



Decision Trees

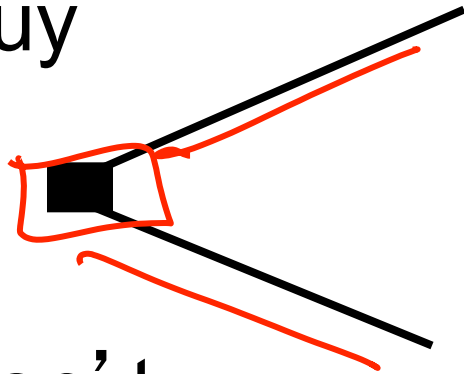


1. Ticket for 3pm: \$200
2. 40% won't make it
3. Ticket 4pm: \$400

Do you buy?

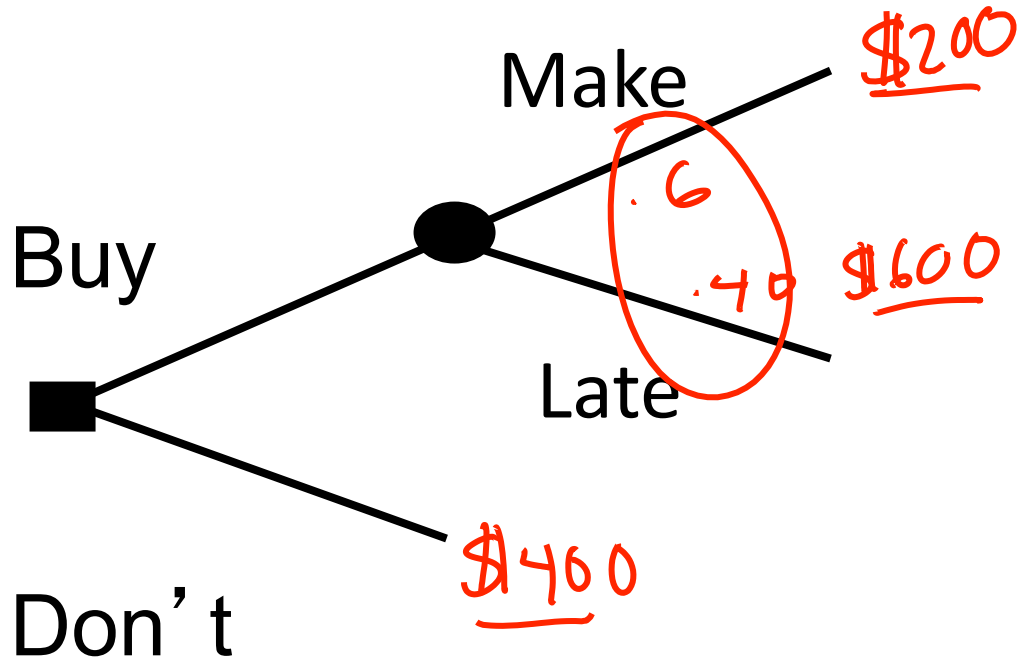


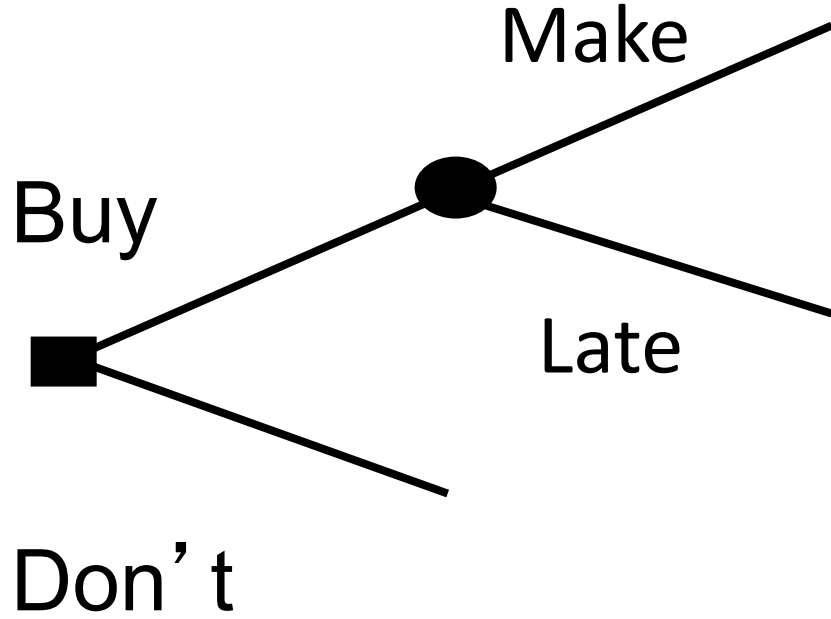
Buy

