**MATHEMATICA**

Note1: in functions, “,” delimits the parts of the function and “;” decompose a part into 2 procedures.

*While[test, body]*

*In[1] = n=1; While[n<4, Print[n]; n++]*

*Out[1] = 1*

*2*

*3 #“n<4” is the test, “Print[n]” and “n++” are the body,*

*ie first n=1, so it’s <4, so it prints 1 and then take n=2. It is still <4, so it prints 2…*

Note2: arguments in matrixes:

*In[1] = coex*

*Out[1] = (M🡪 a Z🡪 b SC🡪 c DC 🡪 d)*

*In[2] = coex[[0]]*

*Out[2] = MatrixForm*

*In[3] = coex [[1]]*

*Out[3] = {{M🡪 a, Z🡪 b, SC🡪 c, DC 🡪 d}}*

*In[4] = coex[[0,0]]*

*Out[4] = Symbol*

*In[5] = coex [[1,1]]*

*Out[5] = {M🡪 a, Z🡪 b, SC🡪 c, DC 🡪 d}*

*In[6] = coex[[0,0,0]]*

*Out[6] = Symbol*

*In[7] = coex [[1,1,1]]*

*Out[7] = M🡪 a*

*In[8] = coex [[1,1,2]]*

*Out[8] = Z🡪 b*

*In[9] =M/. coex [[1,1]] #same as M/.coex[[1,1,1]]*

*Out[9] = a*

**(\***text**\*)**

**||** : “OR” function

*In[1] = 1 > 2 || Pi > 3*

*Out[1] = True #because one of the 2 propositions is true, it will give False only if they are all false.*

**! expr**: “is not”, takes the opposite

*In[1] = ! x > 1*

*Out[1] = x <= 1*

**EvenQ[nbr]** : tests if the number is even

*In[1] = IntegerQ[2]*

*Out[1] = True*

*In[2] = IntegerQ[3]*

*Out[2] = False*

*In[3] = IntegerQ[2.5]*

*Out[3] = False*

**FactorInteger[nbr]** : gives the prime factors of a number and their exponents

*In[1] = FactorInteger[2 434 500]*

*Out[1] = {{2,2} , {3,2} , {5,3}, {541,1}} #2 434 500= 22 x 32 x 53 x 541*

**IntegerQ[nbr]** : tests if the number is an integer

*In[1] = IntegerQ[2]*

*Out[1] = True*

*In[2] = IntegerQ[2.3]*

*Out[2] = False*

**Subscript[a,b]** : gives ab