

Name:

Math Olympiad Exploring! – Problem Due: – April 1, 2004

The Even Number World

Imagine you have entered a new world where the only numbers are even numbers: the “Even Number World”.

1: If we add two even numbers, we get another even number, so we are allowed to do this in the Even Number world. What about subtraction, multiplication, and division? Which will always give us another even number?

Recall that a number is prime if can only be divided by itself and 1. In the Even Number World, 1 does not exist, but all numbers can be divided by two, so we will say a number is an “E-prime” if the only **even** numbers it can be divided by are itself and 2.

For example, 10 is an E-prime, because the only even numbers it can be divided by are 2 and 10. However, 12 is not an E-prime, because it can be divided by 4 and 6.

2: Which of the following are E-primes:

(a) 6

(b) 8

(a) 28

(a) 30

3: Try to find a few more E-primes. What do all E-primes have in common?