

**MATH 233**  
**Fall 2018**  
**Quiz #1**

Name Lastname :  
ID :

**Duration: 50 minutes.**

**Remark: Show your thinking/work. Do not just write a number as a result.**

1. A fair coin is flipped 10 times where each flip comes up either **head** or **tails**.
  - a) How many possible outcomes are there total?
  - b) How many of these outcomes contain a single tail or a single head?

2. Prove the following identity **using induction**:

$$1.2 + 2.3 + 3.4 + \dots + (n-1).n = ((n-1).n.(n+1)) / 3$$