Name: _____

Math 221: Final Worksheet 2

Instructions: Complete this as review for the Test 2 material. It is not a standalone review, so be sure to also review old tests, quizzes, homework, etc, as well as the final theory review sheet.

1. Determine which model is being described in each problem. Match the question to the given choices below.

_____ 1. Shawn worked a 24 hour shift and then worked another 12 hours immediately thereafter. How many hours did he work?

_____ 2. Alan watched 8 hours of TV, and David watched 5 hours of TV. How much more TV did Alan watch than David?

_____ 3. Sharon has 3 cats and 2 birds. How many animals does she have altogether?

_____ 4. Tina had a bookshelf with 50 books on it, but one of her mischievous catss knocked one off. How many books are left on the bookshelf?

_____ 5. A poster on the wall of the Russell house is 3 feet by 5 feet. How much area on the wall does it cover?

_____ 6. Sarah went to the Chinese restaurant with $7 and ordered way more food than she could actually eat, costing $12. How much more money does she need to borrow from her mom to pay for her Chinese food?

_____ 7. For the pen pal party, we will had 200 slices of pizza. If we planned to give 2 slices to each person, how many people were we able to serve?

_____ 8. If Danny has 12 different colored socks and 4 different white socks to choose from, how many ways can he put on black socks on his left food and white socks on his right foot?

_____ 9. Michael drove the 1000 mile drive to Texas to see his grandparents in 2 days. If he drove 600 miles in the second day, how many miles did he drive on the first day?

_____ 10. Travis wrote a program that took 5 hours to run. If the computer did 1 billion calculations per hour, how many calculations did Travis make the computer do?

_____ 11. A marching band is neatly lined up in 10 rows of 4. How many people are in the marching band?

_____ 12. bought a bag of Easter candy for her kindergarten class. If the bag of candy has 75 pieces of candy in it and she has 25 students, how many pieces of candy does each student get?

_____ 13. A loaf of bread has 20 slices. If Holly bought 3 loaves of bread, how many slices of bread did he have?

i. Set Model
ii. Number Line Addition
iii. Take Away
iv. Missing Addition
v. Comparison
vi. Number Line Subtraction
vii. Repeated Addition
viii. Number Line Multiplication
ix. Array
x. Area
xi. Cartesian Product
xii. Partition
xiii. Measurement

2. Use the lattice algorithm to calculate $42_{\text{five}} \times 31_{\text{five}}$.

3. Use the specified algorithm to solve the given problem. Show your work here. **All numbers are base 5.**

(a) Long Division (with remainder)

$$3 \overline{)\, 4\,4\,0\,1}$$

(b) Standard Algorithm

$$\begin{array}{r} 1\,4 \\ \times\, 3\,4 \\ \hline \end{array}$$

(c) Standard Algorithm

$$\begin{array}{r} 1\,1\,4\,2 \\ +\,1\,3\,4\,3 \\ \hline \end{array}$$

(d) Lattice Algorithm

$$\begin{array}{r} 2\,0\,3\,2 \\ +\,1\,3\,4\,2 \\ \hline \end{array}$$

(e) Standard Algorithm

$$\begin{array}{r} 2011 \\ -1112 \\ \hline \end{array}$$

(f) Long Division (with remainder)

$$23\overline{)1422}$$

(g) Equal Additions

$$\begin{array}{r} 2011 \\ -1112 \\ \hline \end{array}$$

4. Determine whether 2, 3, 4, 5, 6, 7, 8, 9, 10, and 11 divide 5280. Briefly justify each one.

5. Determine if the following numbers are prime or composite. You do not have to justify your divisibility tests, but write down what you check. Circle your answer.

   (a) 161 $\left(\sqrt{161} \approx 12.69\right)$

   (b) 163 $\left(\sqrt{163} \approx 12.77\right)$

6. Find the greatest common divisor of the following numbers using the indicated method.

   (a) 70 and 42 (Prime Factorization)

   (b) 96 and 108 (Intersection of Sets)

7. Find the least common multiple of the following numbers using the indicated method.

   (a) 60 and 25 (Prime Factorization)

   (b) 36 and 30 (Intersection of Sets)

8. Determine if the following statements are true or false. If it is true, then explain why, and if it is false, give a specific example that shows why.

   (a) $\mathbb{Z}$ has the commutative property with multiplication.

   (b) $\mathbb{N}$ has the identity property with addition.

   (c) $\mathbb{W}$ has the zero product property.

9. KJ runs the Sieve of Eratosthenes to find all the prime numbers up to 200. He first crosses out the 1 since he knows that it is neither prime nor composite. Next, he circles the 2 then crosses out all multiples of 2, then circles the 3 and crosses out all remaining multiples of 3, and does the same for 5, 7, and 11. He then circles all of the remaining numbers and claims that they are all prime. Is the student correct? How would you respond to this student?

10. Jackie is working on finding the least common multiple of 6 and 9 and writes out some very long lists. She notices that the least common multiple is 18, but that the other common multiples are 36, 54, 72, and 90. She also notices that 36, 54, 72, and 90 are all multiples of 18. Jackie asks you if the common multiples of two numbers are always a multiple of the least common multiple. How would you respond to this student?