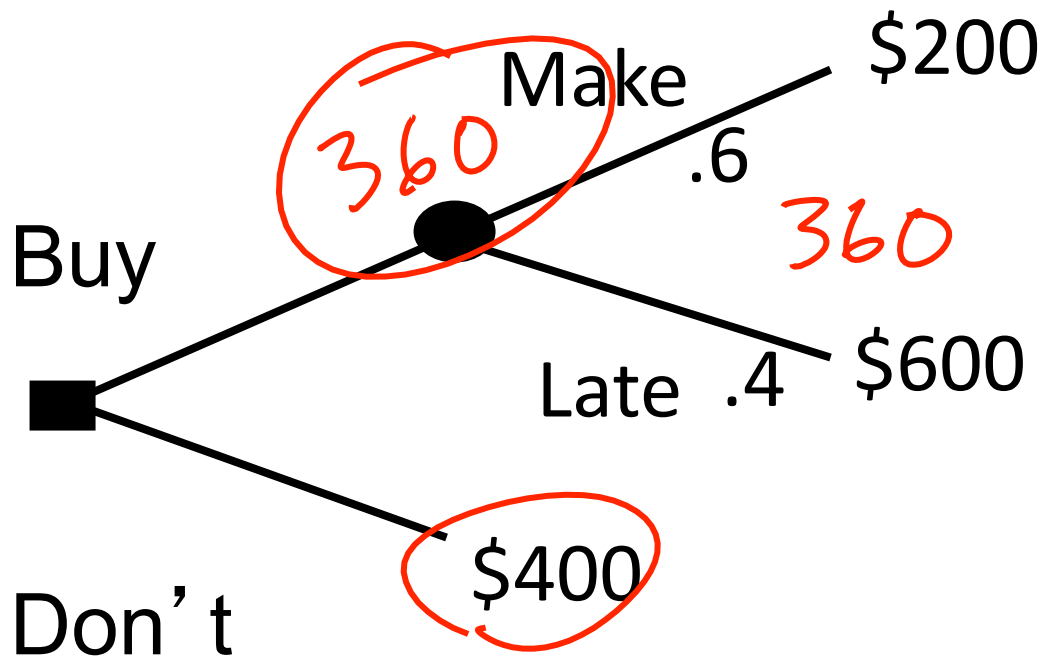


Don't

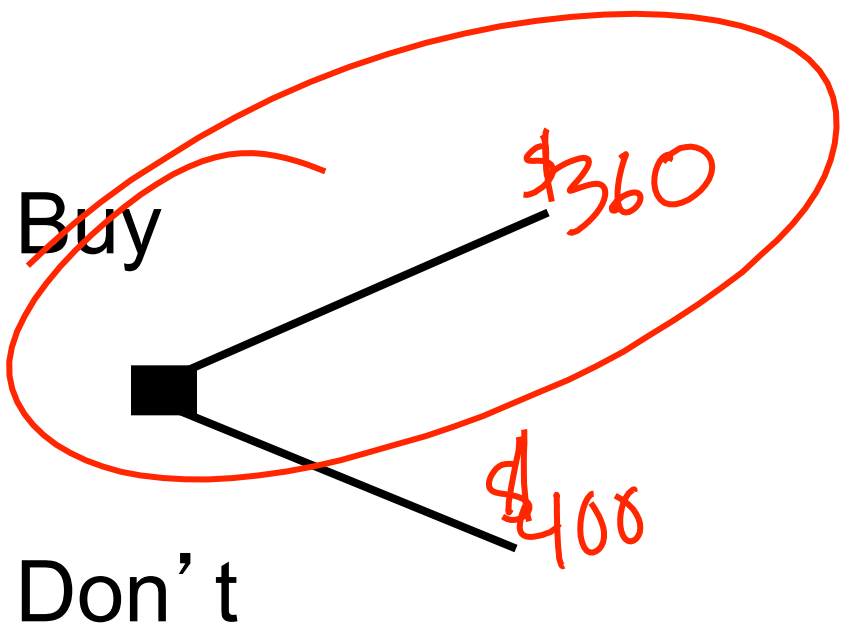








$$(.6)(200) + (.4)(600) = \underline{120 + 240}$$



Scholarship: \$5000

200 applicants

2 page essay

10 finalists

10 page essay



Cost:

Two page essay: \$20.

