

HOMework 1

due date: October 11, 2017

a) If you get no points at all for your homeworks and midterm tests, what percentage of points in the written exam you need to be successful? If you get all possible points for your homeworks, what percentage of points in midterm and written exam together you need to be successful?

b) Write the sentence “Every positive integer is divisible by itself and by 1” using symbols and the predicate $Div(p, q)$, $p, q \in \mathbb{N}$: “ p is divisible by q ”. Write negation of the sentence in English and also in symbols.

Solution.

a) One needs 50 points from the first part, which means 50 points from the written part of the exam (if there are no points from homeworks and midterms). So, it is 50 out of 50, i.e. 100%. If one have 20 points from homeworks, one needs to get another 30 points to be successful in the first part. One can get 10 point from midterm and 50 from the written exam, so 60 together. 30 out of 60 means 50%.

b) The formula is $\forall p \in \mathbb{N} : Div(p, p) \ \& \ Div(p, 1)$ and its negation $\exists p \in \mathbb{N} : \neg Div(p, p) \vee \neg Div(p, 1)$, in English “There is a positive integer that is not divisible by 1 or by itself”.