

Probability

Suppose a bag has 6 boxes, three of them containing 3 bullets(), two of them containing 4 bullets, and one of them containing 5 bullets. A person is asked to randomly choose a box and then shoot a target. Suppose with 60% for this person the bullet will hit the target. Let X be the N^o of bullets hitting the target and Y be the N^o of bullets the person has. Compute the joint P.d.f. of X and Y .

1) The student body of a large university consists of 60% female students. A random sample of 8 students is selected.

(A) What is the probability that among the students in the sample exactly two are female?

- a. 0.0896
- b. 0.2936
- c. 0.0413
- d. 0.0007
- e. None of the above

(B) What is the probability that among the students in the sample at least 6 are male?

- a. 0.0413
- b. 0.0079
- c. 0.0007
- d. 0.0499
- e. None of the above

2) The credit card balance of one elderly group is normally distributed with a mean of \$200 and a standard deviation of \$25.

(A) The probability of an elderly person from this group having a credit card balance of more than \$241.25 is

- a. 0.0252
- b. 0.0495
- c. 0.0901
- d. 0.9010
- e. None of the above

(B) What percent of elderly people in this group would we expect to have balances between \$180 and \$220?

- a. 28.81%
- b. 45.88%
- c. 57.62%
- d. 64.23%
- e. None of the above

3) The starting debt balances for new dentists are normally distributed with a mean of \$40,000 and a standard deviation of \$5,000.

(A) What is the probability that a randomly selected new dentist will have a starting debt balance of at least \$47,500?

- a. 0.1534
- b. 0.7564
- c. 0.0668
- d. 0.1053
- e. None of the above

(B) What percentage of new dentists will have starting debt balances between \$34,000 and \$46,000?

- a. 38.49%
- b. 39.59%
- c. 69.76%
- d. 76.98%
- e. None of the above

4) A particular county in Louisiana experienced incidents of West Niles virus at an average rate of 2.6 per month.

(A) What is the probability of at least three persons coming down with West Niles virus during a month?

- a. 12.26%
- b. 21.76%
- c. 26.40%
- d. 48.16%
- e. None of the above

(B) What is the probability of an incident occurring every 15 days or less (assume a 30-day month)?

- a. 27.25%
- b. 45.53%
- c. 65.67%
- d. 72.75%
- e. None of the above

5) A random sample of 15 people is taken from a population in which 40% favour a particular political stand. What is the probability that exactly 6 individuals in the sample favour this political stand?

- (a) 0.4000
- (b) 0.5000
- (c) 0.4000
- (d) 0.2066
- (e) 0.0041

6) Experience has shown that a certain lie detector will show a positive reading (indicates a lie) 10% of the time when a person is telling the truth and 95% of the time when a person is lying. Suppose that a random sample of 5 suspects is subjected to a lie detector test regarding a recent one-person crime. Then the probability of observing no positive reading if all suspects plead innocent and are telling the truth is

- (a) 0.409
(c) 0.00001
(e) 0.99999
- (b) 0.735
(d) 0.591

7) It has been estimated that about 30% of frozen chicken contain enough salmonella bacteria to cause illness if improperly cooked. A consumer purchases 12 frozen chickens. What is the probability that the consumer will have more than 6 contaminated chickens?

- (a) .961
(c) .882
(e) .079
- (b) .118
(d) .039

8) Refer to the previous question. Suppose that a supermarket buys 1000 frozen chickens from a supplier. Find an approximate 95% interval for the number of frozen chickens that may be contaminated.

- (a) (90, 510)
(c) (0, 730)
(e) (255, 345)
- (b) (285, 315)
(d) (270, 330)

9) Which of the following is NOT an assumption of the Binomial distribution?

- (a) All trials must be identical.
independent.
(e) The probability of success is equal to .5 in all trials.
- (b) All trials must be
(c) Each trial must be classified as a success or a
(d) The number of successes in the trials is counted.

10) It has been estimated that as many as 70% of the fish caught in certain areas of the Great Lakes have liver cancer due to the pollutants present. Find an approximate 95% range for the number of fish with liver cancer present in a sample of 130 fish.

