Second Exam II for MTH23

Take home

> Write your answers in a separate piece of paper. If you use more than one sheet, please make sure that your name appears in the top of each sheet and that the sheets are stapled together.
> This exam is due **Wednesday, June 21 9:00 am**.

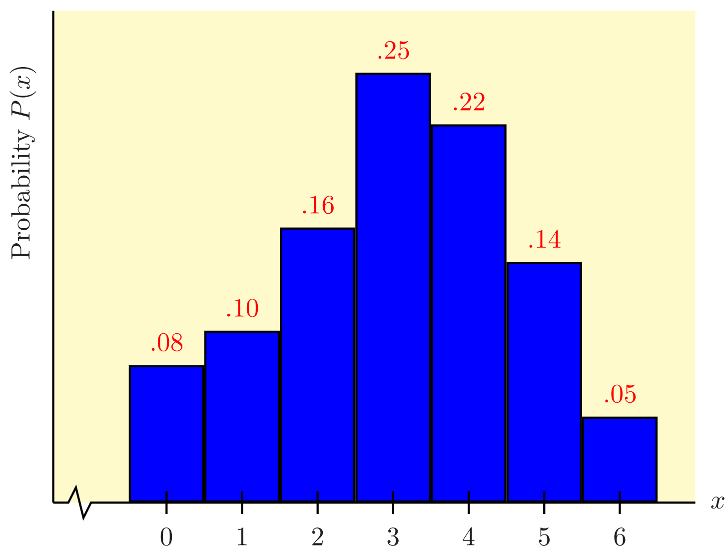
1. In the following table x represents the number of oil changes per year and y represents the cost of repairs for a sample of 10 cars of a certain make and model from a given region:

x	3	5	2	3	1	4	6	4	3	0
y	300	300	500	400	700	400	100	250	450	600

   (a) Compute the correlation coefficient r.
   (b) Find the least squares regression line.
   (c) Use the least squares regression line to predict the cost for car repairs for a car that had 4 oil changes.

2. A pair of fair dice is rolled. Find the probability that the sum is 6 or 10.

3. Find the expected value and the standard deviation of the probability distribution whose graph is shown:



4. Alice and Bob play the following game. Two cards are randomly drawn (without repetition) from a standard 52-card deck. If they are both black Alice wins otherwise Bob wins. If this game is played 10 times what is the probability that Alice will win *at most* 4 times?

5. The weekly amount a family spends on groceries follows (approximately) a normal distribution with mean $\mu = \$200$ and a standard deviation $\sigma = \$15$.
   (a) If \$220 is budgeted for next week's groceries what is the probability that the actual cost will exceed the budget?
   (b) How much should be budgeted for weekly grocery shopping so that the probability that the budgeted amount will be exceeded is only 0.10?