

**Sample Test**  
**MATH 2311, Fall 2005**

1. Consider a sample of data  $\{-120, -7, 0, 2, 14, 18, 206\}$ .  
Calculate:
  - (a) Mean and median of the given data sample.
  - (b) Range, variance and standard deviation.
  - (c) z-score for 2.
  - (d) If z-score satisfies "the rule of thumb"? Explain.
2. The probability that certain experiment will be successful on a first try is 0.4. Then if the experiment fails on a first attempt the probability that it will be successful second time 0.8. Find the probability of the experiment being successful on a second try.
3. Out of 12 lottery tickets 3 win the prize. If someone buys 6 tickets what is the probability of
  - winning two prizes
  - winning all three prizes
  - not winning at all

*Hint: order is not important.*

4. Given set of 52 cards. Consider the following events:

A - pick a red card

B - pick a heart

Calculate:

$$P(A), P(B), P(A \cup B), P(A \cap B), P(B^c).$$

5. A random sample of  $n = 2$  observations is taken from population containing the measurements

$$\{-2, 4, 8, 10, 24, 30\}$$

- Find the sampling distribution of the sample range.
- Find the sampling distribution of the sample mean.