Ten page essay: \$40

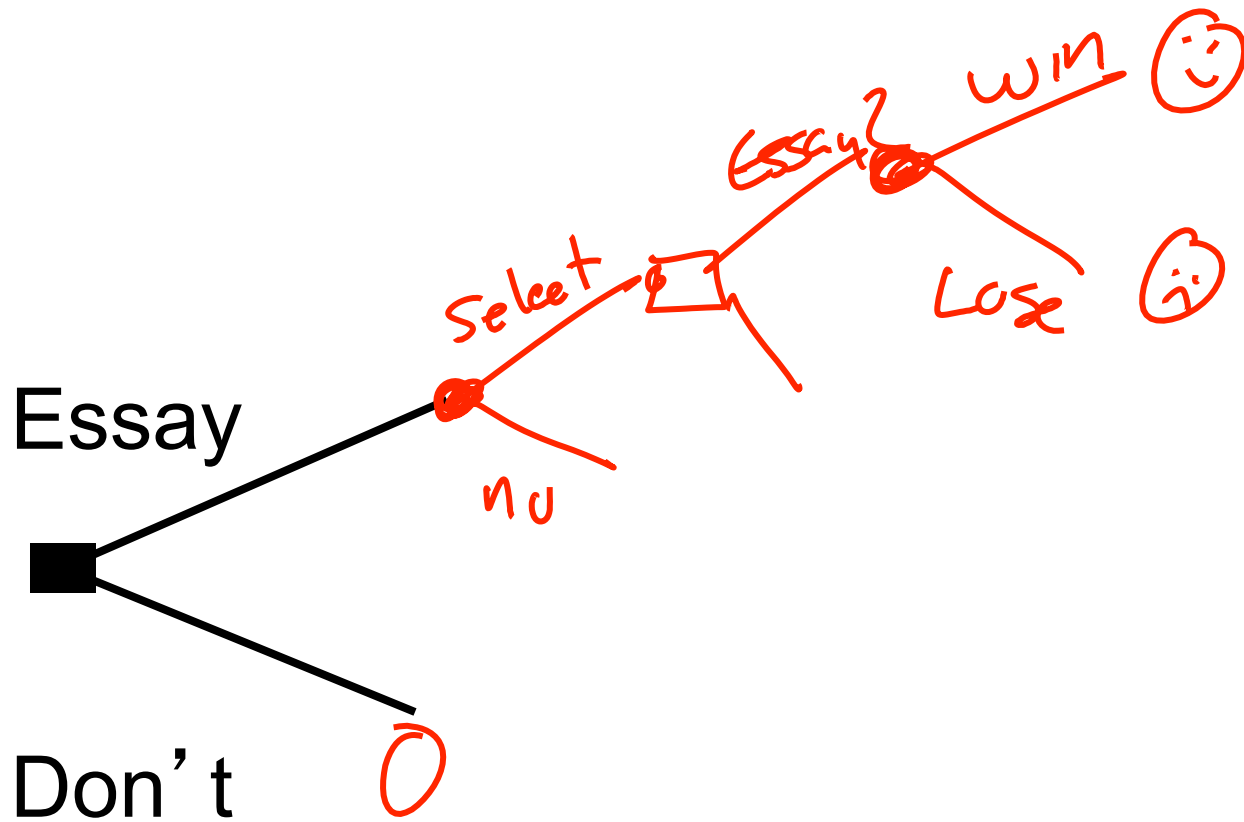


