1. Alice and Bob visit a coffee shop during their lunch break. The probability that Alice orders coffee is 0.6. The probability that Bob orders coffee is 0.5. The probability that either orders coffee is 0.8.

(a) **(2 pts)** What is the probability that they both order coffee?

(b) **(2 pts)** Is the event of Alice ordering coffee independent of the event of Bob ordering coffee? Please justify your answer.

(c) **(3 pts)** Alice and Bob's friend, Charlie, joins them for coffee. The event of Charlie ordering coffee is mutually exclusive to the event of Alice ordering coffee and it is also mutually exclusive to the event of Bob ordering coffee. The probability that none of them orders coffee is 0.05. Find the probability Charlie orders coffee.