

6.1 Practice Problems

Name _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Answer the question.

- 1) The probability of rolling an even number on a die is $\frac{1}{2}$. Does this probability mean that, if you roll the die two times, one even number will appear? If not, what does it mean? 1) _____
- A) No, a probability of $\frac{1}{2}$ tells us nothing.
- B) No. It means that if a die were rolled many times, about $\frac{1}{2}$ of the outcomes would be even numbers.
- C) No, but if the die was rolled 10 times, 5 outcomes would be even numbers.
- D) Yes.
- 2) A single card is chosen at random from a deck of 52 cards, the probability that a face card (Jack , Queen, King) is selected is $\frac{3}{13}$. Does this probability mean that, if you choose a card at random 13 times, a face card will appear 3 times? If not, what does it mean? 2) _____
- A) Yes.
- B) No, it means that if a card was chosen at random from a deck of 52 cards exactly 52 times, exactly 12 outcomes would be face cards.
- C) No, a probability of $\frac{3}{13}$ tells us nothing.
- D) No, it means that if a card was chosen at random from a deck of 52 cards many times, about $\frac{3}{13}$ of the outcomes would be face cards.
- 3) How you would find the empirical probability of rolling a 2 on a die? 3) _____
- A) Roll a die many times and then find the relative frequency of rolling a 2. The relative frequency would be obtained by dividing the number of times a 2 has occurred by the total number of times the die was tossed.
- B) The empirical probability cannot be determined.
- C) Roll a die 6 times and then find the relative frequency of rolling a 2. The relative frequency would be obtained by dividing the number of times a 2 has occurred by 6.
- D) Roll a die 1 time and then find the relative frequency of rolling a 2. The relative frequency would be obtained by dividing the number of times a 2 has occurred by 1.

- 4) How would you find the empirical probability of getting a red card, if you are choosing a card from an ordinary deck of 52 cards? 4) _____
- A) Choose a card from a deck of 52 cards many times and then find the relative frequency of red cards. This would be done by dividing the number of times a red card has occurred by the total number of times a card was chosen.
- B) Choose a card from a deck of 52 cards 2 times and then find the relative frequency of red cards. This would be done by dividing the number of times a red card has occurred by 2.
- C) Choose a card from a deck of 52 cards 52 times and then find the relative frequency of red cards. This would be done by dividing the number of times a red card has occurred by 52.
- D) The empirical probability cannot be determined.

- 5) In order to determine premiums, life insurance companies must compute the probable date of death. They have determined that Carl LaFong, age 30, is expected to live another 45.1 years. Does this mean that Carl will live until he is 75.1 years old? If not, what does it mean? 5) _____
- A) No, it means that for a large group of persons with the same risk factors as Carl, the average age at death would be approximately 75.1 years old.
- B) No, it means that Carl will live to be 75.1 years old, give or take a week.
- C) No, it means that for a large group of persons with the same risk factors as Carl, at least one person would live to an age of exactly 75.1 years old.
- D) Yes.

Solve the problem.

- 6) Two coins are tossed 20 times and the number of tails is observed. 6) _____

Outcome	2 tails	1 tail	0 tails
Frequency	3	7	10

Compute the empirical probability that exactly one tail occurred.

- A) $\frac{1}{4}$ B) $\frac{17}{20}$ C) $\frac{7}{20}$ D) $\frac{1}{2}$

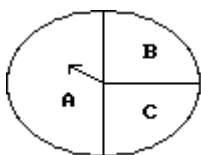
- 7) A die is rolled 50 times with the following results. 7) _____

Outcome	1	2	3	4	5	6
Frequency	3	12	13	7	0	15

Compute the empirical probability that the die comes up a 5.

- A) $\frac{3}{20}$ B) 0 C) $\frac{1}{3}$ D) $\frac{1}{6}$

- 8) This spinner is spun 36 times. The spinner landed on A 6 times, on B 21 times, and on C 9 times. Compute the empirical probability that the spinner will land on B. 8) _____



- A) $\frac{5}{6}$ B) $\frac{1}{3}$ C) $\frac{7}{12}$ D) $\frac{1}{4}$

9) A pair of fair dice is rolled 50 times and the sum of the dots on the faces is noted. 9) _____

Outcome	2	3	4	5	6	7	8	9	10	11	12
Frequency	3	6	8	3	8	1	5	9	7	0	0

Compute the empirical probability that the sum rolled is greater than 9.

- A) $\frac{9}{50}$ B) $\frac{8}{25}$ C) $\frac{7}{50}$ D) $\frac{1}{6}$

10) Three coins are tossed 80 times and the number of heads is observed. 10) _____

Outcome	no heads	one head	two heads	three heads
Frequency	3	59	18	0

Compute the empirical probability that at most two heads occur.

- A) $\frac{3}{4}$ B) 31 C) $\frac{77}{90}$ D) 1

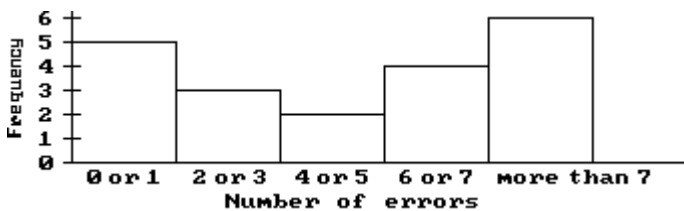
11) A die is rolled 100 times with the following results. 11) _____

Outcome	1	2	3	4	5	6
Frequency	25	18	12	23	14	8

Compute the empirical probability that the die comes up 2 or 3.