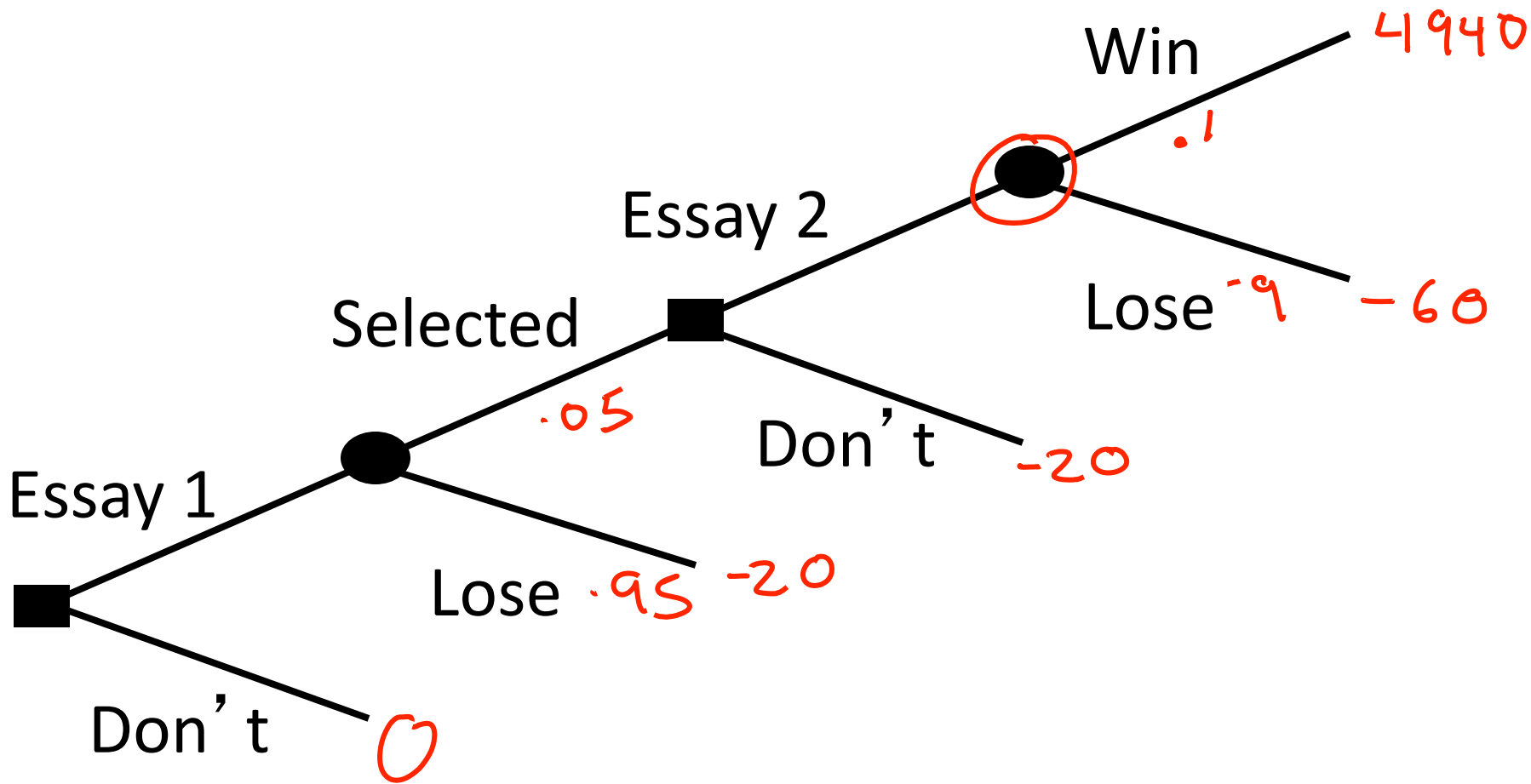
Step 1: Draw Tree

