# Work Sheets

- A work sheet is a set of exercises.
- Meant to be started in class
- Meant to be finished at home
- Must be submitted on Thursday evening before midnight.
- Should take only an hour or so
- If you demonstrate significant effort you will get full credit (5 points). If you don’t turn it in you will get 0 points.
- Worksheets account for 15% of your grade.

Part 1. Mathematical preliminaries

1. Let A = {a,bc} What set is
    1. $A^2$
    2. $A^3$

2. Write a short English description of each set
    1. {n | n=2m for some m in Nat}
    2. { w | w is in {0,1}* and w = the reverse of w}
    3. { n | n is in Nat and n=n+1}

3. Write formal descriptions for each of the following
    1. The set containing 1, 10, and 100
    2. The set containing all integers greater than 5
    3. The set containing the string "aba"
    4. The set containing the empty string
    5. The set containing nothing at all

4. An n-ary relation is a set of n-tuples. Let the set A = {0,1,2,3,4}. Give the sets of n-tuples for relations over A
    1. The binary Less than relation
    2. The unary Even relation
    3. The ternary relation R(x,y,z) where x+y=z

Part 2. DFAs

5. Draw a state transition diagram for the DFA that accepts the language
{w | w has exactly two a's and at least 2 b's}

6. Describe in English the language accepted by the DFA to the right.