

**3. Fortunate Numbers**

**PROBLEM:** Let  $P$  be the product of the first  $N$  ( where  $N > 1$ ) prime numbers. Let  $Q$  equal the smallest prime number greater than  $P+1$ . Mathematician Reo Fortune conjectured that  $Q - P$  will always be a prime. For example, if  $N = 3$ ,  $P = 2 * 3 * 5 = 30$ .  $P + 1 = 31$ . The smallest prime number greater than 31 gives  $Q = 37$ .  $Q - P = 7$ . Numbers in the form  $Q - P$  are called Fortunate numbers.

Another mathematician, Paul Carpenter conjectured that by letting  $Q$  be the greatest prime less than  $P-1$  that  $P - Q$  will also be prime. These numbers are called Less-Fortunate numbers. For example if  $N = 3$ ,  $P = 30$  and  $Q = 23$ .  $P - Q = 7$ .

**INPUT:** There will be 10 input lines. Each line will consist of one positive integer value of  $N$ .

**OUTPUT:** For the first 5 inputs print the calculated Fortunate number. For the last five outputs print the calculated Less-Fortunate number.

**SAMPLE INPUT**

1. 2  
2. 5  
.  
.  
.  
6. 2  
7. 5

**SAMPLE OUTPUT**

1. 5  
2. 23  
  
  
  
6. 3  
7. 13