- (a) (80, 102)
(c) (63, 119)
(e) (75, 107)
- (b) (86, 97)
(d) (36, 146)

11) In a triangle test a tester is presented with three food samples, two of which are alike, and is asked to pick out the odd one by testing. If a tester has no well developed sense and can pick the odd one only, by chance, what is the probability that in five trials he will make four or more correct decisions?

- (a) 11/243
(c) 10/243
(e) 232/243
- (b) 1/243
(d) 233/243

12) The probability that a certain machine will produce a defective item is $1/4$. If a random sample of 6 items is taken from the output of this machine, what is the probability that there will be 5 or more defectives in the sample?

- (a) $1/4096$
- (b) $3/4096$
- (c) $4/4096$
- (d) $18/4096$
- (e) $19/4096$

13) The probability that a certain machine will produce a defective item is 0.20. If a random sample of 6 items is taken from the output of this machine, what is the probability that there will be 5 or more defectives in the sample?

- (a) .0001
- (b) .0154
- (c) .0015
- (d) .2458
- (e) .0016

14) Suppose 60% of a herd of cattle is infected with a particular disease. Let Y = the number of non-diseased cattle in a sample of size 5. The distribution of Y is

- (a) binomial with $n = 5$ and $p = 0.6$
- (b) binomial with $n = 5$ and $p = 0.4$
- (c) binomial with $n = 5$ and $p = 0.5$
- (d) the same as the distribution of X , the number of infected cattle.
- (e) Poisson with $\lambda = .6$

15) Fifteen percent of new residential central air conditioning units installed by a supplier need additional adjustments requiring a service call. Assume that a recent sample of seven such units constitutes a Bernoulli process. Interest centers on X , the number of units among these seven that need additional adjustments. The mean and variance of X are, respectively

- (a) .15; .85

(b) .15; 1.05

(c) .15; .8925

(d) 1.05; .1275

(e) 1.05; .8915

16) If you buy one ticket in the Provincial Lottery, then the probability that you will win a prize is 0.11. If you buy one ticket each month for five months, what is the probability that you will win at least one prize?

(a) 0.55

(b) 0.50

(c) 0.44

(d) 0.45

(e) 0.56

17) Suppose that the probability that a cross between two varieties will express a particular gene is 0.20. What is the probability that in 8 progeny plants, two or fewer plants will express the gene?

(a) .2936

(b) .3355

(c) .1678

(d) .6291

(e) .7969

18) Refer to the previous question. Suppose that 120 crosses are bred. Find a likely 95% range for the number of progeny that will express the gene.

(a) 24s19.2

(b) 24s4.4

(c) 24s8.8

(d) 24s4.9

(e) 24s9.8

Probability problems by dr. khaled el naggar

19) Seventeen people have been exposed to a particular disease. Each one independently has a 40% chance of contracting the disease. A hospital has the capacity to handle 10 cases of the disease. What is the probability that the hospital's capacity will be exceeded?

- (a) .965
- (b) .035
- (c) .989
- (d) .011
- (e) .736

20) Refer to the previous problem. Planners need to have enough beds available to handle a proportion of all outbreaks. Suppose a typical outbreak has 100 people exposed, each with a 40% chance of coming down with the disease. Which is not correct?

- (a) This experiment satisfies the assumptions of a binomial distribution.
- (b) About 95% of the time, between 30 and 50 people will contract the disease.
- (c) Almost all of the time, between 25 and 55 people will contract the disease.
- (d) On average, about 40 people will contract the disease.
- (e) Almost all of time, less than 40 people will be infected.

21) There are 10 patients on the Neo-Natal Ward of a local hospital who are monitored by 2 staff members. If the probability (at any one time) of a patient requiring emergency attention by a staff member is .3, assuming the patients to behave independently, what is the probability at any one time that there will not be sufficient staff to attend all emergencies?