- A) $\frac{3}{25}$ B) $\frac{3}{10}$ C) $\frac{9}{50}$ D) $\frac{1}{6}$

12) An employment agency required 20 secretarial candidates to type the same manuscript. The number of errors found in each manuscript is summarized in the histogram. Find the empirical probability that a candidate has less than four errors in the typed manuscript. 12) _____



- A) $\frac{1}{10}$ B) $\frac{1}{4}$ C) $\frac{2}{5}$ D) $\frac{1}{2}$

Estimate the indicated probability.

13) The table shows the number of college students who prefer a given pizza topping. 13) _____

toppings	freshman	sophomore	junior	senior
cheese	14	16	20	26
meat	19	26	16	14
veggie	16	14	19	26

Determine the empirical probability that a student prefers cheese toppings.

- A) 0.342 B) 0.115 C) 0.332 D) 0.336

- 14) The table shows the number of college students who prefer a given pizza topping. 14) _____

toppings	freshman	sophomore	junior	senior
cheese	10	15	26	21
meat	24	21	15	10
veggie	15	10	24	21

Determine the empirical probability that a junior prefers meat toppings.

- A) 0.071 B) 0.214 C) 0.231 D) 0.320

- 15) The table shows the number of college students who prefer a given pizza topping. 15) _____

toppings	freshman	sophomore	junior	senior
cheese	11	16	24	22
meat	24	22	16	11
veggie	16	11	24	22

Determine the empirical probability that a freshmen prefers cheese toppings.

- A) 0.151 B) 0.216 C) 0.471 D) 0.050

- 16) The table shows the number of college students who prefer a given pizza topping. 16) _____

toppings	freshman	sophomore	junior	senior
cheese	12	13	24	25
meat	18	25	13	12
veggie	13	12	18	25

Determine the empirical probability that a student prefers meat toppings.

- A) 0.086 B) 0.265 C) 0.352 D) 0.324

- 17) The Amboy Kennel Club has held an annual dog show for the last 30 years. During this time the winner of "Best of Show" has been an Alaskan Malamute 15 times, a Great Pyrenees 3 times, and an Siberian Husky 12 times. Determine the empirical probability that the next winner of "Best of Show" will be an Alaskan Malamute. 17) _____

- A) $\frac{1}{10}$ B) 1 C) $\frac{1}{2}$ D) $\frac{5}{8}$

- 18) The Amboy Kennel Club has held an annual dog show for the last 48 years. During this time the winner of "Best of Show" has been an Alaskan Malamute 24 times, a Great Pyrenees 3 times, and an Siberian Husky 21 times. Determine the empirical probability that the next winner of "Best of Show" will be a Great Pyrenees. 18) _____

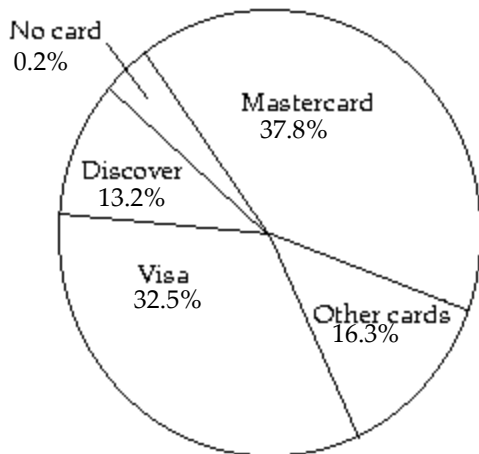
- A) $\frac{3}{8}$ B) $\frac{1}{16}$ C) $\frac{1}{8}$ D) 1

- 19) The Amboy Kennel Club has held an annual dog show for the last 18 years. During this time the winner of "Best of Show" has been an Alaskan Malamute 9 times, a Great Pyrenees 3 times, and an Siberian Husky 6 times. Determine the empirical probability that the next winner of "Best of Show" will be a Siberian Husky. 19) _____

- A) $\frac{1}{2}$ B) $\frac{2}{7}$ C) $\frac{2}{3}$ D) $\frac{1}{3}$

20) A survey was done at a mall in which 1000 customers were asked what type of credit card they used most often. The results of the survey are shown in the figure below:

20) _____

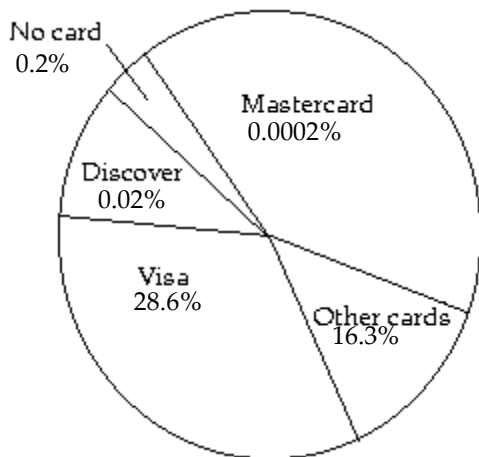


Determine the empirical probability that a person selected at random from the 1000 surveyed uses Mastercard.

- A) 0.365 B) 1.049 C) 0.0378 D) 0.378

21) A survey was done at a mall in which 5000 customers were asked what type of credit card they used most often. The results of the survey are shown in the figure below:

21) _____



Determine the empirical probability that a person selected at random from the 5000 surveyed uses no card.

- A) 0.002 B) 0.0002 C) 0.022 D) 0.02