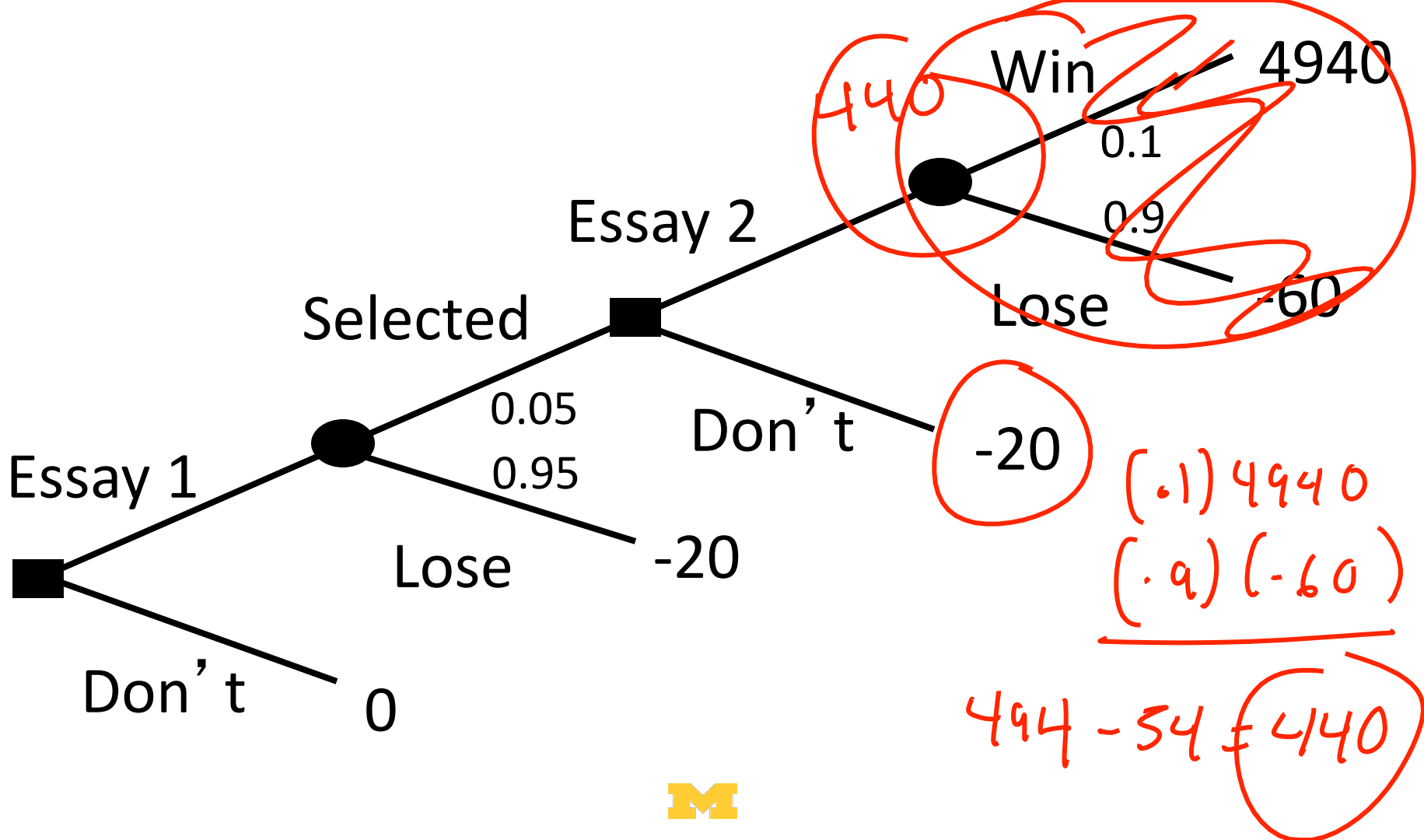
Step 2: Write down payoffs and probabilities

