All students should **read** §6.3.2, **review** §6.4 and **read** §6.5 of the textbook before answering their assigned questions this assignment. **Keep in mind:** although the text does not use the term, algorithm 6.5.6 is colliquilly known as *"reservior sampling"*. It is an **important algorithm** in data science and simulation, and I'll refer to 6.5.6 as simply *reservior sampling* in lecture, assessments (quizzes and exams) and other written material such as learning goals.

The following numbered questions should be split across your group and the solutions discussed during the next lecture period. Students should review the learning goals for the day, determine which are applicable to their questions and provide answers or commentary to their group members. When using the Internet to formulate answers (some questions may require this), keep track of **where** you find your information on the web. You may be asked for, and are expected to have (in Email-able form), URLs supporting your investigations.

1. Question 6.5.1 (§6.5.4) just part (a), make 26 draws per shuffling.
2. Question 6.5.2 (§6.5.4) and question 6.5.5 (§6.5.4)
3. Question 6.5.1 (§6.5.4) just part (b), re-insert the cards in an unbiased manner back into the deck.
4. Question 6.5.6 (§6.5.4) Hint for part a: Think of $f(x)$ in two parts: what is the probability of drawing an amber marble on the kth draw? Knowing this, what is the probability of requiring a second draw? a third draw? a fourth draw? a kth draw? Drawing an amber marble on the kth draw requires that you haven't drawn one on the previous $k-1$ draws ***and*** you are successful drawing it on the kth draw — what is the expression for this probability?