Homework Assignment #6

Due Jul 31 at 11:59pm **Points** 20 **Questions** 10 **Available** after Jul 25 at 12am
Time Limit None **Allowed Attempts** 2

Instructions

- This homework assignment will evaluate your understanding of the concepts covered in Chapter 13.
- There is no time limit.
- You have TWO attempts to work on this homework and the highest one will be kept.
- You will be able to see the correct answers only after the last attempt.

Take the Quiz Again

ⓘ Answers will be shown after your last attempt

Score for this attempt: **16.2** out of 20
Submitted Jul 29 at 1:38pm
This attempt took 252 minutes.

Question 1

2 / 2 pts

Muñoz Corporation's decision to produce a new line of recreational products resulted in the need to construct either a small plant or a large plant. The best selection of plant size depends on how the marketplace reacts to the new product line. To conduct an analysis, marketing management has decided to view the possible long-run demand as low, medium, or high. The following payoff table shows the projected profit in millions of dollars.

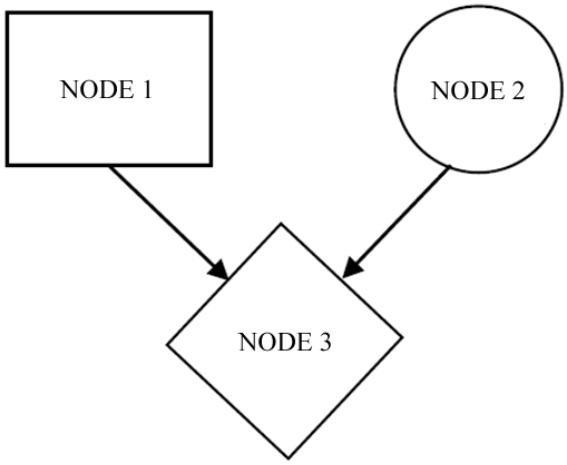
	Long-Run Demand		
Plant Size	**Low**	**Medium**	**High**
Small	350	400	400
Large	250	400	700

Question

(a) What is the decision to be made, and what is the chance event for Muñoz problem?

The decision is to choose the best plant size . There are 2 alternatives. The chance event is [Select] . There are [Select] possible outcomes.

(b) Construct an influence diagram. Choose an appropriate name for each node.

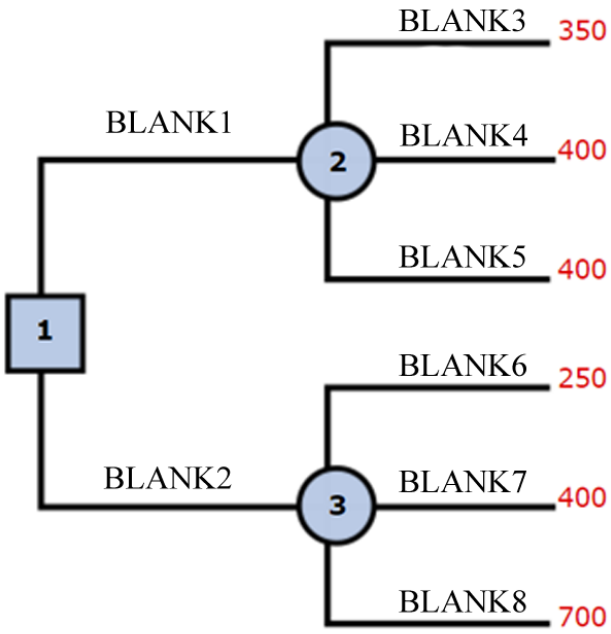


Node 1: [Select]

Node 2: [Select]

Node 3: [Select]

(c) Construct a decision tree. Choose an appropriate name/value for blanks.



Blank 1: [Select]

Blank 2: [Select]

Blank 3: [Select]

Blank 4: [Select]

Blank 5: [Select]

Blank 6: [Select]

Blank 7: [Select]

Blank 8: [Select]

Answer 1:

the best plant size

Answer 2:

2

Answer 3:

the market demand for the new product line

Answer 4:

3

Answer 5:

Plant Size

Answer 6:

Market Demand

Answer 7:

Profit

Answer 8:

Small

Answer 9:

Large

Answer 10:

Low

Answer 11:

Medium

Answer 12:

High

Answer 13:

Low

Answer 14:

Medium

Answer 15:

High

Question 2

1.33 / 2 pts

Muñoz Corporation's decision to produce a new line of recreational products resulted in the need to construct either a small plant or a large plant. The best selection of plant size depends on how the marketplace reacts to the new product line. To conduct an analysis, marketing management has decided to view the possible long-run demand as low, medium, or high. The following payoff table shows the projected profit in millions of dollars.

