

Name: Key

Math 221: Quiz 7 - 6/13/14

Solve the following problems. Please use a pencil if possible.

1. Use long division to calculate $2014_{\text{five}} \div 13_{\text{five}}$. [25 Points]

$$\begin{array}{r} \boxed{112_{\text{five}} R 3_{\text{five}}} \\ 13 \overline{) 2014} \\ \underline{-13} \\ 21 \\ \underline{-13} \\ 34 \\ \underline{-31} \\ 3 \end{array}$$

2. Determine which of the numbers 2, 3, 4, 5, 6, 7, 8, 9, 10, and 11 divide the number 24750 using divisibility tests. Briefly explain each number. [50 Points]

② $2|0$, so $2|24750$

③ $2+4+7+5+0=18$

$3|18$, so $3|24750$

④ $4 \nmid 50$, so $4 \nmid 24750$

⑤ ends in 0, so $5|24750$

⑥ $2, 3|24750$, so $6|24750$

$\boxed{2, 3, 5, 6, 9, 10, 11}$

⑦ $2475 - 2 \cdot 0 = 2475$

$247 - 2 \cdot 0 = 237$

$23 - 2 \cdot 7 = 9$

$7 \nmid 9$, so $7 \nmid 24750$

⑧ $4 \nmid 24750$, so $8 \nmid 24750$

⑨ $9 \nmid 18$, so $9 \nmid 24750$

⑩ ends in 0, so $10|24750$

⑪ $2-4+7-5+0=0$

$11|0$, so $11|24750$

3. Determine if the number 143 is prime or composite. Show each of the values that you check, but you do not have to show divisibility tests. (Hint: The square root of 143 is about 11.96.) [25 Points]

$143 = 11 \cdot 13$

$\boxed{\text{composite}}$