S a is i s 1 1: Homewor 2

E ercise 1

a. If and B are inde endent,

$$\mathbf{P} \quad |B \ = \mathbf{P} \ B \text{ and } \quad /\mathbf{P} \quad = \mathbf{P} \ B \ \mathbf{P} \quad /\mathbf{P} \quad = \mathbf{P} \ B \ .$$

If and B are inde endent, then not and B are inde endent. So,

$$\mathbf{P} \ B|\text{not} \quad = \quad B \text{ and not} \quad /\mathbf{P} \text{ not} \quad = \mathbf{P} \ B \ \mathbf{P} \text{ not} \quad /\mathbf{P} \text{ not} \quad = \mathbf{P} \ B \ .$$

Since $\mathbf{P} \quad |B \ = \mathbf{P} \ B$ and $\mathbf{P} \ B|\text{not} \quad = \mathbf{P} \ B$, then $\mathbf{P} \ B| \quad = \mathbf{P} \ B|\text{not}$ **P 1141 1 ice 1141 1 41 .1 4**

E ercise

a. s usual, a ood start is to write out the robability information stated in the roblem.

$$\mathbf{P}\ \text{failure} = 0.60 \qquad \mathbf{P}\ \text{moderate} = 0.\ 0 \qquad \mathbf{P}\ \text{major} = 0.10$$

$$\mathbf{P}\ \text{oor}|\text{failure} = 0.50 \qquad \mathbf{P}\ \text{fair}|\text{failure} = 6\ (\text{failure}\ \mathbf{P} = 6\ \text{moderate} = \text{oo}\ :\ 2\ \theta = \text{P}\ 0.4\ \text{a}\ \mathbf{P}\ \text{j}\ \text{moderate} = 0.$$

For the first branc

Since 0. > 0.21 and 0.255 it is best for to shoot in the air. nd res ectively, $\mathbf{P}$ wins $=$ 0. ; $\mathbf{P}$ B wins $= 0.175$; $\mathbf{P}$ C wins $= 0.\ 5$; $\mathbf{P}$ B wins $= 0$

b. e lose only if we et five eds in a row, otherwise we win 1 dollar. The robability distribution of $_2$