

# DATA609 HW WK8

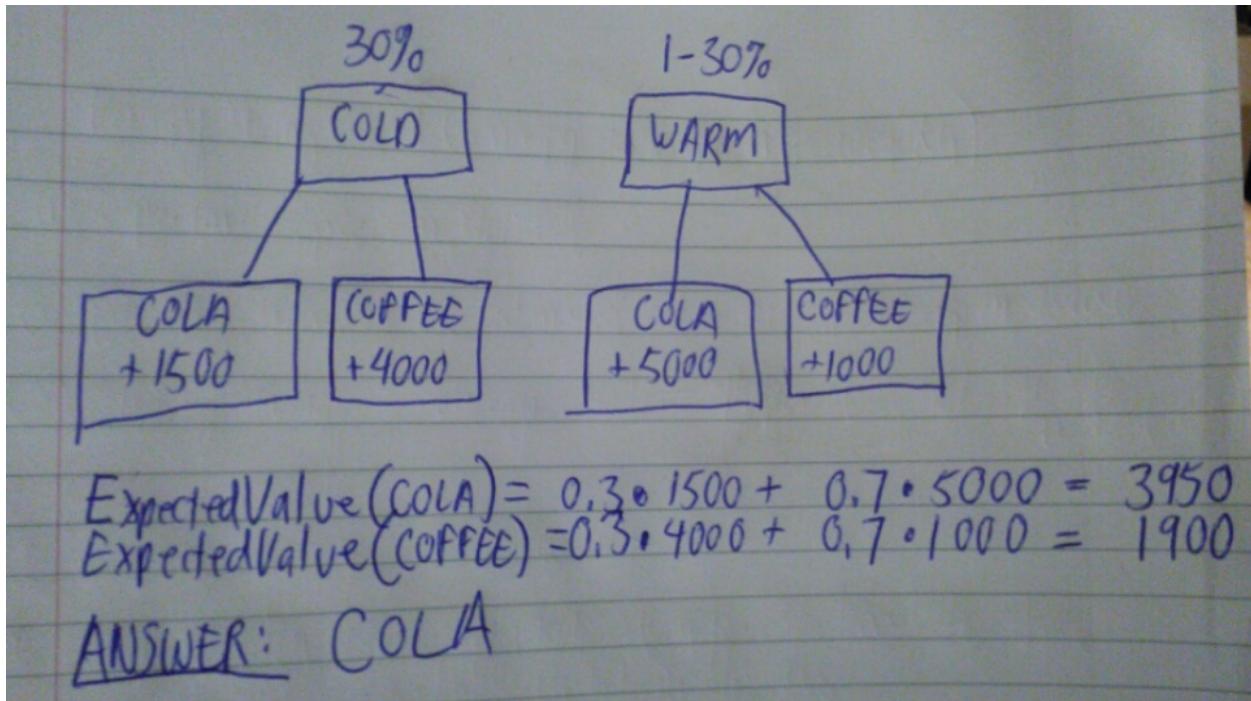
Dan Fanelli

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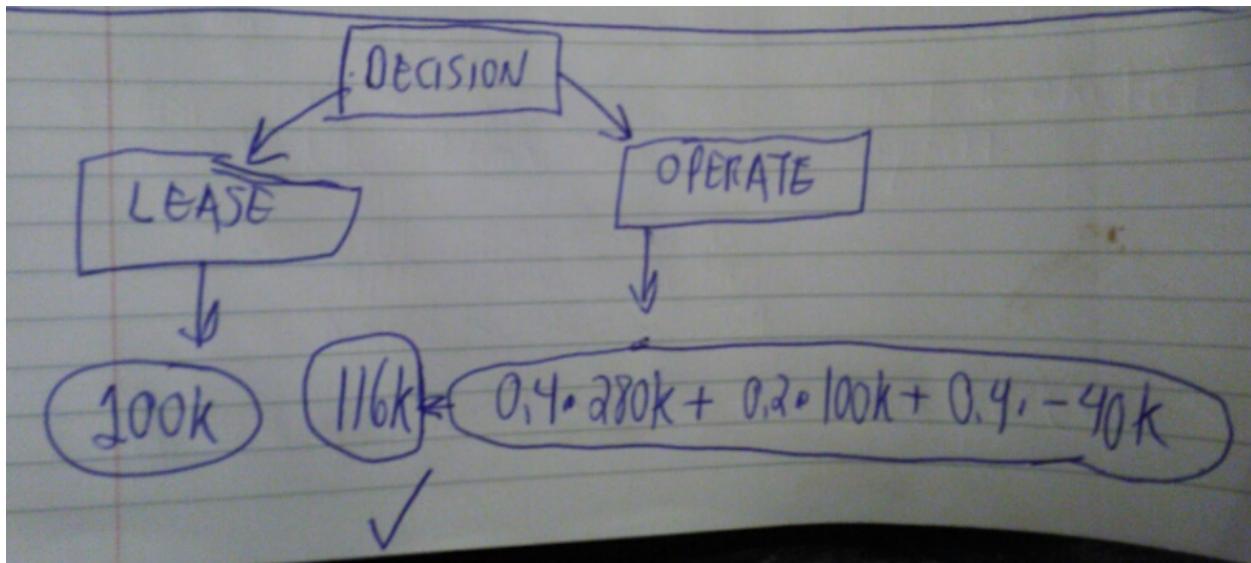
```
biz_venture_expected_value <- (2/5)*55000 + (3/5)*(-1750)  
biz_venture_expected_value
```

```
## [1] 20950
```

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Answer: test and then drill regardless of test results...