	Long-Run Demand		
Plant Size	**Low**	**Medium**	**High**
Small	350	400	400
Large	250	400	700

Question

Recommend a decision based on the use of the optimistic, conservative, and minimax regret approaches.

The recommended decision using the optimistic approach is [Select] .

The recommended decision using the conservative approach is to select the large plant .

The recommended decision using the minimax regret approach is [Select] .

Answer 1:

to select the large plant

Answer 2:

to select the large plant

Answer 3:

to select the large plant

Question 3

2 / 2 pts

Amy Lloyd is interested in leasing a new car and has contacted three automobile dealers for pricing information. Each dealer offered Amy a closed-end 36-month lease with no down payment due at the time of signing. Each lease includes a monthly charge and a mileage allowance. Additional miles receive a surcharge on a per-mile basis. The monthly lease cost, the mileage allowance, and the cost for additional miles follow:

Dealer	Monthly Cost	Mileage Allowance	Cost per Additional Mile
Dealer A	$294	36,000	$0.15
Dealer B	$305	45,000	$0.20
Dealer C	$320	54,000	$0.15

Amy decided to choose the lease option that will minimize her total 36-month cost. The difficulty is that Amy is not sure how many miles she will drive over the next

three years. For purposes of this decision, she believes it is reasonable to assume that she will drive 12,000 miles per year, 15,000 miles per year, or 18,000 miles per year. With this assumption, Amy estimated her total costs for the three lease options. For example, she figures that the Dealer A lease will cost her $10,584 if he drives 12,000 miles per year, $11,934 if he drives 15,000 miles per year, or $13,284 if he drives 18,000 miles per year.

Question

(a) What is the decision, and what is the chance event?

The decision is to choose [Select] . There are 3 . The chance event is the number of miles driven . There are [Select] possible outcomes.

(b) Construct a payoff table. (Round your answer to the nearest whole number)

Dealer	Annual Miles Driven		
	12,000	**15,000**	**18,000**
Dealer A	$10,584	$11,934	$13,284
Dealer B	$10,980	[Select]	[Select]
Dealer C	[Select]	$11,520	[Select]

Answer 1:

the best lease option

Answer 2:

3

Answer 3:

the number of miles driven

Answer 4:

3

Answer 5:

$10,980

Answer 6:

$10,980

Answer 7:

$12,780

Answer 8:

$11,520

Answer 9:

$11,520

Answer 10:

$11,520

Question 4

0.67 / 2 pts

Amy Lloyd is interested in leasing a new car and has contacted three automobile dealers for pricing information. Each dealer offered Amy a closed-end 36-month lease with no down payment due at the time of signing. Each lease includes a monthly charge and a mileage allowance. Additional miles receive a surcharge on a per-mile basis. The monthly lease cost, the mileage allowance, and the cost for additional miles follow:

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Amy decided to choose the lease option that will minimize her total 36-month cost. The difficulty is that Amy is not sure how many miles she will drive over the next three years. For purposes of this decision, she believes it is reasonable to assume that she will drive 12,000 miles per year, 15,000 miles per year, or 18,000 miles per year. With this assumption, Amy estimated her total costs for the three lease options.

For example, she figures that the Dealer A lease will cost her $10,584 if he drives 12,000 miles per year, $11,934 if he drives 15,000 miles per year, or $13,284 if he drives 18,000 miles per year.

Question

If Amy has no idea which of the three mileage assumptions is most appropriate, what is the recommended decision (leasing option) using the optimistic, conservative, and minimax regret approaches?

The recommended decision using the optimistic approach is Dealer A .

The recommended decision using the conservative approach is Dealer A .

The recommended decision using the minimax regret approach is Dealer A .

