

Find the largest prime factor of  
600851475143

Divide by successive primes. stop  
when the current prime equals  
the current number.

```
require 'prime'
num = 600851475143
prime = 2
loop do
  while (num % prime).zero?
    num /= prime
  end
  prime = next_prime(prime)
  return prime if prime == num
end
```

```
def next_prime(num)
  return 3 if num == 2
  loop do
    num += 2
    return num if Prime.prime?(num)
  end
end
```