Name: _____ SHOW ALL OF YOUR WORK.

1. To study Canadian scientist, researchers surveyed 2500 of them and asked for the information below:

   - location (region of Canada)
   - income (number)
   - specialty (physics, mathematics, biology, etc.)
   - hours working on a project per week.

   Answer the following:

   (a) Identify the population and the sample.
   (b) Is the data collected qualitative or quantitative? Explain.
      - location

      - income

      - specialty

      - hours working on a project per week
   (c) Determine the level of measurement of each item.
      - location

      - income

      - specialty

      - hours working on a project per week

2. If there are ten players on a basketball team, find the number of choices the coach has in selecting

   (a) 4 players to carry the team equipment.
   (b) 2 players for guard position and 2 players for forward position.

3. The data set represents the number of hours that a sample of 9 people spent on Facebook in a year:

$$120, 617, 208, 16, 111, 268, 892, 353, 54$$

   (a) Construct a frequency distribution for the data set using 3 classes. Include class limits, midpoints, boundaries, frequencies, relative frequencies, and cumulative frequencies.
   (b) Display the data using a polygon.

4. The table shows the number of students who took the July 2012 California Bar Examination for the first time and the number of students who repeated the exam.

	Passed	**Failed**	**Total**
First time	4427	2058	6485
Repeat	407	1845	2252
Total	4834	3903	8737

   A student is selected at random from the sample. Find the probability of each event:

(a) A student failed, given that the students took the exam for the first time.

(b) A student repeated the exam and passed.

(c) A student repeated the exam or failed.

5. The spinner below is spun three times and the number of odd outcomes is recorded. Construct a probability distribution and find the mean, standard deviation and the variance.
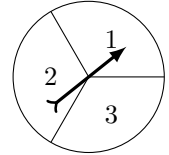
6. Facebook claims that the mean number of hours that people spend on their website is 300 hours per year. Assuming the population is normally distributed, you take a random sample of 9 facebook users and find out that on average they spend 290 hours on facebook, with a standard deviation of 10 hours. Test the facebook's claim at 1% significance level.

7. Selling and buying a home has become very difficult due to the economical crisis which has severely affected the housing sector in recent years. Home sellers participating in a survey indicated that it typically takes between 6 and 14 months to sell a house. Suppose that the distribution of the time that it takes to sell a house can be approximated by a normal distribution with a mean of 10 months and a standard deviation of 4 months.

(a) What percent of the homes sold take less than 9 months to sell?

(b) What percent of the homes sold take between 10 and 16 months to sell?

(c) How long does it take for 70% of the homes to sell?

(d) If 25 sold homes were randomly selected, what is the probability that the mean selling time is less than 9 months?

(e) Which one is more likely to happen and explain why?

    i. Randomly selecting a home that takes less than 9 months to sell.

    ii. Finding a random sample of 25 homes with a mean selling time of less than 9 months.