

# Math 153 - Quiz 5

March 2, 2017

Name key

Score \_\_\_\_\_

Show all work to receive full credit. Supply explanations when necessary. YOU MUST WORK INDIVIDUALLY.

1. (1 point) In a probability experiment, what is an event?

AN EVENT IS A SUBSET OF THE SAMPLE SPACE.

2. (2 points) When John went to work at the liquor store, he wondered how good he was at guessing customers' ages. For the first 38 customers, John guessed correctly 20 times.

- (a) Estimate the probability that John guesses an age correctly.

$$20/38 \approx 52.6\%$$

- (b) Is your estimate a theoretical, experimental, geometric, or subjective probability?

EXPERIMENTAL

3. (1 point) A company is developing a new type of lithium ion battery. While the battery has not yet been tested, engineers say they are 85% certain that the battery will have double the life of existing batteries. What type of probability are the engineers assigning?

SUBJECTIVE

4. (6 points) Suppose a letter is selected at random from the word *ASSESSEE*.

- (a) What is the sample space for this experiment?

$\{A, S, E\}$

- (b) Is each outcome in your sample space equally likely? Why?

NO, IN THE WORD *ASSESSEE*, THERE ARE MORE OF SOME LETTERS THAN OTHERS.

- (c) Steve made the claim that since there are three different letters in the word *ASSESSEE*, then the probability of each letter must be  $1/3$ . What is wrong with Steve's reasoning?

SEE (b). EACH LETTER IN THE SAMPLE SPACE IS NOT EQUALLY LIKELY.

- (d) In part (c), what type of probability did Steve attempt to assign?

THEORETICAL

- (e) Refer to the sample space you gave in part (a). Give an example of an event.

EVENT OF SELECTING A OR E  
 $= \{A, E\}$