Bellwork Alg 2B Monday, May 7, 2018

1. In a bag are the following pieces of gum: 8 grape, 5 cherry, 6 sour apple. You randomly grab a piece and start chewing, you end up needing more to blow a bigger bubble, so you randomly grab another, etc. Find each probability as a fraction without reducing.

a) P(cherry and sour apple)= b) P(grape and cherry and grape)=

2. You go out for a hike. The probability you get a mosquito bite is $\frac{6}{11}$ and the probability you get a blister on your foot is $\frac{4}{9}$. Find the following probability as a percent to the nearest tenth.

P(mosquito bite or blister)=

3. You have a nine question multiple choice quiz. You didn't study so you will guess at every question. For every question you will choose either A, B, C, D, or E. Find each probability as a percent to the nearest hundredth.

a) P(get all the questions wrong) b) P(get exactly 6 correct) c) P(get at least 8 correct)

4. A machine produces nails that are advertised to be 3 in long. The mean length of the nails are 3.05 inches long with a standard deviation of 0.05 inches.

a) What percent of the nails are shorter than 3 inches long?

b) What range of lengths contain 95% of the nails?

c) What is the probability you randomly take a nail to attach two boards that have a total thickness of 3" and the end of the nail sticks out when you pound it flush with the top board?

d) What range of lengths contain the longest 16% of the nails?

5. The weights of a baseball are normally distributed. 2.5% of the baseballs weigh more than 9.26 ounces. 16% of the baseballs weigh less than 8.78 ounces. Find $\bar{x}$ and σ.

6. A survey of 725 students on a college campus show that 186 want more apartments built on campus. If there are 35,000 students on this campus find the interval for the total number of students that would like more apartments on campus.

7. Twenty passengers are about to board a small plane. The flight has open seating with the passenger first in line getting their pick of seats, etc.

a) The gate agent wants them to get in line to board the plane. How many ways could these passengers line up in to board the plane?

b) Three of the seats must be removed from the plane to make room for some cargo. How many ways could the gate agent pick three of the passengers to remove from the flight?

8. You are landscaping your yard and want to plant some trees and bushes. You go to the local nursery and have the following to choose from: 8 different kinds of trees and 7 different kinds of bushes.

a) In the back yard you want to plant 2 different kinds of trees and 4 different kinds of bushes. How many ways can you landscape the back yard?

b) For the front yard you only have enough room for one tree or 3 bushes. How many ways can you landscape the front yard?

ALG 2B Bellwork Mon 5-7-18

Answers

(1) 19 TOTAL pieces of gum

a) $P(\text{cherry \& sour apple}) = \frac{5}{19} \cdot \frac{6}{18} = \boxed{\frac{30}{342}}$

b) $P(\text{grape \& cherry \& grape}) = \frac{8}{19} \cdot \frac{5}{18} \cdot \frac{7}{17} = \boxed{\frac{280}{5814}}$

(2) $P(\text{mosq. bite or blister}) = \frac{6}{11} + \frac{4}{9} - \frac{6}{11} \cdot \frac{4}{9} = \boxed{74.7\%}$

(3) success = guessing correct $\quad P(\text{success}) = \frac{1}{5} = .20$

$P(\text{failure}) = .80$

a) $P(\text{all wrong}) = {}_9C_0 (.20)^0 (.80)^9 = \boxed{13.42\%}$

b) $P(\text{6 correct}) = {}_9C_6 (.2)^6 (.8)^3 = \boxed{0.28\%}$

c) $P(\text{at least 8 correct}) = P(\text{8 correct}) + P(\text{9 correct})$

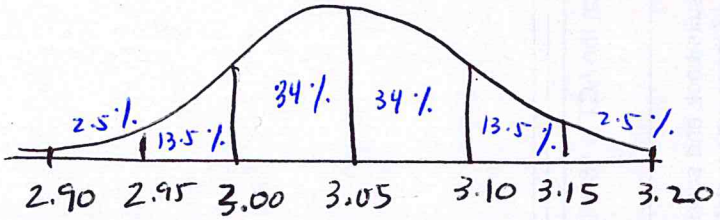
$= {}_9C_8 (.2)^8 (.8)^1 + {}_9C_9 (.2)^9 (.8)^0$

this needs to be carried out to the nearest thousandths, at least!

$= .002\% + .0003\%$

$= \boxed{.0023\%}$

(4)



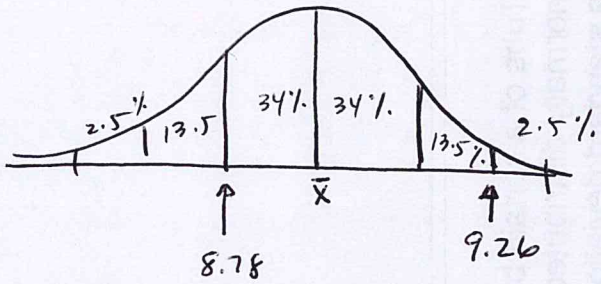
a) % shorter than 3" = $\boxed{16\%}$

b) 95% → $\boxed{2.95" \text{ to } 3.15"}$

c) $\boxed{84\%} > 3"$

d) $\boxed{3.10" \text{ to } 3.20"}$ is the longest 16%

(5)



$8.78 = \bar{x} - \sigma = \bar{x} - 0.16$

$\boxed{\bar{x} = 8.94 \text{ ounces}}$

$8.78 + 3\sigma = 9.26$

$3\sigma = 9.26 - 8.78$

$\sigma = \frac{.48}{3}$

$\boxed{\sigma = 0.16 \text{ ounce}}$

(6) sample proportion $= \frac{186}{725} = 25.7\%$

margin of error $= \pm \frac{1}{\sqrt{725}} = \pm 3.7\%$

population proportion $= 25.7\% \pm 3.7\%$

$= 22\%$ TO 29.4%

STUDENTS: $(.22)(35{,}000)$ TO $(.294)(35{,}000)$

$= \boxed{7700 \text{ TO } 10{,}290 \text{ STUDENTS}}$

(7) a) $20!$ or ${}_{20}P_{20} = \boxed{2.43 \times 10^{18}}$

b) ${}_{20}C_3 = \boxed{1140}$

(8) a) 2 TREES AND 4 BUSHES $= {}_8C_2 \cdot {}_7C_4 = 28 \cdot 35$

$= \boxed{980}$

b) 1 TREE OR 3 BUSHES $= {}_8C_1 + {}_7C_3 = 8 + 35$

$= \boxed{43}$