

## Reading 7: Discounted Cash Flow Applications

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### Question #1 of 71

Question ID: 412888

A T-bill with a face value of \$100,000 and 140 days until maturity is selling for \$98,000. What is the money market yield?

- ☐ A) 2.04%.
- ☐ B) 5.41%.
- ☒ C) 5.25%.

#### Explanation

The money market yield is equivalent to the holding period yield annualized based on a 360-day year.  $= (2,000 / 98,000)(360 / 140) = 0.0525$ , or 5.25%.

#### References

**Question From:** Session 2 > Reading 7 > LOS e

#### **Related Material:**

- Key Concepts by LOS
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### Question #2 of 71

Question ID: 412868

On January 1, Jonathan Wood invests \$50,000. At the end of March, his investment is worth \$51,000. On April 1, Wood deposits \$10,000 into his account, and by the end of June, his account is worth \$60,000. Wood withdraws \$30,000 on July 1 and makes no additional deposits or withdrawals the rest of the year. By the end of the year, his account is worth \$33,000. The time-weighted return for the year is *closest to*:

- ☐ A) 7.0%.
- ☒ B) 10.4%.
- ☐ C) 5.5%.

#### Explanation

January - March return =  $51,000 / 50,000 - 1 = 2.00\%$

April - June return =  $60,000 / (51,000 + 10,000) - 1 = -1.64\%$

July - December return =  $33,000 / (60,000 - 30,000) - 1 = 10.00\%$

Time-weighted return =  $[(1 + 0.02)(1 - 0.0164)(1 + 0.10)] - 1 = 0.1036$  or 10.36%

#### References

**Question From:** Session 2 > Reading 7 > LOS d

#### **Related Material:**

- Key Concepts by LOS
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### Question #3 of 71

Question ID: 412904

An investor has just purchased a Treasury bill for \$99,400. If the security matures in 40 days and has a holding period yield of 0.604%, what is its money market yield?

- ✓ **A)** 5.436%.
- ✗ **B)** 5.650%.
- ✗ **C)** 5.512%.

#### Explanation

The money market yield is the annualized yield on the basis of a 360-day year and does not take into account the effect of compounding. The money market yield = (holding period yield)(360 / number of days until maturity) = (0.604%)(360 / 40) = 5.436%.

#### References

**Question From:** Session 2 > Reading 7 > LOS f

#### **Related Material:**

- Key Concepts by LOS

### Question #4 of 71

Question ID: 412870

An investor buys a share of stock for \$200.00 at time  $t = 0$ . At time  $t = 1$ , the investor buys an additional share for \$225.00. At time  $t = 2$  the investor sells both shares for \$235.00. During both years, the stock paid a per share dividend of \$5.00. What are the *approximate* time-weighted and money-weighted returns respectively?

- ✓ **A)** 10.8%; 9.4%.
- ✗ **B)** 7.7%; 7.7%.
- ✗ **C)** 9.0%; 15.0%.

#### Explanation

*Time-weighted return* =  $(225 + 5 - 200) / 200 = 15\%$ ;  $(470 + 10 - 450) / 450 = 6.67\%$ ;  $[(1.15)(1.0667)]^{1/2} - 1 = 10.8\%$

*Money-weighted return*:  $200 + [225 / (1 + \text{return})] = [5 / (1 + \text{return})] + [480 / (1 + \text{return})^2]$ ; money return = approximately 9.4%

Note that the easiest way to solve for the money-weighted return is to set up the equation and **plug in the answer choices** to find the discount rate that makes outflows equal to inflows.

Using the financial calculators to calculate the money-weighted return: (The following keystrokes assume that the financial memory registers are cleared of prior work.)

TI Business Analyst II Plus®

- Enter  $CF_0$ : 200, +/-, Enter, down arrow
- Enter  $CF_1$ : 220, +/-, Enter, down arrow, down arrow
- Enter  $CF_2$ : 480, Enter, down arrow, down arrow,
- Compute IRR: IRR, CPT
- Result: 9.39

HP 12C®

- Enter  $CF_0$ : 200, CHS, g,  $CF_0$
- Enter  $CF_1$ : 220, CHS, g,  $CF_j$
- Enter  $CF_2$ : 480, g,  $CF_j$
- Compute IRR: f, IRR
- Result: 9.39

#### References

**Question From:** Session 2 > Reading 7 > LOS d

#### **Related Material:**

- Key Concepts by LOS

## Question #5 of 71

Question ID: 412874

An investor makes the following investments:

- She purchases a share of stock for \$50.00.
- After one year, she purchases an additional share for \$75.00.
- After one more year, she sells both shares for \$100.00 each.
- There are no transaction costs or taxes.