- (a) .3828
- (b) .3000
- (c) .0900
- (d) .9100
- (e) .6172

22) A newborn baby whose Apgar score is over 6 is classified as normal and this happens in 80% of births. As a quality control check, an auditor examined the records of 100 births. He would be suspicious if the number of normal births in the sample of 100 births fell above the upper limit of a "95%-normal-range". What is this upper limit?

- (a) 112

(b) 72

(c) 88

(d) 8

(e) none of these

23) Refer to the previous question. Babies that have Apgar scores of 6 or lower require more expensive medical care. What is the probability that in the next 10 births, 3 or more babies will have Apgar scores of 6 or lower?

(a) .2013

(b) .3222

(c) .9999

(d) .0001

(e) .1536

24) Newsweek in 1989 reported that 60% of young children have blood lead levels that could impair their neurological development. Assuming that a class in a school is a random sample from the population of all children at risk, the probability that at least 5 children out of 10 in a sample taken from a school may have a blood level that may impair development is:

(a) about .25

(b) about .20

(c) about .84

(d) about .16

(e) about .64

25) Refer to the previous problem. The total number of children in the school is about 400. In order to estimate the cost of treating all the children at one school, the health board wishes to be reasonably sure of the upper limit on the number of children affected. This upper limit is:

(a) about 260

(b) about 350

(c) about 240

(d) about 400

26) Consider 8 blood donors chosen randomly from a population. The probability that the donor has type A blood is .40. Which of the following is correct?

- (a) The probability of 1 or fewer donors having type A blood is about .11.
- (b) The probability of 7 or more donors NOT having type A blood is about .0087.
- (c) The probability of exactly 5 donors having type A blood is about .28.
- (d) The probability of exactly 5 donors NOT having type A blood is about .12.
- (e) The probability that between 3 and 5 donors (inclusive) will have type A blood is about .37.

27) Consider 100 blood donors chosen randomly from a population where the probability of type A is 0.40? What is the approximate probability that at least 43 donors will have type A blood?

- (a) about .43
- (b) about .62
- (c) about .73
- (d) about .27
- (e) about .38

28) It is sometimes possible to obtain approximate probabilities associated with values of a random variable by using the probability distribution of a different random variable. For example, binomial probabilities using the Poisson probability function, binomial probabilities using the normal etc. In order for the Poisson to give “good” approximate values for binomial probabilities we must have the condition(s) that:

- (a) the population size is large relative to the sample size.
- (b) the sample size is large
- (c) the probability, p , is small and the sample size is large
- (d) the probability, p , is close to .5 and the sample size is large
- (e) the probability, p , is close to .5 and the population size is large

29) Suppose flaws (cracks, chips, specks, etc.) occur on the surface of glass with density of 3 per square metre. What is the probability of there being

Probability problems by dr. khaled el naggar
exactly 4 flaws on a sheet of glass of area 0.5 square metre?

- (a) 0.047
- (b) 0.168
- (c) 0.981
- (d) 0.815
- (e) 0.647

30) The rate at which a particular defect occurs in lengths of plastic film being produced by a stable manufacturing process is 4.2 defects per 75 meter length. A random sample of the film is selected and it was found that the length of the film in the sample was 25 meters. What is the probability that there will be at most 2 defects found in the sample?

- (a) .2102
- (b) .2417
- (c) .8335
- (d) .1323
- (e) .1665

31) Refer to the previous question. The manufacturer decides to examine a larger amount of film. She selects 1000 m of film. If there were no change in the defect rate from the old process, what would be the number of defects seen in approximately 95% of such examinations?

- (a) (49 to 63)
- (b) (34 to 78)
- (c) (62 to 98)
- (d) (41 to 71)
- (e) (71 to 89)

32) The number of traffic accidents per week in a small city has a Poisson distribution with mean equal to 1.3. What is the probability of at least two accidents in 2 weeks?

- (a) 0.2510
- (b) 0.3732

(c) 0.5184

(d) 0.7326

(e) 0.4816

33) The number of traffic accidents per week in a small city has Poisson distribution with mean equal to 3. What is the probability of at least one accident in 2 weeks?

