

First name: _____ Last name: _____

Student ID: _____

Number Theory Homework**Basic problems****1. Find the greatest common factor and least common multiple. Show steps.**

<i>Numbers</i>	<i>Steps</i>	<i>Answers</i>
a) 30, 35, 63		$GCF =$ $LCM =$
b) 12, 24, 30		$GCF =$ $LCM =$
c) 96, 72, 120		$GCF =$ $LCM =$

2. Prime factorize of each number and write them in exponential form.

a) $484 =$	b) $900 =$	c) $725 =$
d) $10^{10} =$	e) $1326 =$	f) $999 =$

5. How many perfect squares are there between -100 and 100 ?

6. The product of three different positive integers is 72 . What is the smallest possible sum of these integers?

7. How many natural numbers n have such a property that out of all of its the positive factors, the greatest factor is 15 times the smallest factor (Outside of 1 and n itself)?

8. How many natural numbers n have the property that the remainder of dividing 2003 by n is 23 ?

9. In a number with at least two digits, the last digit was deleted. The resulting number was n times smaller than the previous one. What is the greatest possible value of n ?

10. How many different combinations of pennies, nickels, dimes, and quarters use 48 coins to total \$1? Note that we do not need to use all four types of coins.

11. Five students wrote a quiz with a maximum score of 50. Four of scores were 42, 43, 46, and 49. The score of the fifth student was N . The average of the five scores turned out to be the same as the its median. How many values of N are there?

12. A two-digit number is divisible by 8, 12, and 18. The number is between:

- A) 10 and 19 B) 20 and 39 C) 40 and 59 D) 60 and 79 E) 80 and 99