Complete the following assignment prior to Meeting #16:

A. Study our notes from Meeting #15.

B. Comprehend Jim's sample response to Quiz 15.

C. Comprehend Entry #036A–D of our *Glossary*.

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

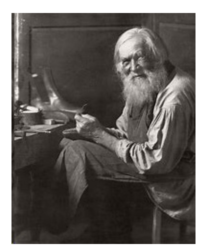
i In a certain region of western Asia, 75 % of the population live to be at least 80 years old. 63% of the population lives to be at least 90 years. What is the probability of a randomly selected person who is in her/his/their 80's survives to be 90 years old?

Sample computation:

Let A be the event that the selected person survives to be 90 years old $\wedge$ let B be the event that the person is at least 80 years old. We need to compute $p(A|B)$.

$p(A|B) = \frac{p(A \cap B)}{p(B)}$. Since a 90-year old is also 80, $p(A \cap B) = p(A)$, thus we have:

$$p(A|B) = \frac{p(A \cap B)}{p(B)} = \frac{p(A)}{p(B)} = \frac{0.63}{0.75} = 0.84$$



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ii. Assume that in a two-child family, all sex distributions are equally probable. An experiment is conducted in which a ***family*** is randomly selected from { families that have exactly two children }; the selected family has at least one girl. What is the probability that the second child is also a girl?

Sample computation:

Let A be the event that the selected family has two girls $\wedge$ let B be the event that the family has a girl. For this family with exactly two children, let $\Omega =$ $\{ (f, s) : f =$ the sex of the first born $\wedge$ s is the sex of the second born $\} =$ $\{ (g, g), (g, b), (b, g), (b, b) \}$. We need to compute $p(A|B)$:

$$p(A|B) = \frac{p(A \cap B)}{p(B)} = \frac{0.25}{0.75} = \frac{1}{3}$$

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iii. Assume that in a two-child family, all sex distributions are equally probable. An experiment is conducted in which a ***child*** is randomly selected from { families that have exactly two children } and that particular child is a girl. What is the probability that the second child is also a girl?

Sample computation:

Let B be the event that the randomly selected child is a girl $\wedge$ let A be the event that her sibling is also a girl. We need to compute $p(A|B)$:

$$p(A|B) = \frac{p(A \cap B)}{p(B)} = \frac{0.25}{0.50} = \frac{1}{2}$$

E. From the Video Page of *Canvas*, view with comprehension "Bayes' theorem of conditional probability."

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