(a) 0.0174

(b) 0.9502

(c) 0.9975

(d) 0.1991

(e) 0.0025

34) Significant birth defects occur at a rate of about 4 per 1000 births in human populations. After a nuclear accident, there were 10 defects observed in the next 1500 births. Find the probability of observing at least 10 defects in this sample if the rate had not changed after the accident.

(a) .008

(b) .003

(c) .041

(d) .084

(e) .042

35) Refer to the previous question. An approximate 95% interval for the number of defects that would occur in 1500 births (assuming that the rate has not changed) is:

(a) (4, 8)

(b) (2, 10)

(c) (2, 6)

(d) (0, 8)

(e) (0, 12)

36) In a certain communications system, there is an average of 1 transmission error per 10 seconds. Let the distribution of transmission errors be Poisson. What is the probability of more than 1 error in a communication one-half minute in duration?

- (a) 0.950
- (b) 0.262
- (c) 0.738
- (d) 0.199
- (e) 0.801

37) Bacteria in hamburger are distributed through out the meat. Suppose that a large batch of hamburger has an average contamination of 0.3 bacteria/ gram. Then the probability that a 10 gram sample will contain one or fewer bacteria is:

- (a) .2222
- (b) .7408
- (c) .9603
- (d) .1494
- (e) .1992

38) Refer to the previous question. A 95% range for the likely number of bacteria present in a 100 g sample is:

- (a) 30s30.0
- (b) 30s5.5
- (c) 30s11.0
- (d) 30s16.4
- (e) 30s2.8

39) The number of bacteria in a drop of water from a lake has a Poisson distribution with an average of 0.5 bacteria/drop. A small dish containing four drops of water from the lake is placed under a microscope. The probability of observing at most one bacteria in the sample is

(a) 0.910

(b) 0.406

(c) 0.271

(d) 0.135

(e) 0.303

40) Refer to the previous question. An approximate 95% range for the number of bacteria present in 400 drops of water is:

(a) (171,229)

(b) (361,439)

(c) (185,215)

(d) (157,243)

(e) (0,400)

41) Which of the following is NOT applicable to a Poisson Distribution?

(a) It is used to compute the probability of rare events.

(b) Every event is independent of every other event.

(c) It is parameterized by the sample size and the probability that an event will occur.

(d) The theoretical range for the number of events that could occur is 0,1,2,3, ...

(e) In order to compute the parameter value, we need to know the standardized rate and the sample size.

42) In a biological cell the average number of genes that will change into mutant genes, when treated radioactively, is 2.4. Assuming Poisson probability distribution find the probability that there are at most 3 mutant genes in a biological cell after the radioactive treatment.

- (a) .2090
- (b) .7576
- (c) .5697
- (d) .7787
- (e) 1.000

43) The number of telephone calls that pass through a switchboard has a Poisson distribution with mean equal to 2 per minute. The probability that no telephone calls pass through the switch board in two consecutive minutes is:

- (a) 0.2707
- (b) 0.0517
- (c) 0.0183
- (d) 0.0366
- (e) 0.1353

44) The distribution of phone calls arriving in one minute periods at a switchboard is assumed to be Poisson with the parameter λ . During 100 periods, the following distribution was obtained:

# (calls)	0	1	2	3	4 or more
Frequency	30	43	21	6	0

An estimate for λ based on this data set is:

- (a) 1.00
- (b) 1.03
- (c) 1.04
- (d) 1.33
- (e) 1.37

Probability problems by dr. khaled el naggar

45) A can company reports that the number of breakdowns per 8-hour shift on its machine-operated assembly line follows a Poisson distribution with a mean of 1.5. Assuming that the machine operates independently across shifts, what is the probability of no breakdowns during three consecutive 8-hour shifts?

