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8. Complete the following assignment prior to Meeting #22:

A. Study our notes from Meeting #21.

B. Comprehend Jim's sample response to Quiz 21.

C. Comprehend Entries #042 & #43A–B of our *Glossary*.

D. From the Video Page of *Canvas*, view with comprehension the videos named "intro bernoulli distributions" and "visualizing binomial distributions."

E*. Please solve the following problems; display the computations, and upload the resulting pdf document on the appropriate Canvas assignment link:

i. A person is randomly selected from a population and tested for COVID-19 infection. A positive test result is labeled a "success" and coded as 1; a negative test result is labeled a "failure" and coded as 0. Again a person is randomly selected from that *same* population (Thus, the first person is still the population; so the two events are independent). The trial is repeated another 3 times. The number of successes is recorded. As of May 26, 2020, one seemingly credible estimate is 30% of the people worldwide are infected; use that figure for this problem. Display the probability distribution for the random variable for this experiment.

1
2
3
$n=5$

$P(\text{Success}) = .3$

ii. Three fair dice are randomly rolled and the sum of the dots on the three upper-facing surfaces is recorded. An even sum is considered a success and coded 1; an odd sum is considered a failure and coded 0. The number of success is recorded. The trial is repeated 5 more times. The number of successes is recorded. Display the probability distribution for the random variable for this experiment.

$P(\text{success}) = \frac{\frac{3}{6}+\frac{2}{6}+\frac{2}{6}}{3} = .5$

$5+1=6$

$n=6$

E. Comprehend Jim's sample responses to the homework prompts that are posted on *Canvas*.

i) $P(k) = \binom{n}{k} m(1)^k (1-m(1))^{n-k}$ ⟶

$P(0) = \binom{5}{0}(.3)^0(.7)^5 = .1681$
$P(1) = \binom{5}{1}(.3)^1(.7)^4 = .3602$
$P(2) = \binom{5}{2}(.3)^2(.7)^3 = .3087$
$P(3) = .1323$
$P(4) = .0284$
$P(5) = .0024$

ii) $P(k) = \binom{n}{k} m(1)^k (1-m(1))^{n-k}$ ⟶

$P(0) = \binom{6}{0}(.5)^0(.5)^6 = .0156$
$P(1) = \binom{6}{1}(.5)^1(.5)^5 = .0938$
$P(2) = .2344$
$P(3) = .3125$
$P(4) = .2344$
$P(5) = .0938$
$P(6) = .0156$