Answer 1:

Dealer A

Answer 2:

Dealer A

Answer 3:

Dealer A

Question 5

2 / 2 pts

Amy Lloyd is interested in leasing a new car and has contacted three automobile dealers for pricing information. Each dealer offered Amy a closed-end 36-month lease with no down payment due at the time of signing. Each lease includes a monthly charge and a mileage allowance. Additional miles receive a surcharge on a per-mile basis. The monthly lease cost, the mileage allowance, and the cost for additional miles follow:

Dealer	Monthly Cost	Mileage Allowance	Cost per Additional Mile
Dealer A	$294	36,000	$0.15
Dealer B	$305	45,000	$0.20
Dealer C	$320	54,000	$0.15

Amy decided to choose the lease option that will minimize her total 36-month cost. The difficulty is that Amy is not sure how many miles she will drive over the next

three years. For purposes of this decision, she believes it is reasonable to assume that she will drive 12,000 miles per year, 15,000 miles per year, or 18,000 miles per year. With this assumption, Amy estimated her total costs for the three lease options. For example, she figures that the Dealer A lease will cost her $10,584 if he drives 12,000 miles per year, $11,934 if he drives 15,000 miles per year, or $13,284 if he drives 18,000 miles per year.

Question

(a) Suppose that the probabilities that Amy drives 12,000, 15,000, and 18,000 miles per year are 0.5, 0.4, and 0.1, respectively. What option should Amy choose using the expected value approach?

EV(Dealer A) = $ [Select]

EV(Dealer B) = $11,160

EV(Dealer C) = $ [Select]

The best decision is [Select]

(b) Suppose that after further consideration Amy concludes that the probabilities that she will drive 12,000, 15,000, and 18,000 miles per year are 0.3, 0.4, and 0.3, respectively. What decision should Amy make using the expected value approach?

EV(Dealer A) = $11,934

EV(Dealer B) = $ [Select]

EV(Dealer C) = $ [Select]

The best decision is [Select]

Answer 1:

11,394

Answer 2:

11,160

Answer 3:

11,520

Answer 4:

Dealer B

Answer 5:

11,934

Answer 6:

11,520

Answer 7:

11,520

Answer 8:

Dealer B or C

Question 6

2 / 2 pts

Investment advisors estimated the stock market returns for four market segments: computers, financial, manufacturing, and pharmaceuticals. Annual return projections vary depending on whether the general economic conditions are improving, stable, or declining. The anticipated annual return percentages for each market segment under each economic condition are as follows.

	Economic Condition		
Market Segment	**Improving**	**Stable**	**Declining**
Computers	11	2	−4
Financial	8	5	−3
Manufacturing	6	4	−2
Pharmaceuticals	6	5	−1

Question

(a) Assume that an individual investor wants to select one market segment for a new investment. A forecast shows improving to declining economic conditions with the following probabilities: improving (0.3), stable (0.5), and declining (0.2).

The preferred market segment for the investor is [Select] .

The expected return percentage of the preferred market segment is [Select] .

(b) At a later date, a revised forecast shows a potential for an improvement in economic conditions. New probabilities are as follows: improving (0.5), stable (0.4), and declining (0.1).

The preferred market segment for the investor based on these new probabilities is [Select] .

The expected return percentage of the preferred market segment is [Select] .

Answer 1:

Financial

Answer 2:

4.3

Answer 3:

Computers

Answer 4:

5.9

Question 7

1.2 / 2 pts

Seneca Hill Winery recently purchased land for the purpose of establishing a new vineyard. Management is considering two varieties of white grapes for the new vineyard: Chardonnay and Riesling. The Chardonnay grapes would be used to produce a dry Chardonnay wine, and the Riesling grapes would be used to produce a semidry Riesling wine. It takes approximately four years from the time of planting before new grapes can be harvested. This length of time creates a great deal of uncertainty concerning future demand and makes the decision concerning the type of grapes to plant difficult. Three possibilities are being considered: Chardonnay grapes only; Riesling grapes only; and both Chardonnay and Riesling grapes. Seneca management decided that for planning purposes it would be adequate to consider only two demand possibilities for each type of wine: strong or weak. With two

possibilities for each type of wine, it was necessary to assess four probabilities. With the help of some forecasts in industry publications management made the following probability assessments.

