## Problem 60-2

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$\begin{aligned} & A \cup B \cup C=S \\ & \mathrm{P}(\mathrm{A})=\frac{1}{2} \\ & \mathrm{P}(\mathrm{B})=\frac{2}{3} \\ & \mathrm{P}(A \cup B)=\frac{5}{6}\end{aligned}$

## 1 A

A

$$
\begin{gathered}
A \cup B-A=\frac{2}{6} \\
A \cup B-B=\frac{1}{6} \\
A \cap B=A \cup B-((A \cup B-B)+(A \cup B-A))=\frac{2}{6}
\end{gathered}
$$

B
No, because A and B aren't mutually disjoint, $A \cap B$ isnt 0 .
C
This is equivilent to $A \cup B \cup C-A \cup B$ so we're supposed to find $\mathrm{P}(\mathrm{S})-\mathrm{P}(A \cup B)$ which is $1-\frac{5}{6}=\frac{1}{6}$
D

$$
\begin{gathered}
P(C \cap(A \cup B))=P(C)+P(A \cup B)-P(C \cup(A \cup B)) \\
\frac{5}{12}=P(C)+\frac{5}{6}-1=P(C)-\frac{1}{6}
\end{gathered}
$$

$\mathrm{P}(\mathrm{C})=\frac{7}{12}$
Had some unexpected life issues yesterday that disrupted my work. If I had started on Wednesday than I probably would've been able to finish, but I didn't.

