

APMA 1650 Problem Set 1

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1. (a) $S = \{\text{turn left, turn right, continue straight}\}$
(b) $2/3$
(c) $(2/3)^2 = 4/9$
2. (a) i. $P(A \cup B) = P(A) + P(B) - P(A \cap B) = 0.4 + 0.12 - 0.12 = 0.4$
ii. $P(A \cap B) = P(B) = 0.12$
iii. $P((A \cap B)^c) = 1 - P(A \cap B) = 1 - 0.12 = 0.88$
(b) i. $P(A \cup B) = P(A) + P(B) = 0.4 + 0.12 = 0.52$
ii. $P(A \cap B) = 0$ (disjointness implies $A \cap B = \emptyset$, $P(\emptyset) = 0$)