Name:_____

1. (2) Does 50 divide 100? Why or why not? Does 50 divide 80? Why or why not?

   100=50 x 2 so yes
   80 = 50 x (8/5) so no

2. (2) Give the formal definition of a prime number, i.e. “p is prime if and only if…”

   p is prime if and only if whenever p = r x s then r=p or s=p

3. (2) Write the prime factorization of 51200 using power notation.

   $51200 = 2^5 \times 4^3 \times 5^2$

4. (4) If p,q,r, and s are distinct primes, how many distinct divisors does pxqxrxs have (excluding 1)? Explain.

   Since pxqxrxs has p, q, r, and s as its prime factors, find all the ways to put those numbers together. We get:
   p q r s pq pr ps qr qs rs
   pqr pqs prs qrs pqrs 1
   which is 16 in all!