

Math 153 - Quiz 5

October 4, 2012

Name key

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (7 points) A jar contains 5 green marbles, 8 blue marbles, and 9 red marbles. A marble is selected at random.

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

$$S = \{ \text{GREEN, BLUE, RED} \}$$

- (b) What is the probability of each outcome in your sample space?

$$P(\{ \text{GREEN} \}) = \frac{5}{22}$$

$$P(\{ \text{RED} \}) = \frac{9}{22}$$

$$P(\{ \text{BLUE} \}) = \frac{8}{22}$$

- (c) Are your probabilities in part (b) experimental, theoretical, or subjective?

THEORETICAL

- (d) If A is the event of drawing a blue marble, then what is \bar{A} ? What is the probability of \bar{A} ?

\bar{A} = EVENT OF DRAWING A GREEN OR RED MARBLE

$$P(\bar{A}) = 1 - \frac{8}{22} = \frac{14}{22}$$

- (e) Jerry actually carried out the experiment 87 times. In all, he selected 29 blue marbles, 23 green marbles, and 35 red marbles. What are his experimental probabilities?

$$P(\{ \text{GREEN} \}) = \frac{23}{87}$$

$$P(\{ \text{RED} \}) = \frac{35}{87}$$

$$P(\{ \text{BLUE} \}) = \frac{29}{87}$$

2. (1 point) A father said to his son, "There is no way you're taking the new car. You're a terrible driver! There's a 99% chance you'd destroy the car!" What kind of probability did the father compute? Choose from experimental, theoretical, geometric, or subjective.

SUBJECTIVE

3. (2 points) A letter is selected at random from the word EYJAFJALLAJOKULL.
- (a) What is a possible sample space?

$$\text{SAMPLE SPACE} = \{ e, y, j, a, f, l, o, k, u \}$$

- (b) What is the probability of selecting the letter J or the letter L?

$$P(\{j, l\}) = \frac{7}{16}$$