\$1 million to Drill

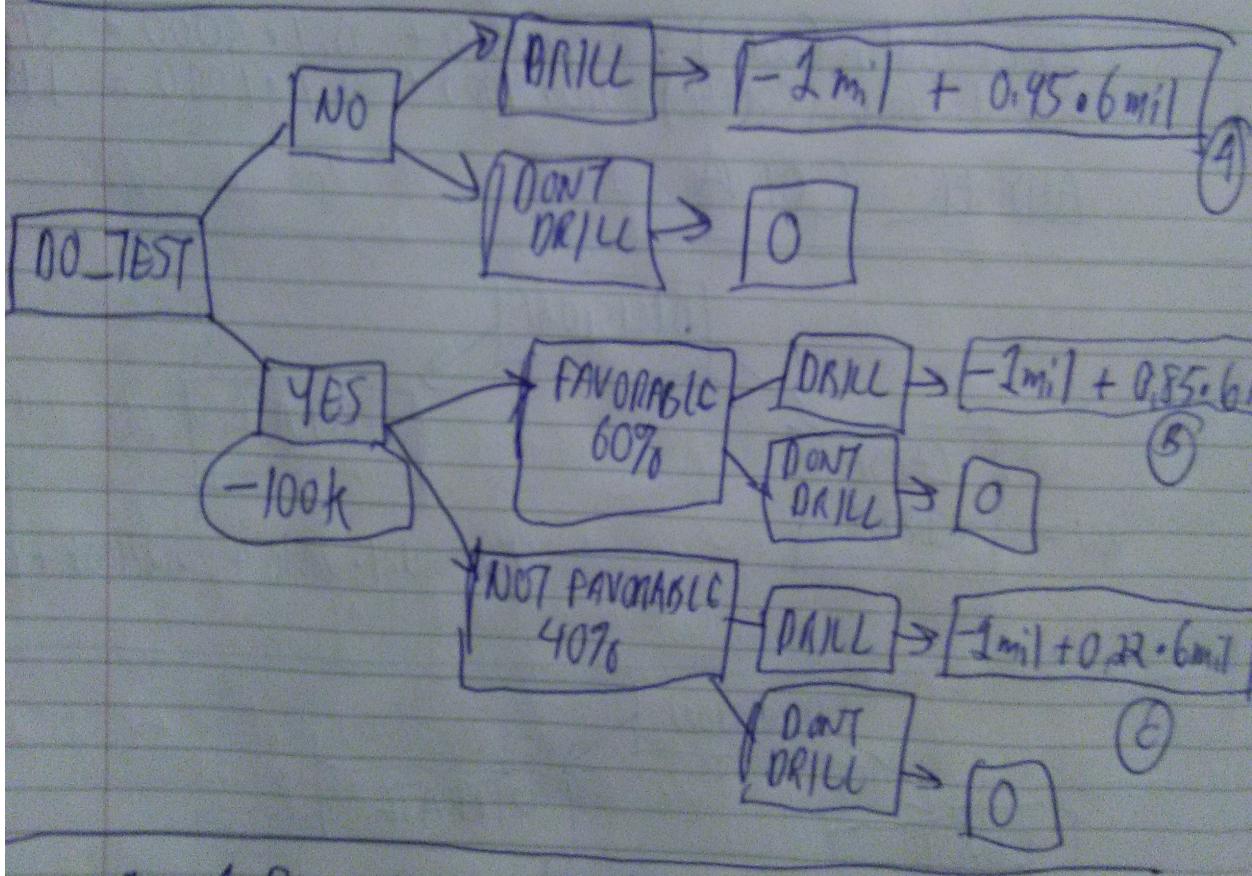
\$1.6 million profit if oil found

45% chance oil present

Geologist Test cost 100k and 60% favorable

↳ if geologist favorable  $\rightarrow$  85% chance oil

" unfavorable  $\rightarrow$  22% chance oil



$$A = 1.7 \text{ million}, \text{Not}(A) =$$

$$B = 950k (60\%) 2.36 \text{ million} \quad 3.64 \text{ million} \quad \text{Si Test, Then Drill}$$

$$C = (40\%) 28k \quad \text{no profit if not}$$

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a) Row b has highest expected value:

```
col_probabilities <- c(0.35, 0.3, 0.25, 0.1)
row_A_pay <- c(1100, 900, 400, 300)
row_B_pay <- c(850, 1500, 1000, 500)
row_C_pay <- c(700, 1200, 500, 900)

sum(col_probabilities %*% row_A_pay)
```

```
## [1] 785
```

```
sum(col_probabilities %*% row_B_pay)
```

```
## [1] 1047.5
```

```
sum(col_probabilities %*% row_C_pay)
```

```
## [1] 820
```

b) Regret Table: Row B minimizes the expected regret:

```
df <- t(data.frame(row_A_pay, row_B_pay, row_C_pay))
df
```

```
## [,1] [,2] [,3] [,4]
## row_A_pay 1100 900 400 300
## row_B_pay 850 1500 1000 500
## row_C_pay 700 1200 500 900
```

```
df[,1] <- max(df[,1]) - df[,1]
df[,2] <- max(df[,2]) - df[,2]
df[,3] <- max(df[,3]) - df[,3]
df[,4] <- max(df[,4]) - df[,4]
df <- df * col_probabilities
df[,1] + df[,2] + df[,3] + df[,4]
```

```
## row_A_pay row_B_pay row_C_pay
## 390 175 365
```