Math 200 - Quiz 10

November 24, 2010

Name key

Score _____

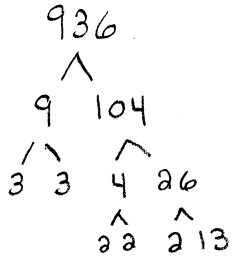
Show all work to receive full credit. Supply explanations when necessary.

1. (1 point) What does it mean for a positive integer to be prime?

A positive integer is prime if it has exactly two distinct positive integer factors.

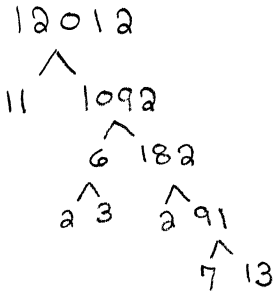
2. (2 points) Find the prime factorization of each number.

(a) 936



$936 = 2^3 \cdot 3^2 \cdot 13$

(b) 12012



$12012 = 2^2 \cdot 3 \cdot 7 \cdot 11 \cdot 13$

3. (1 point) Find the smallest positive integer divisible by 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, and 14.

Construct its prime factorization ...

$2 \cdot 3 \cdot 2 \cdot 5 \cdot 7 \cdot 2 \cdot 3 \cdot 11 = 2^3 \cdot 3^2 \cdot 5 \cdot 7 \cdot 11 = 27{,}720$

4. (1 point) How many positive integer divisors does 936 have?

$936 = 2^3 \cdot 3^2 \cdot 13$ (See above)

# of divisors $= 4 \times 3 \times 2 = 24$