Homework 8

due Wednesday March 5 in class

1. Biggs 20.1 # 3 page 443

2. Biggs 20.1 # 4 page 443

3. Biggs 20.2 # 1 page 447

4. Biggs 20.2 # 4 page 448

5. In the RSA encryption system choose $n = 65$. Find the decryption key d for $e = 5$ and for $e = 7$. For $n = 33$ and $e = 3$ encrypt the message $M = 18$.

6. (a) Suppose you are handed the cheap rubik box in the following configuration:

18	15	16
17	14	2
3	13	1

front face

12	11	10
4	5	6
9	8	7

back face

Can you bring it back to the initial configuration by a finite sequence of simple moves?
(b) Now suppose that rotating the two central rectangles by 180^0 are also allowed moves. Can you reach the initial configuration in this case?
[Hint: Use Maple for this problem!!]