During year one, the stock paid a \$5.00 per share dividend. In year 2, the stock paid a \$7.50 per share dividend. The investor's required return is 35%. Her money-weighted return is *closest to*:

- ✓ **A)** 48.9%.
- X **B)** -7.5%.
- X **C)** 16.1%.

#### Explanation

To determine the money weighted rate of return, use your calculator's cash flow and IRR functions. The cash flows are as follows:

$CF_0$ : initial cash outflow for purchase = \$50

$CF_1$ : dividend inflow of \$5 - cash outflow for additional purchase of \$75 = net cash outflow of -\$70

$CF_2$ : dividend inflow ( $2 \times \$7.50 = \$15$ ) + cash inflow from sale ( $2 \times \$100 = \$200$ ) = net cash inflow of \$215

Enter the cash flows and compute IRR:

$CF_0 = -50$ ;  $CF_1 = -70$ ;  $CF_2 = +215$ ; CPT IRR = 48.8607

#### References

**Question From:** Session 2 > Reading 7 > LOS d

#### **Related Material:**

- Key Concepts by LOS

## Question #6 of 71

Question ID: 412900

If the money market yield is 3.792% on a T-bill with 79 days to maturity, what is the holding period yield?

- ✓ **A)** 0.83%.
- ✗ **B)** 0.89%.
- ✗ **C)** 0.77%.

#### Explanation

The holding period yield can be calculated from the money market yield as:  $(\text{money market yield}) \div (360 \div t)$ . Therefore, the HPY is  $(0.03792) \times (79 \div 360) = 0.0083 = 0.83\%$ .

#### References

**Question From:** Session 2 > Reading 7 > LOS f

#### **Related Material:**

- Key Concepts by LOS

### Question #7 of 71

Question ID: 412843

The financial manager at IBFM, a farm implement distributor, is contemplating the following three mutually exclusive projects. IBFM's required rate of return is 9.5%. Based on the information provided, which should the financial manager select and why?

<i>Project</i>	<i>Investment at <math>t = 0</math></i>	<i>Cash Flow at <math>t = 1</math></i>	<i>IRR</i>	<i>NPV @ 9.5%</i>
A	\$10,000	\$11,300	13.00	\$320
B	\$25,000	\$29,000	16.00	\$1,484
C	\$35,000	\$40,250	15.00	\$1,758

- ✗ **A)** All of the projects, because they all earn more than 9.5%.
- ✗ **B)** Project A with the lowest initial investment.
- ✓ **C)** Project C with the highest net present value.

#### Explanation

When projects are mutually exclusive, only one can be chosen. Project selection should be done on the basis of which project will enhance firm value the most. That project, Project C in this case, is the one with the highest NPV.

#### References

**Question From:** Session 2 > Reading 7 > LOS b

#### **Related Material:**

- Key Concepts by LOS

### Question #8 of 71

Question ID: 412867

Which of the following is *most* accurate with respect to the relationship of the money-weighted return to the time-weighted return? If funds are contributed to a portfolio just prior to a period of favorable performance, the:

- X **A)** time-weighted rate of return will tend to be elevated.
- X **B)** money-weighted rate of return will tend to be depressed.
- ✓ **C)** money-weighted rate of return will tend to be elevated.

#### Explanation

The time-weighted returns are what they are and will not be affected by cash inflows or outflows. The money-weighted return is susceptible to distortions resulting from cash inflows and outflows. The money-weighted return will be biased upward if the funds are invested just prior to a period of favorable performance and will be biased downward if funds are invested just prior to a period of relatively unfavorable performance. The opposite will be true for cash outflows.

#### References

**Question From:** Session 2 > Reading 7 > LOS d

#### **Related Material:**

- Key Concepts by LOS
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### **Question #9 of 71**

Question ID: 412903

The effective annual yield (EAY) for a T-bill maturing in 150 days is 5.04%. What are the holding period yield (HPY) and money market yield (MMY) respectively?

- X **A)** 2.80%; 5.41%.
- X **B)** 5.25%; 2.04%.
- ✓ **C)** 2.04%; 4.90%.

#### Explanation

The EAY takes the holding period yield and annualizes it based on a 365-day year accounting for compounding. The  $HPY = (1 + 0.0504)^{150/365} - 1 = 2.04\%$ . Using the HPY to compute the money market yield =  $HPY \times (360/t) = 0.0204 \times (360/150) = 0.04896 = 4.90\%$ .

