

## A. A Very Short Number Sequence

Time limit: 1 second  
Memory limit: 65535 kBytes

### Description

Your task is to answer one of the four questions below:

#### Question 1

Given  $k$ , a natural number ( $k \geq 1$ ), define  $A(k)$  as the largest  $n$ , for which the list  $L = 1, 2, 3, \dots, n$  has a sublist  $K$  of length  $k$ , such that the list  $L \setminus K$  contains no Arithmetic progression of length  $k$  (sublists of length 1 or 2 by default are considered arithmetic progressions of length 1 and 2 respectively).

- Compute  $A(k)$  for  $k = 1, 2, 3, 4, 5, 7$ .

#### Question 2

Define  $B(k)$  as the maximal number of 1's that a  $k \times k$  invertible matrix - containing only 0 or 1 - can have ( $k \geq 1$ ).

- Compute  $B(k)$  for  $k = 1, 2, 3, 4, 5, 7$ .

#### Question 3

Let  $C(k)$  be the maximal number of interior regions formed by  $k$  intersecting circles, for ( $k \geq 1$ ).

- Compute  $C(k)$  for  $k = 1, 2, 3, 4, 5, 7$ .

#### Question 4

Let  $D(k)$  be the number of walks of length 3 between any two distinct vertices of the complete graph  $K_{k+1}$ , ( $k \geq 1$ ). Example:  $D(2) = 3$  because in the complete graph  $ABC$  we have the following walks of length 3 between  $A$  and  $B$ :  $ABAB$ ,  $ACAB$  and  $ACBA$ .

- Compute  $D(k)$  for  $k = 1, 2, 3, 4, 5, 7$ .

### Input

There is no input for this problem.

### Output

The output should contain six numbers separated each other by a single colon. *Eg.*: 0,1,0,0,0,1