1717719
Di Zhen
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Question 1

1

P(A randomly selected subject was enrolled in the CC-CPR class) $= \frac{29}{56} = 0.5178$

2

P(A randomly selected subject was rated competent) $= \frac{27}{56} = 0.4821$

3

Let A = A randomly selected subject was rated competent, B = A randomly selected subject was enrolled in the CPR course.

$P(A \cap B) = \frac{12}{56} = 0.2142$

4

Let A = A randomly selected subject was rated competent, C = A randomly selected subject was enrolled in the CC-CPR course.

$P(A \cup C) = P(A) + P(C) - P(A \cap C) = \frac{27+29-15}{56} = \frac{41}{56} = 0.7321$

5

Let A = A randomly selected subject was rated competent, C = A randomly selected subject was enrolled in the CC-CPR course. $P(A|C) = \frac{P(A \cap C)}{P(C)} = \frac{\frac{15}{56}}{\frac{29}{56}} = 0.5172$

Question 2

According to the question 2, we can build a table:

	under 30	over 30	total
bachelor's degrees	4	13	17
master's degrees	6	2	8
total	10	15	25

Let A = A randomlt selected person who is over 30,
B = A randomly selected person with a master's degree.

$P(A \cup B) = P(A) + P(B) - P(A \cap B) = \frac{15+8-2}{25} = \frac{21}{25} = 0.8400$

So the probability that a person over 30 or a person with a master's degree will be selected is 0.8400.

Question 3

Let A = A randomly selected student who will have been exposed to a certain allergen, B = A randomly selected students who experience a reaction to the allergen. According to the question:

$P(B|A) = 0.8$

$P(B \cap A) = 0.6$

According to the Bayes' Rule:

$P(B|A) = \frac{P(B \cap A)}{P(A)}$

Thus, we can get:

$P(A) = \frac{P(B \cap A)}{P(B|A)} = \frac{0.6}{0.8} = 0.7500$

So the probability that he or she will have been exposed to the allergen is 0.7500.