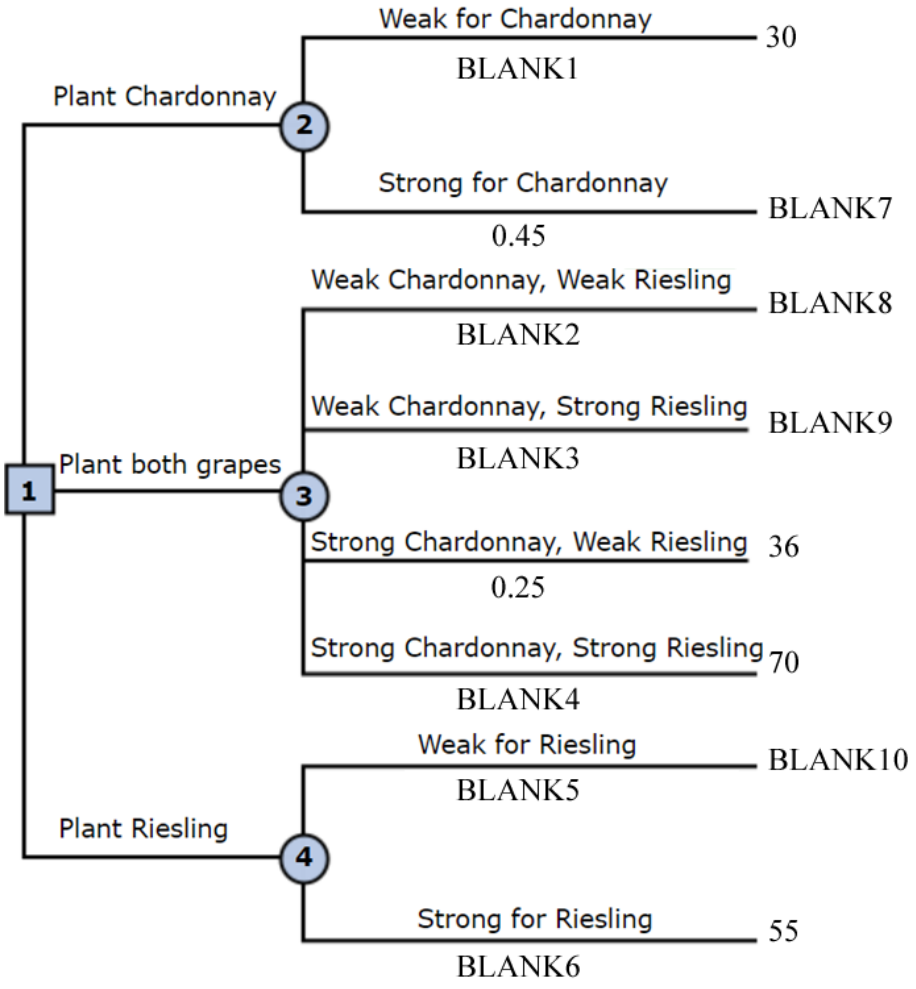
Chardonnay Demand	Riesling Demand	
	Weak	Strong
Weak	0.05	0.50
Strong	0.25	0.20

Revenue projections show an annual contribution to profit of $30,000 if Seneca Hill only plants Chardonnay grapes and demand is weak for Chardonnay wine, and $80,000 if the company only plants Chardonnay grapes and demand is strong for Chardonnay wine. If Seneca Hill only plants Riesling grapes, the annual profit projection is $35,000 if demand is weak for Riesling grapes and $55,000 if demand is strong for Riesling grapes. If Seneca plants both types of grapes, the annual profit projections are shown in the following table.

Chardonnay Demand	Riesling Demand	
	Weak	Strong
Weak	$32,000	$50,000
Strong	$36,000	$70,000

Question

Develop a decision tree. (Enter Integer monetary values in Thousands. Enter percentages with Two decimal places.)



Blank 1: 0.55

Blank 2: 0.05

Blank 3: 0.5

Blank 4: 0.2

Blank 5: 0.3

Blank 6: 0.7

Blank 7: 80

Blank 8: 32

Blank 9: 50

Blank 10: 35

Answer 1:

0.55

Answer 2:

0.05

Answer 3:

0.5

Answer 4:

0.2

Answer 5:

0.3

Answer 6:

0.7

Answer 7:

80

Answer 8:

32

Answer 9:

50

Answer 10:

35

Question 8

2 / 2 pts

Seneca Hill Winery recently purchased land for the purpose of establishing a new vineyard. Management is considering two varieties of white grapes for the new vineyard: Chardonnay and Riesling. The Chardonnay grapes would be used to produce a dry Chardonnay wine, and the Riesling grapes would be used to produce

a semidry Riesling wine. It takes approximately four years from the time of planting before new grapes can be harvested. This length of time creates a great deal of uncertainty concerning future demand and makes the decision concerning the type of grapes to plant difficult. Three possibilities are being considered: Chardonnay grapes only; Riesling grapes only; and both Chardonnay and Riesling grapes. Seneca management decided that for planning purposes it would be adequate to consider only two demand possibilities for each type of wine: strong or weak. With two possibilities for each type of wine, it was necessary to assess four probabilities. With the help of some forecasts in industry publications management made the following probability assessments.