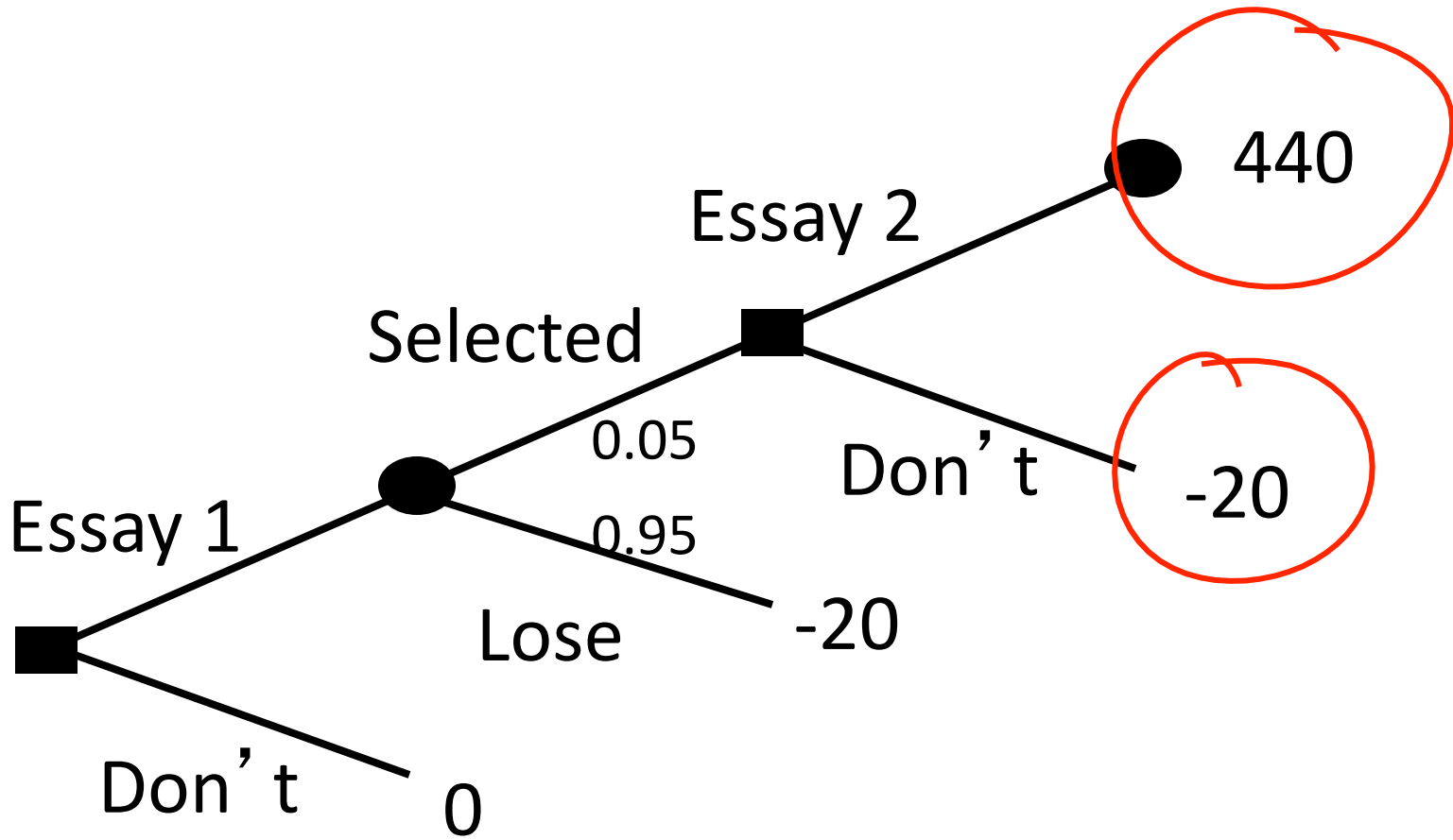
Step 3: Solve Backwards

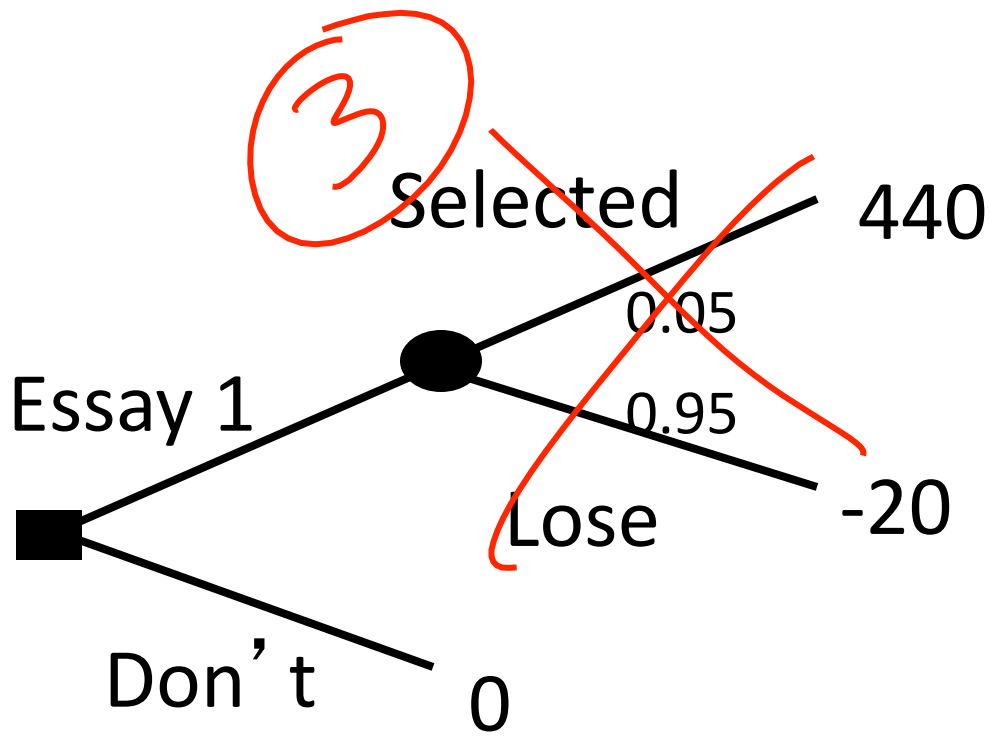








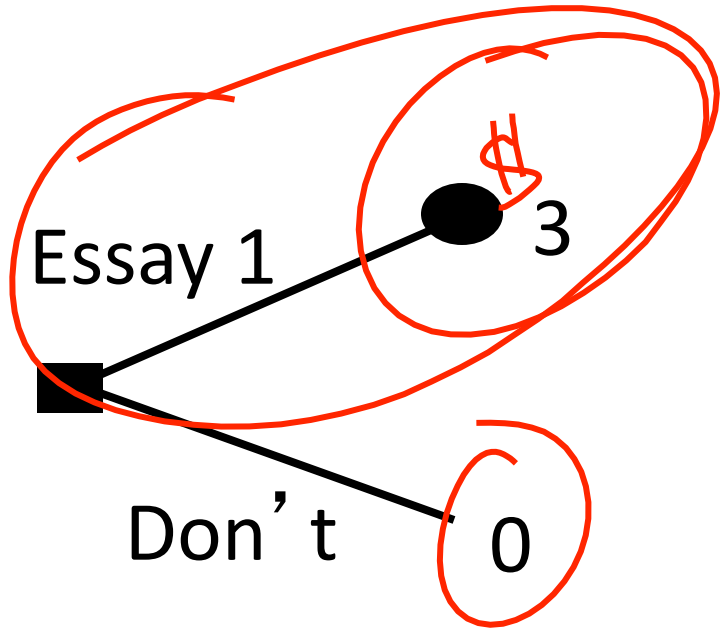




$$(440)(.05) + (-20)(.95) +$$

$$\frac{22 - 19}{3}$$





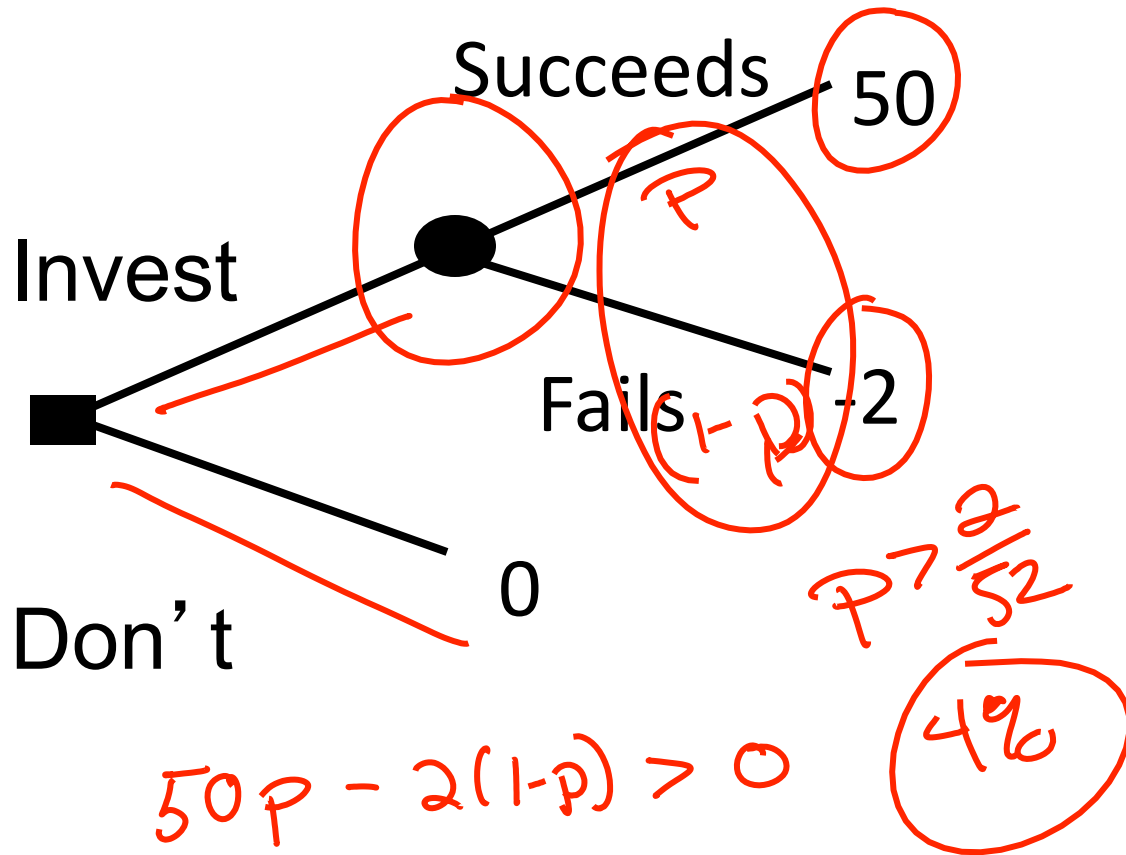
Inferring Probabilities



Your friend tells you
about a risky investment