#### References

**Question From:** Session 2 > Reading 7 > LOS f

#### **Related Material:**

- Key Concepts by LOS
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### **Question #10 of 71**

Question ID: 412854

A stock is currently worth \$75. If the stock was purchased one year ago for \$60, and the stock paid a \$1.50 dividend over the course of the year, what is the holding period return?

- X **A)** 24.0%.
- ✓ **B)** 27.5%.
- X **C)** 22.0%.

### Explanation

$(75 - 60 + 1.50) / 60 = 27.5\%$ .

### References

**Question From:** Session 2 > Reading 7 > LOS c

### **Related Material:**

- Key Concepts by LOS
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## **Question #11 of 71**

Question ID: 412852

A bond was purchased exactly one year ago for \$910 and was sold today for \$1,020. During the year, the bond made two semi-annual coupon payments of \$30. What is the holding period return?

- X **A)** 12.1%.
- X **B)** 6.0%.
- ✓ **C)** 18.7%.

### Explanation

$HPY = (1,020 + 30 + 30 - 910) / 910 = 0.1868$  or 18.7%.

### References

**Question From:** Session 2 > Reading 7 > LOS c

### **Related Material:**

- Key Concepts by LOS
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## **Question #12 of 71**

Question ID: 412871

Miranda Cromwell, CFA, buys £2,000 worth of Smith & Jones PLC shares at the beginning of each year for four years at prices of £100, £120, £150 and £130 respectively. At the end of the fourth year the price of Smith & Jones PLC is £140. The shares do not pay a dividend. Cromwell calculates her average cost per share as  $[(£100 + £120 + £150 + £130) / 4] = £125$ . Cromwell then uses the geometric mean of annual holding period returns to conclude that her time-weighted annual rate of return is 8.8%. Has Cromwell correctly determined her average cost per share and time-weighted rate of return?

- | <u>Average cost</u>   | <u>Time-weighted<br/>return</u> |
|-----------------------|---------------------------------|
| ✓ <b>A)</b> Incorrect | Correct                         |
| X <b>B)</b> Correct   | Incorrect                       |
| X <b>C)</b> Correct   | Correct                         |

### Explanation

Because Cromwell purchases shares each year for the same amount of money, she should calculate the average cost per share using the harmonic mean. Cromwell is correct to use the geometric mean to calculate the time-weighted rate of return. The

calculation is as follows:

Year	Beginning price	Ending price	Annual rate of return
1	£100	£120	20%
2	£120	£150	25%
3	£150	£130	-13.33%
4	£130	£140	7.69%

$TWR = [(1.20)(1.25)(0.8667)(1.0769)]^{1/4} - 1 = 8.78\%$ . Or, more simply,  $(140/100)^{1/4} - 1 = 8.78\%$ .

#### References

**Question From:** Session 2 > Reading 7 > LOS d

#### **Related Material:**

- Key Concepts by LOS

## Question #13 of 71

Question ID: 412842

Financial managers should always select the project that provides the highest net present value (NPV) whenever NPV and IRR methods conflict, because maximizing:

- ✓ **A)** shareholder wealth is the goal of financial management.
- ✗ **B)** revenues is the goal of financial management.
- ✗ **C)** the shareholders' rate of return is the goal of financial management.

#### Explanation

Focusing on the maximization of earnings does not consider the differences in risk across projects, while focusing on revenues precludes concern for the expenses incurred. Earning a higher return on a small project provides less of a benefit than earning a slightly lower rate of return on a much larger project.

#### References

**Question From:** Session 2 > Reading 7 > LOS b

#### **Related Material:**

- Key Concepts by LOS

## Question #14 of 71

Question ID: 434186

An investor buys a \$1,000 par value, 10.375% coupon, annual-pay bond for \$1,033.44 and sells it one year later for \$1,014.06. What is the holding period yield?

- ✗ **A)** 8.22%.
- ✗ **B)** 8.14%.

✓ **C)** 8.16%.

#### Explanation

The rate of return equals the  $[(\text{ending cash} - \text{price}) / \text{price}] \times 100 =$

$$[(1014.06 + 103.75 - 1033.44) / 1033.44] \times 100 = 8.16\%$$

#### References

**Question From:** Session 2 > Reading 7 > LOS c

#### **Related Material:**

- Key Concepts by LOS
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### Question #15 of 71

Question ID: 412881

A Treasury bill (T-bill) with a face value of \$10,000 and 137 days until maturity is selling for 98.125% of face value. Which of the following is *closest* to the bank discount yield on the T-bill?

- X **A)** 5.06%.
- X **B)** 4.56%.
- ✓ **C)** 4.93%.