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Chardonnay Demand	Riesling Demand	
	Weak	Strong
Weak	$32,000	$50,000
Strong	$36,000	$70,000

Question

(a) Use the expected value approach to recommend which alternative Seneca Hill Winery should follow in order to maximize the expected annual profit.

EV(Plant Chardonnay) = [Select]

EV(Plant both grapes) = [Select]

EV(Plant Riesling) = [Select]

The best decision is to plant [Select] grapes.

(b) Suppose management is concerned about the probability assessments when demand for Chardonnay wine is strong. Some believe it is likely for Riesling's demand to also be strong in this case. Suppose the probability of strong demand for Chardonnay and weak demand for Riesling is 0.05 and that the probability of strong demand for Chardonnay and strong demand for Riesling is 0.40. How does this change the recommended decision? Assume that the probabilities when Chardonnay demand is weak are still 0.05 and 0.50.

EV(Plant Chardonnay) = [Select]

EV(Plant both grapes) = [Select]

EV(Plant Riesling) = [Select]

The best decision is to plant [Select] grapes.

(c) Other members of the management team expect the Chardonnay market to become saturated at some point in the future, causing a fall in prices. Suppose that the annual profit projections fall to $50,000 when demand for Chardonnay is strong and Chardonnay grapes only are planted. Using the original probability assessments, determine how this change would affect the optimal decision.

EV(Plant Chardonnay) = 39

EV(Plant both grapes) = [Select]

EV(Plant Riesling) = [Select]

The best decision is to plant [Select] grapes.

Answer 1:

52.5

Answer 2:

49.6

Answer 3:

49

Answer 4:

Chardonnay

Answer 5:

52.5

Answer 6:

56.4

Answer 7:

53

Answer 8:

both

Answer 9:

39

Answer 10:

49.6

Answer 11:

49

Answer 12:

both

Question 9

1 / 2 pts

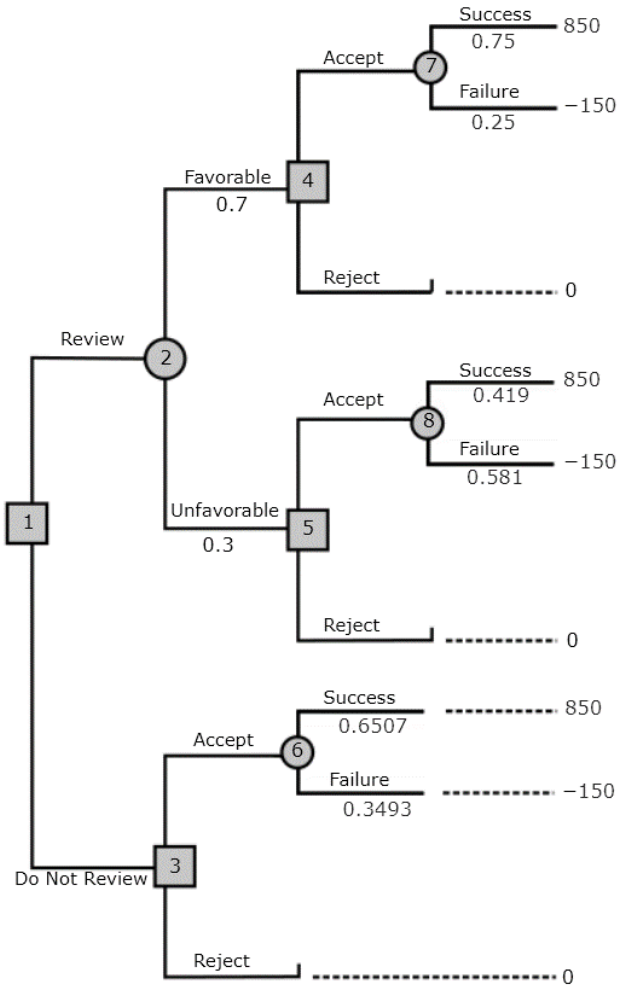
Anand Publishing Company received a six-chapter manuscript for a new college textbook. The editor of the college division is familiar with the manuscript and estimated a 0.6507 probability that the textbook will be successful. If successful, a profit of $850,000 will be realized. If the company decides to publish the textbook and it is unsuccessful, a loss of $150,000 will occur.