opportunity that will pay
\$50,000 on a \$2000
investment.

She's in. Do you invest?





$$50P - 2(1-P) > 0$$

$$50P - 2 + 2P > 0$$

$$52P > 2$$

Inferring Payoffs

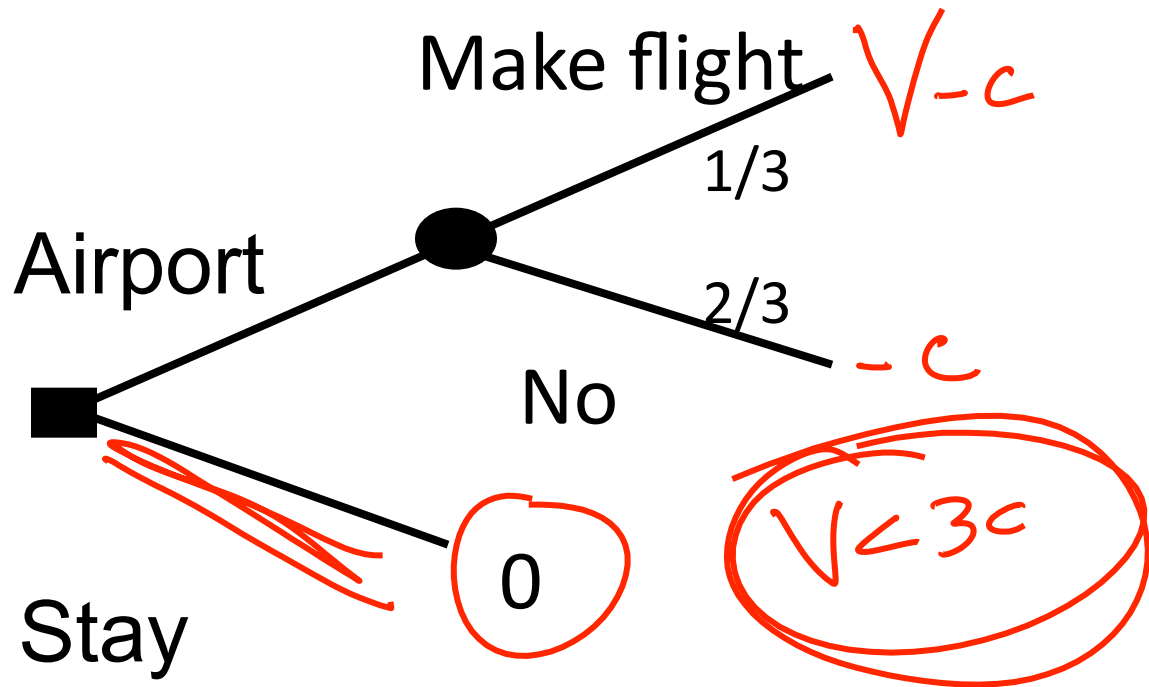


You have a standby to go visit your parents. The airline says that there is a one third chance that you'll make the flight.

You decide not to go to the airport and to stay on campus.

How much did you want to see your parents?





$$\frac{1}{3}(V - c) + \frac{2}{3}(-c) < 0$$
$$\frac{1}{3}V - c < 0$$

The final inequality is circled in red and contains the handwritten expression $V < 3c$.

Model Thinking

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