select
cross
mutate
callObs

2E1. ~~Pr(rain|Monday)~~ (2) (1)

2E2. (3)

2E3. (1)

2E4. ~~Prop~~ $p = 0.7$ would expect it to land

$P(W) = 0.7 \quad P(W|m) = 1$

~~P(E)~~ $P(E|L) = 0.23$

$P(E|L) \propto P(L|E) \cdot P(E)$

$\propto 0.3 \times 0.5$

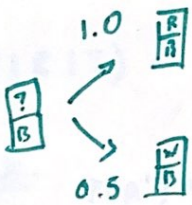
$\propto 0.15$

$$P(E|L) = \frac{P(L|E) \cdot P(E)}{P(E)P(L|E) + P(M)P(L|M)}$$

$$= \frac{0.3 \times 0.5}{0.5 \times 0.3 + 0.5}$$

$$= \frac{0.15}{0.65} \quad (= 0.23)$$

2M4. 



$\therefore \frac{2}{3}$

2M5. B/B, B/B, W/W, B/W

B/?

B/B'
B'/B
B/B'
B'/B
B/W

(4/5.)

2M6.

B/B, B/W, W/W

BB = 1/6

BW = 2/6

WW = 3/6

B/?

B/B' 1/6

B'/B 1/6

B/W 2/6

$\frac{2}{6} \times \frac{6}{4} = \frac{12}{24}$

$\frac{\left(\frac{2}{6}\right)}{3} = \frac{2}{6} \times \frac{1}{3}$

$= \frac{2}{12} =$

2+1

BW BB WW

B? → W? $P(?!=B) = 0.75$ (yes)

BW → WW'

BB' → WW', W'W, WB

B'B → WB, 'WW, WW'

$P(?=B) = 2/8$

~~2/8~~

$P(?=W) = 0.75$

2+1 $P(TWins|B) = 0.2$ $P(T|A) = 0.1$ $P(A) = 0.5$, $P(B) = 0.5$

~~P(TWins|~~ $P(1\,Twins) = ?$, $P(2\,Twins) = ?$

$P(1Twins) = P(A) \cdot P(T|A) + P(B) \cdot P(T|B)$

$= 0.05 + 0.1 = 0.15$

$P(T) = 0.15$

$P(A|T) = \frac{P(T|A)\,P(A)}{P(T)} = \frac{0.1 \cdot 0.5}{0.15} = \frac{1}{3}$

$P(B|T) = \frac{P(B|T)\,P(B)}{P(T)} = \frac{0.2 \cdot 0.5}{0.15} = \frac{2}{3}$

Update. $P(A') = P(A|T) = \frac{1}{3}$, $P(B') = P(B|T) = \frac{2}{3}$

$P(2^{nd}\,Twins) = P(A')P(T|A) + P(B')P(T|B)$

$= \frac{1}{3} \cdot 0.1 + \frac{2}{3} \cdot 0.2$

$= \frac{0.1}{3} + \frac{0.4}{3}$

$= \frac{0.5}{3}$

$= 0.166$

2H2 $\frac{1}{3}$ (prev calculated)

2H3 Data : Twins, Single.

$P(A \mid [T, S])$ given have calculations for Twins event.

$$P(A \mid S) = \frac{P(S \mid A)\, P(A')}{P(S)} \longrightarrow P(S) = 1 - P(+) = 0.85$$

$P(A') = \frac{1}{3}$

$P(S \mid A) = 0.9 \quad (1 - P(T \mid A))$

$$P(A \mid S) = \frac{0.9 \cdot \frac{1}{3}}{0.85} = 0.35924$$

2H4. ~~$P(A) = 0.8 \quad P(B) = 0.65$~~

~~given $P(A \mid PA) = 0.8$, $P(B \mid PB) = 0.65$~~ ✓

$P(PA \mid A)$

$P(\cancel{PA} \mid A) = 0.8$, $P(\cancel{PB} \mid B) = 0.65$

$$P(A \mid \cancel{PA}) = \frac{P(\cancel{PA} \mid A)\, P(A)}{\cancel{PA}\, P(X)}$$

$P(\cancel{PA}) \; P(X) = 0.1 \cdot 0.8 + 0.2 \cdot 0.65$

$= 0.21$

$$P(A \mid X) = \frac{0.8 \cdot 0.1}{0.21}$$

$= 0.39095$