Before making the decision to accept or reject the manuscript, the editor is considering sending the manuscript out for review. A review process provides either a favorable (*F*) or an unfavorable (*U*) evaluation of the manuscript. Past experience with the review process suggests probabilities P(F) = 0.7 and P(U) = 0.3 apply. Let s_1 = the textbook is successful, and s_2 = the textbook is unsuccessful.

The editor's initial probabilities of s_1 and s_2 will be revised based on whether the review is favorable or unfavorable. The revised probabilities are as follows:

- $P(s_1|F) = 0.75$
- $P(s_2|F) = 0.25$
- $P(s_1|U) = 0.419$
- $P(s_2|U) = 0.581$

The following decision tree assumes that the company will first make the decision of whether to send the manuscript out for review and then the decision to accept or reject the manuscript.



Question

(a) Assuming the manuscript review process is free, using the expected value approach, determine the optimal decision strategy.

Optimal decision strategy Review, and then always accept.

(b) If the manuscript review costs $5,000, what is your recommendation?

Recommendation Do not review, and accept.

Answer 1:

Review, and then always accept.

Answer 2:

Do not review, and accept.

Question 10

2 / 2 pts

Anand Publishing Company received a six-chapter manuscript for a new college textbook. The editor of the college division is familiar with the manuscript and estimated a 0.6507 probability that the textbook will be successful. If successful, a profit of $850,000 will be realized. If the company decides to publish the textbook and it is unsuccessful, a loss of $150,000 will occur.

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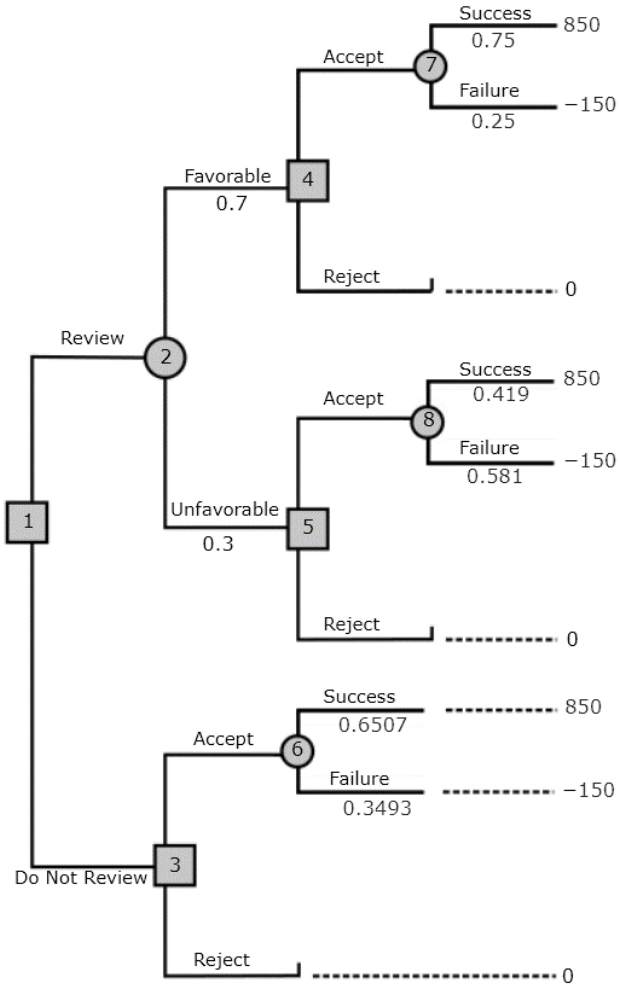

Question

(a) What is the expected value of perfect information (in thousands $)?

EVwPI = $ [Select]

EVwoPI = $ [Select]

EVPI = $ [Select]

(b) What does this EVPI suggest for the company?

This EVPI suggests a better procedure for assessing the market potential for the textbook may be [Select]

Answer 1:

553.095

Answer 2:

500.7

Answer 3:

52.395

Answer 4:

worthwhile

Quiz Score: **16.2** out of 20