- (a) .0744
- (b) .0498
- (c) .6065
- (d) .2231
- (e) .0111

46) A fisherman arrives at his favorite fishing spot. From past experience he knows that the number of fish he catches per hour follows a Poisson distribution at 0.5 fish/hour. The probability that he catches at least 3 fish in four hours is:

- (a) .0126
- (b) .0144
- (c) .1804
- (d) .3233
- (e) .8571

47) The number of arrivals per hour at an automatic teller machine is Poisson distributed with a mean of 3.5 arrivals/hour. What is the probability that more than three arrivals occur in an hour?

- (a) .3209
- (b) .4633
- (c) .5367
- (d) .6791
- (e) .7246

48) The marketing manager of a company has noted that she usually receives 10 complaint calls during a week (consisting of five working days), and that the calls occur at random. Let us suppose that the number of calls during a week follows the Poisson distribution. The probability that she gets five such calls in one day is:

- (a) .0361
- (b) .0378

(c) .9834

(d) .2000

(e) .5

49) Cataracts are a very rare birth defect. In Canada, they occur at a rate of approximately 3 babies in every 100,000 births. In 1989, there were approximately 57,000 births in BC. The probability that more than 5 babies will be born with cataracts is approximately:

(a) about .1080

(b) about .0295

(c) about .0216

(d) about .0080

(e) about .0839

50) The number of deaths due to stroke in the Vancouver region each year varies randomly with a mean of about 555 deaths per year. Assuming that the number of deaths has an approximate Poisson distribution, then the probability that there will be at least 600 deaths due to stroke in any one year is:

(a) about 1%

(b) about 32%

(c) about 16%

(d) about 5%

(e) about 2.5%

51) The number of babies born with a particular severe eye defect each year varies randomly, but at a rate of about 30/10,000 live births. Last year there were about 15,000 live births. The approximate probability that there will be more than 58 babies born with this eye defect is:

(a) about 16%

(b) about 5%

(c) about 1%

(d) about 0.5%

(e) about 2.5%

52) If x is the number of successes in an independent series of 10 Bernoulli trials, then x has a _____ distribution.

- hypergeometric
- Poisson
- normal
- binomial
- exponential

53) Twenty five items are sampled. Each of these has the same probability of being defective. The probability that exactly 2 of the 25 are defective could best be found by _____.

- using the normal distribution
- using the binomial distribution
- using the Poisson distribution
- using the exponential distribution
- using the uniform distribution

54) A fair coin is tossed 5 times. What is the probability that exactly 2 heads are observed?

- 0.313
- 0.073
- 0.400
- 0.156
- 0.250

55) A student randomly guesses the answers to a five question true/false test. If there is a 50% chance of guessing correctly on each question, what is the probability that the student misses no questions?

- 0.000
- 0.200
- 0.500
- 0.031
- 1.000

56) The number of cars arriving at a toll booth in five-minute intervals is Poisson distributed with a mean of

3 cars arriving in five-minute time intervals. The probability of 5 cars arriving over a five-minute interval is _____.

- 0.0940
- 0.0417
- 0.1500
- 0.1008
- 0.2890

57) For the Poisson distribution of a random variable λ is 5 occurrences per ten-minute time interval. If we want to analyze the number of occurrences per hour, we must use an adjusted value for λ equal to _____.

- 5
- 60
- 30
- 10
- 20

58) If x , the time (in minutes) to complete an oil change job at certain auto service station, is uniformly distributed over the interval 20 to 30, inclusively ($20 \leq x \leq 30$), then the mean of this distribution is _____.

- 50
- 25
- 10
- 15
- 5

59) The difference between a random variable and a probability distribution is

- A) A random variable does not include the probability of an event
- B) A random variable can only assume whole numbers
- C) A probability distribution can only assume whole numbers
- D) None of the above.

60) Which of the following is not a requirement of a binomial distribution?

- A) A constant probability of success.
- B) Only two possible outcomes.
- C) A fixed number of trials.
- D) Equally likely outcomes.

