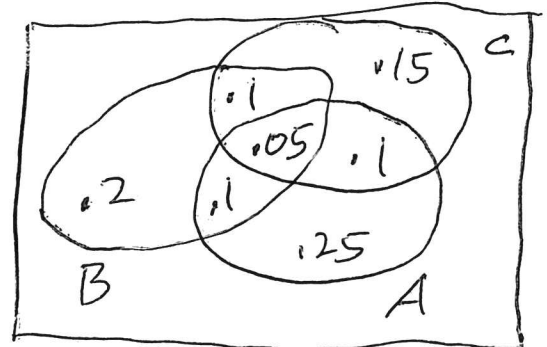


Math 483 HW 5 2015. Due Monday, Sept. 14. EXAM 1 is Thursday, Sept. 17. Quiz 2 on Friday, Sept. 11 will include expectations and variance. (So HW 3, 4 and problems C and D from HW 5).

A) 2.155abc A group of men possesses the three characteristics of being married (A) having a college degree (B) and being a citizen of a specified state (C) with the fractions given by the accompanying Venn diagram. That is, 5% of the men possess all three characteristics, whereas 20% have a college education but are not married and are not citizens of the specified state. One man is chosen at random from the group.

- a) Find the probability that he is married.
- b) Find the probability that he has a college degree and is married.
- c) Find the probability that he is not from the specified state but is married and has a college degree.



comment: The 8 different regions of the Venn diagram are disjoint. The numbers in 7 of the 8 regions correspond to the probability of the region.

B) 3.1 When the health department tested private wells in a community for two impurities commonly found in drinking water, it found that 20% of the wells had neither impurity, 40% had impurity A, and 50% had impurity B. (Some wells had both.) If a well is randomly chosen from those in the county, find the probability distribution for Y, the number of impurities found in the well.

comment: A Venn diagram may be useful (if only to show work). Make a table of y and $P(Y = y)$.

C) 3.10 Let Y be a random variable with $p(y)$ given by the accompanying table. Find $E(Y)$, $E(1/Y)$, $E(Y^2 - 1)$ and $V(Y)$.

y	1	2	3	4
p(y)	0.4	0.3	0.2	0.1

comment: See ex.s 3.2, 3.3, and 3.4.

D) 3.22 A single fair die is tossed once. Let Y be the number facing up. Find the expected value and variance of Y.

comment: Using th. 3.6 on p. 96 reduces the amount of work.