2.