- 61) The mean and the variance are equal in\
A) All probability distributions.
B) The binomial distribution.
C) The Poisson distribution
D) The hypergeometric distribution.
- 62) In which of the following distributions is the probability of a success usually small?
A) Binomial
B) Poisson
C) Hypergeometric
D) All distribution
- 63) Which of the following is not a requirement of a probability distribution?
A) Equally likely probability of a success.
B) Sum of the possible outcomes is 1.00.
C) The outcomes are mutually exclusive.
D) The probability of each outcome is between 0 and 1
- 64) For a binomial distribution
A) n must assume a number between 1 and 20 or 25.
B) n must be a multiple of .10.
C) There must be at least 3 possible outcomes.
D) None of the above.
- 65) Which of the following is a major difference between the binomial and the hypergeometric distributions?
A) The sum of the outcomes can be greater than 1 for the hypergeometric
B) The probability of a success changes from trial to trial in the hypergeometric distribution.
C) The number of trials changes in the hypergeometric distribution
D) The outcomes cannot be whole numbers in the hypergeometric distribution.
- 66) In a continuous probability distribution
A) Only certain outcomes are possible
B) All the values within a certain range are possible
C) The sum of the outcomes is greater than 1.00
D) None of the above.
- 67) For a binomial distribution with $n = 15$ as p changes from .50 toward .05 the distribution will
 A) Become more positively skewed
 B) Become more negatively skewed
 C) Become symmetrical
 D) All of the above.
- 68) The expected value of the a probability distribution
A) Is the same as the random variable.

Probability problems by dr. khaled el naggar

- B)** Is another term for the mean
- C)** Is also called the variance.
- D)** Cannot be greater than 1.

69) Which of the following is an experiment?

- Tossing a coin.
- Rolling a single 6-sided die.
- Choosing a marble from a jar.
- All of the above.

70) Which of the following is an outcome?

- Rolling a pair of dice.
- Landing on red.
- Choosing 2 marbles from a jar.
- None of the above.

71)

Which of the following experiments does NOT have equally likely outcomes?

- Choose a number at random from 1 to 7.
- Toss a coin.
- Choose a letter at random from the word SCHOOL.
- None of the above.

72) What is the probability of choosing a vowel from the alphabet?

- $21/26$
- $5/26$
- $1/21$
- None of the above.

73) A number from 1 to 11 is chosen at random. What is the probability of choosing an odd number?

1/11

5/11

6/11

None of the above.

74) Spin a spinner numbered 1 to 7, and toss a coin. What is the probability of getting an odd number on the spinner and a tail on the coin?

3/14

2/7

5/14

None of the above.

75) A jar contains 6 red balls, 3 green balls, 5 white balls and 7 yellow balls. Two balls are chosen from the jar, with replacement. What is the probability that both balls chosen are green?

6/441

2/49

1/49

None of the above

76) In Exercise 2, what is the probability of choosing a red and a yellow ball?

2/21

3/21

13/63

All of the above.

77) Four cards are chosen from a standard deck of 52 playing cards with replacement. What is the probability of choosing 4 hearts in a row?

- 13/256
- 1/16
- 1/256
- None of the above.

78) A nationwide survey showed that 65% of all children in the United States dislike eating vegetables. If 4 children are chosen at random, what is the probability that all 4 dislike eating vegetables? (Round your answer to the nearest percent.)

- 18%
- 260%
- 2%
- None of the above.

79) What is the sample space for choosing an odd number from 1 to 11 at random?

- 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
- {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11}
- {1, 3, 5, 7, 9, 11}
- None of the above.

80) What is the sample space for choosing a prime number less than 15 at random?

- {2, 3, 5, 7, 11, 13, 15}
- {2, 3, 5, 7, 11, 13}
- {2, 3, 5, 7, 9, 11, 13}
- All of the above.

81) What is the sample space for choosing 1 jelly bean at random from a jar containing 5 red, 7 blue and 2

green jelly beans?

- {5, 7, 2}
- {5 red, 7 blue, 2 green}
- {red, blue, green}
- None of the above.

82) What is the sample space for choosing 1 letter at random from 5 vowels?

- {a, e, i, o, u}
- {v, o, w, e, l}
- {1, 2, 3, 4, 5}
- None of the above.

