





## Question #1 of 13

Question ID: 1485522

Lisa Brownard is considering investing in timberland. She owns a portfolio of stocks, bonds, and money market securities. Relative to her existing portfolio, the primary benefit of the timberland investment is most likely:

- A) timber values are tied to cyclical industries. 
- B) the investment horizon is longer than that of stocks and bonds, balancing the duration of the portfolio. 
- C) timber is a renewable resource so Brownard can profit from the land for many years. 
- D) low correlation between traditional asset returns and timberland returns. 

### Explanation

Timberland returns exhibit low correlation with stock and bond returns. This is generally cited as the key advantage to investing in timber. However, it is difficult to measure the returns to illiquid assets such as timber so the low correlation may be more a function of poor measurement of returns and less a function of true uncorrelated or negatively correlated returns. Cyclicalities and a long investment horizon are disadvantages of timberland investments. Timber is a renewable resource but that would not be the key advantage in a traditional asset portfolio.

(LO 3.1.3)

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## Question #2 of 13

Question ID: 1706119

A land developer has found a property that will be used to develop an apartment complex. Another developer that also had intended to construct an apartment complex is selling the property. Development of the property was started including the rough grading and initial drainage and erosion controls. The development fees and the permitting fees have not been paid. This property would be best categorized as a:

- A) blue top lot. 
- B) black top lot. 
- C) finished lot. 
- D) paper lot. 

### Explanation

Land can be categorized into the following types of lots based on the level of improvements that have been made to the property:

- *Paper lots.* Vacant lots with zoning approval.
- *Blue top lots.* Lots with the development process started. This may include rough grading and interim drainage and erosion controls. Some development fees and building permit fees will not have been paid.
- *Finished lots.* Lots that are ready for construction with all development fees paid. Only building permit and property inspection remain.





(LO 3.1.2)

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### Question #3 of 13

Question ID: 1405102

When viewing undeveloped land as a call option, the option payoff is the difference between the value of the:

- A)** original purchase price of the land and the value of improvements made to the property. 
- B)** completed project and the original purchase price of the undeveloped land. 
- C)** completed project and the cost of developing and constructing the project. 
- D)** original purchase price of the undeveloped land and the cost of developing and constructing the project. 

#### Explanation

The payoff of an option on undeveloped land is the difference between the value of the completed project (the value of the underlying asset) and the cost of developing and constructing the project (the strike or exercise price).





(LO 3.1.2)

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### Question #4 of 13

Question ID: 1405096

As a natural resource option gets closer to its expiration date, if the price of receivables declines relative to the cost of deliverables, the option's intrinsic value will:

- A)** decrease as its time value decreases. 
- B)** decrease as its time value increases. 
- C)** increase as its time value increases. 
- D)** increase as its time value declines. 

### Explanation

An option premium consists of its intrinsic value and its time value. When the price of receivables declines relative to the cost of deliverables, the option is losing intrinsic value. In addition, as time gets closer to expiration, the time value of the option decreases as well.





(LO 3.1.1)

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### Question #5 of 13

Question ID: 1485516

Which of the following statements regarding exchange option factors and their impact on option values is most accurate?

- A) An increase in equipment and labor cost volatility decreases option values. 
- B) Decreases in commodity price volatility increases option values. 
- C) A lower correlation between deliverables and receivables decreases option values. 
- D) An increase in volatility in mineral rights costs increases option values. 

### Explanation

Decreases in correlations between deliverables (costs such as equipment, labor, mineral rights) and receivables (e.g., commodity prices), as well as increases in individual deliverable and receivable volatility, all serve to increase the value of exchange options.





(LO 3.1.1)

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### Question #6 of 13

Question ID: 1485518

A real estate investor is evaluating a group of blue top lots for potential investment. Which of the following statements regarding blue top lots is most accurate?

- A) Blue top lots are ready for immediate home construction. 
- B) Blue top lots are in an interim completion stage, with rough grading of the property and interim drainage controls completed. 
- C) Blue top lots are ready for home construction, containing homes in various stages of construction. 
- D) Blue top lots are vacant sites approved for development, but with no infrastructure. 

## Explanation

The process of development has begun for blue top lots including rough grading of the property and interim drainage and erosion controls and some fees have been paid.

(LO 3.1.2)

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## Question #7 of 13

Question ID: 1485517

A real estate development company is evaluating the option to develop a significant piece of land near a major highway using a single-period binomial model. The company estimates that in an up-market, the cost to complete the construction will be \$5 million and the development will have a value of \$12 million. Additionally, the company estimates that in a down market, the cost to complete the construction will be \$4.5 million and the development will have a value of \$4 million. The current value of a comparable development is \$7 million. If the risk-free rate of interest is assumed to be zero, the option value to develop the land is closest to:

- A) \$2.3 million.
- B) \$4.4 million.
- C) \$2.6 million.
- D) \$4.2 million.



