

1. (a) Determine if 27846307156262180868245720683137457259720533825968195426595776796597770603080894925504105563713339464755273905848064262596252817580101074253 is prime or composite. If its composite, 100 bonus points for factoring it
- (b) Determine if 8550772709843954666562577853174378343596498253295347507662906765881889886376364796342852088938136759689173552140094086980468212236967449987 is prime or composite. If its composite, 100 bonus points for factoring it
2. Suppose you recover the following message fragment: 593171713808135379950189152804416592250142327410697119805352194179282508311251150957290248450250365606463849480632471620614897762408359641424312687630404393173 from Alice to you. Decipher it knowing it was enciphered with RSA and enciphering key  $e = 384079833717534023810960042584966284280265972233934670906047982850836456962172419983600827188152676744399229933316524797472856902955091049036653091962254615225$  and private keys:  $p = 29119631303679773195015465525384055527483931035886916446955095559100442243910727$  and  $q = 36935682726158005764323700292588064799751748244876105351818328990397453541717849$ .
3. (a) Express the number 843 in binary.
- (b) What number has the hexadecimal expression  $1b969b$ .