

# (Math 170) Homework 1:

Due January 17, 2007

Exercise 1: Make a list of the birthdays of all your close family and friends (call your mom if you need help). Do two of them share a birthday?

Exercise 2: There are about 70 student in this class. Suppose each person's list has 10 people on it. Should we be surprised if there is a student who has two people with the same birthday on their list? Justify your answer in not more than 1 page. (Note your justification should read like a book and not like a math exercise, but it should have math in it.)

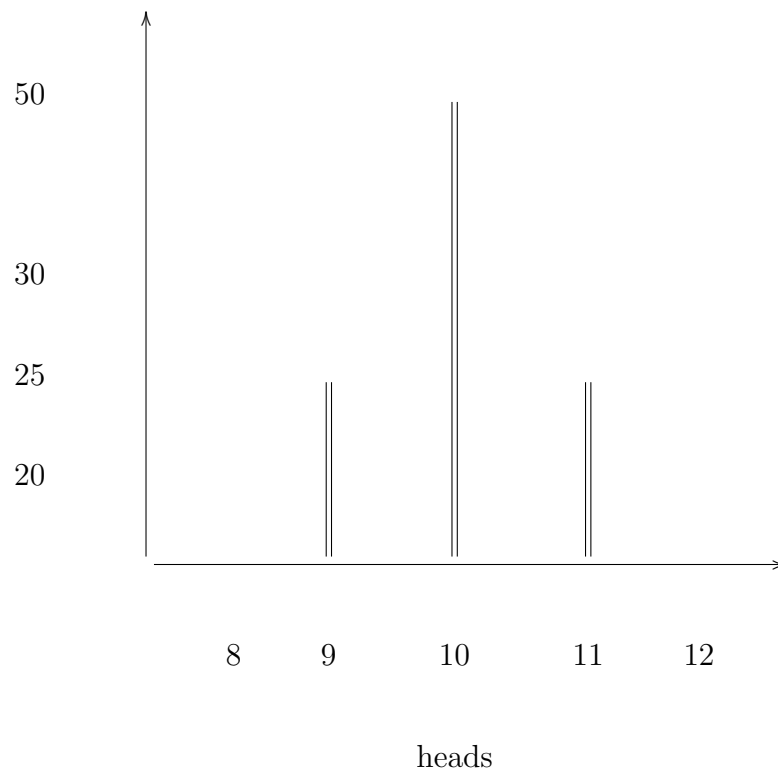
Exercise 3: What is the smallest number of people you need in order for it to be more likely than not (i.e. more than a 50% chance) that two of them share a birthday.

Exercise 4: Flip 20 coins and record the number of heads (this may be done either by hand or by using the web site <http://shazam.econ.ubc.ca/flip/>). Repeat this 100 times and graph the frequency.

For example suppose you repeated the above experiment and found that 50 times there were 10 heads, 25 times there were 49 heads and 25

times there were 51 heads. Then your graph would look something like

times



Extra Credit (3 bonus points) For Benjamin Franklin's 300th birthday someone thought it would be a good idea to get students all round the world to flip a coin and then to tally the results. You can find the results <http://fi.edu/flip/>. Are these results surprising? Justify your answer and if you think they are surprising give a plausible explanation. This should read as a book not a math exercise but should have math in it. It should not be more than 1 page long.