

## Hw 2

Read chapters 3,4 and 5 of the textbook. Main skills. You need to know how to :

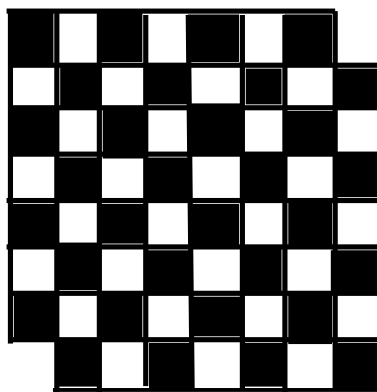
- prove an implication using a direct proof, by contradiction and by contraposition.
- do an "if and only if" proof.
- do a proof by (regular) induction.

Do the following problems from your textbook:

- p. 29: 3.2 (a divides b means there is an integer k such that  $b=a \cdot k$ ) and 3.4
- p. 37: 4.1,4.2,4.3
- p. 51: 5.1
- p.53: 5
- p. 54:7
- p. 55: 14,16

. Do the following additional problems

1. Prove that an integer is divisible by 10 if and only if it is divisible by 2 and by 5.
2. Consider an 8x8 checkerboard with two opposite corner squares deleted. Prove that it cannot be covered exactly by 1x2 tiles (domino tiles).



Domino tile

3. Prove that an  $8 \times 8$  checkerboard with the upper right corner removed cannot be covered by  $1 \times 3$  tiles. (Hint: consider three colors). Is a covering possible if the upper left corner is removed instead?