## Explanation

The first step is to determine the risk-neutral probabilities of the up and down states.

$$\$7,000,000 = (\$12,000,000 \times \text{UpProb}) + [\$4,000,000 \times (1 - \text{UpProb})]$$

$$\$7,000,000 = \$12,000,000\text{UpProb} + 4,000,000 - 4,000,000\text{UpProb}$$

$$\$7,000,000 = \$8,000,000\text{UpProb} + 4,000,000$$

$$\$3,000,000 = \$8,000,000\text{UpProb}$$

$$\$3,000,000 / \$8,000,000 = \text{UpProb}$$

$$\text{UpProb} = 37.5\%$$

The second step is to determine the option values in each state.

$$\text{option value}_{\text{up state}} = \text{Max}(0, \$12,000,000 - \$5,000,000) = \$7,000,000$$

$$\text{option value}_{\text{down state}} = \text{Max}(0, \$4,000,000 - \$4,500,000) = \$0$$

Using the option values from each state along with the risk-neutral probabilities, the value of the option is calculated as:

$$\text{option value} = \$7,000,000 \times 0.375 + \$0 \times 0.625$$

$$\text{option value} = \$2,625,000$$





(LO 3.1.2)

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### Question #8 of 13

Question ID: 1485524

Which of the following would most likely have the greatest impact on the value of farmland property?

- A)** The property can be repurposed from the current crop to an alternative crop relatively quickly. 
- B)** A decrease in the domestic use of bio-fuels. 
- C)** There is a local demand rather than global demand for the crop. 
- D)** There is a co-op willing to lease the property. 

#### Explanation

One of the main factors that increase the value of a property is a multi-use option. Farmland is easy to repurpose because of the short growth cycle and harvest schedule.





(LO 3.1.4)

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### Question #9 of 13

Question ID: 1405105

Which of the following investment vehicles may be used to provide exposure to timberland?

- A) Neither exchange traded funds nor real estate investment trusts. 
- B) Only exchange traded funds. 
- C) Both exchange traded funds and real estate investment trusts. 
- D) Only real estate investment trusts. 

#### Explanation

Both exchange traded funds (ETFs) and real estate investment trusts (REITs) provide methods for timberland exposure. There are currently two ETFs that track the S&P Timber and Forestry Index and four REITs that invest in timberland.





(LO 3.1.3)

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### Question #10 of 13

Question ID: 1405109

Gilbert Rooney is considering several alternative investments including farmland and timberland. Which of the following is an advantage Rooney should consider that is specific to farmland investments?

- A) Short growth cycles. 
- B) Fixed supplies of crops. 
- C) Minimal agency risk because owners typically farm the land themselves. 
- D) Flexible harvesting schedules. 

#### Explanation

Benefits that accrue to farmland investors include a short growth cycle. This allows for planting and harvesting the crop within one year (contrasted to timber, which takes up to 80 years to harvest).

The shorter growth cycle allows for a valuable, multi-purpose option on the land, allowing the owner to repurpose the land.

(LO 3.1.4)

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### Question #11 of 13

Question ID: 1485521

An investor is considering the purchase of a large tract of land to construct a conference center. The total cost of the project is estimated to be \$2.5 million over three years. A decision is being made in one year as to whether or not a major sporting event will be granted to the local vicinity. Should the games be awarded, the conference center needs to be ready in three years and the value of the facility will be twice the total investment; otherwise, the facility's value will be \$1 million. There is a 60% chance that the games will be granted to the local area. Budget specifics are as follows:

- Year 1: purchase of land, permits—\$250,000
- Year 2: construction of infrastructure—\$1,000,000
- Year 3: construction of facility—\$1,250,000

Assuming a discount rate of zero, what is the expected profit of the project?

- A) \$1.5 million. 
- B) \$1.4 million. 
- C) \$0. 
- D) \$3.4 million. 

#### Explanation

The expected value of the project =  $[0.6 \times (\$5\text{m} - \$2.5\text{m}) + 0.4 \times (-\$0.25\text{m})]$  = \$1.4 million If the games aren't awarded, the facility won't be built and the investor has only spent \$250k.

(LO 3.1.2)

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#### Question #12 of 13

Question ID: 1485520

Which type of real estate is most likely to maintain its value over an extended period of time?

- A) Raw land. 
- B) Blue top lots. 
- C) Finished lots. 
- D) Fully developed property. 

#### Explanation

Developed real estate requires maintenance to maintain its value, thus the downside risk of owning raw land is lower than that of properties where development has occurred.

(LO 3.1.2)

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### Question #13 of 13

Question ID: 1405098

Diane Florrick has recently invested in an undeveloped piece of land. She paid \$350,000 for the land. There is a 30% chance the land will be developed. If developed, Florrick expects the land will return 25%. If undeveloped, the expected return on the land is 3%. The expected return on Florrick's investment is:

- A) 25.0%
- B) 3.0%.
- C) 9.6%.
- D) 7.5%.



#### Explanation

The expected return of land is a probability-weighted average of the expected returns if the land is developed or not developed. The expected return on the land is:

$$E(R) = [P_d \times E(R_d)] + [(1 - P_d) \times E(R_{nd})]$$

$$E(R) = [0.30 \times 0.25] + [(1 - 0.30) \times 0.03] = 9.6\%$$

(LO 3.1.2)