83) What is the sample space for choosing 1 letter at random from the word DIVIDE?

- {d, i, v, i, d, e}
- {1, 2, 3, 4, 5, 6}
- {d, i, v, e}
- None of the above.

84) Two cards are chosen at random from a deck of 52 cards without replacement. What is the probability that the first card is a jack and the second card is a ten?

- $3/676$
- $1/169$
- $4/663$
- None of the above.

85) On a math test, 5 out of 20 students got an A. If three students are chosen at random without replacement, what is the probability that all three got an A on the test?

- $1/114$

- 25/1368
- 3/400
- None of the above.

86) Three cards are chosen at random from a deck of 52 cards without replacement. What is the probability of choosing an ace, a king, and a queen in order?

- 1/2197
- 8/5525
- 8/16.575
- None of the above.

87) A school survey found that 7 out of 30 students walk to school. If four students are selected at random without replacement, what is the probability that all four walk to school?

- 343/93.960
- 1/783
- 7/6750
- None of the above.

88) Two cards are chosen at random from a deck of 52 cards without replacement. What is the probability of choosing two kings?

- 4/663
- 1/221
- 1/69
- None of the above.

89) In New York State, 48% of all teenagers own a skateboard and 39% of all teenagers own a skateboard and roller blades. What is the probability that a teenager owns roller blades given that the teenager owns a skateboard?

- 87%
- 81%
- 123%
- None of the above.

90) At a middle school, 18% of all students play football and basketball and 32% of all students play football. What is the probability that a student plays basketball given that the student plays football?

56%

178%

50%

None of the above.

91) In the United States, 56% of all children get an allowance and 41% of all children get an allowance and do household chores. What is the probability that a child does household chores given that the child gets an allowance?

137%

97%

73%

None of the above.

92) In Europe, 88% of all households have a television. 51% of all households have a television and a VCR. What is the probability that a household has a VCR given that it has a television?

173%

58%

42%

None of the above.

93) In New England, 84% of the houses have a garage and 65% of the houses have a garage and a backyard. What is the probability that a house has a backyard given that it has a garage?

77%

109%

19%

None of the above.

94) Which of the following is the sample space for choosing a letter from the word LIBRARY?

- {I, A}
- {L, I, B, R, A, R, Y}
- {L, I, B, R, A, Y}
- None of the above.

95) What is the probability that a single card chosen from a deck is not an ace?

- 1/13
- 12/13
- 3/4
- None of the above.

96) Which of the following is a certain event?

- Choosing a teacher from a room full of students.
- Choosing an odd number from the numbers 1 to 10.
- Getting a 4 after rolling a single 6-sided die.
- None of the above.

97) There are 4 parents, 3 students and 6 teachers in a room. If a person is selected at random, what is the probability that it is a teacher or a student?

- 9/13
- 4/13
- 7/13
- None of the above.

98) In a high school computer class there are 15 juniors and 10 seniors. Four juniors and five seniors are boys. If a student is selected at random, then what is the probability of selecting a junior or a boy?

- 24/25
- 4/5
- 1/5
- None of the above

99) A jar contains 5 red, 3 green, 2 purple and 4 yellow marbles. A marble is chosen at random from the jar. After replacing it, a second marble is chosen. What is the probability of choosing a purple and a red marble?

- 5/98
- 1/2
- 3/98
- 2/49

100) Three cards are chosen at random from a deck without replacement. What is the probability of choosing an eight, a seven and a six, in order?

- 6/35.152
- 1/2197
- 8/16.575
- None of the above.

101) In a shipment of 25 DVD Players, 2 are defective. If 2 DVD Players are randomly selected and tested, what is the probability that both are defective if the first one is not replaced after it has been tested?

- 4/625
- 1/300

2/625

None of the above.

102) In a school, 48% of the students take a foreign language class and 19% of students take both foreign language and technology. What is the probability that a student takes technology given that the students takes foreign language? (Round your answer to the nearest percent.)

67%

253%

40%

None of the above.