#### Explanation

The formula for bank discount yield is:  $(D / F) \times (360 / t)$ . Actual discount is  $1 - 0.98125 = 0.01875$ . Annualized is:  $0.01875 \times (360 / 137) = 0.04927$

#### References

**Question From:** Session 2 > Reading 7 > LOS e

#### **Related Material:**

- Key Concepts by LOS
- 

### Question #16 of 71

Question ID: 412872

Robert Mackenzie, CFA, buys 100 shares of GWN Breweries each year for four years at prices of C\$10, C\$12, C\$15 and C\$13 respectively. GWN pays a dividend of C\$1.00 at the end of each year. One year after his last purchase he sells all his GWN shares at C\$14. Mackenzie calculates his average cost per share as  $[(C\$10 + C\$12 + C\$15 + C\$13) / 4] = C\$12.50$ . Mackenzie then uses the internal rate of return technique to calculate that his money-weighted annual rate of return is 12.9%. Has Mackenzie correctly determined his average cost per share and money-weighted rate of return?

<u>Average cost</u>	<u>Money-weighted return</u>
---------------------	----------------------------------

- |                       |           |
|-----------------------|-----------|
| X <b>A)</b> Incorrect | Correct   |
| X <b>B)</b> Correct   | Incorrect |
| ✓ <b>C)</b> Correct   | Correct   |



### Explanation

Because Mackenzie purchased the same number of shares each year, the arithmetic mean is appropriate for calculating the average cost per share. If he had purchased shares for the same amount of money each year, the harmonic mean would be appropriate. Mackenzie is also correct in using the internal rate of return technique to calculate the money-weighted rate of return. The calculation is as follows:

<i>Time</i>	<i>Purchase/Sale</i>	<i>Dividend</i>	<i>Net cash flow</i>
0	-1,000	0	-1,000
1	-1,200	+100	-1,100
2	-1,500	+200	-1,300
3	-1,300	+300	-1,000
4	$400 \times 14 = +5,600$	+400	+6,000

CF0 = -1,000; CF1 = -1,100; CF2 = -1,300; CF3 = -1,000; CF4 = 6,000; CPT → IRR = 12.9452.

### References

**Question From:** Session 2 > Reading 7 > LOS d

#### **Related Material:**

- Key Concepts by LOS

## **Question #17 of 71**

Question ID: 412886

A T-bill with a face value of \$100,000 and 140 days until maturity is selling for \$98,000. What is the bank discount yield?

- ✓ **A)** 5.14%.
- X **B)** 5.41%.
- X **C)** 4.18%.

### Explanation

Actual discount is 2%, annualized discount is:  $0.02(360 / 140) = 5.14\%$

### References

**Question From:** Session 2 > Reading 7 > LOS e

#### **Related Material:**

- Key Concepts by LOS

## **Question #18 of 71**

Question ID: 412901

The holding period yield for a T-Bill maturing in 110 days is 1.90%. What are the equivalent annual yield (EAY) and the money market yield (MMY) respectively?

- X **A)** 5.25%; 5.59%.
- ✓ **B)** 6.44%; 6.22%.
- X **C)** 6.90%; 6.80%.

#### Explanation

The EAY takes the holding period yield and annualizes it based on a 365-day year accounting for compounding.  $(1 + 0.0190)^{365/110} - 1 = 1.06444 - 1 = 6.44\%$ . Using the HPY to compute the money market yield =  $HPY \times (360 / t) = 0.0190 \times (360 / 110) = 0.06218 = 6.22\%$ .

#### References

**Question From:** Session 2 > Reading 7 > LOS f

#### **Related Material:**

- Key Concepts by LOS

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## Question #19 of 71

Question ID: 412891

A Treasury bill with a face value of \$1,000,000 and 45 days until maturity is selling for \$987,000. The Treasury bill's bank discount yield is *closest* to:

- ✓ **A)** 10.40%.
- X **B)** 10.54%.
- X **C)** 7.90%.

#### Explanation

The actual discount is 1.3%,  $1.3\% \times (360 / 45) = 10.4\%$

The bank discount yield is computed by the following formula,  $r = (\text{dollar discount} / \text{face value}) \times (360 / \text{number of days until maturity}) = [(1,000,000 - 987,000) / (1,000,000)] \times (360 / 45) = 10.40\%$ .

#### References

**Question From:** Session 2 > Reading 7 > LOS e

#### **Related Material:**

- Key Concepts by LOS

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## Question #20 of 71

Question ID: 412849

Sarah Kelley, CFA, is analyzing two mutually exclusive investment projects. Kelley has calculated the net present value (NPV) and internal rate of return (IRR) for each project:

- Project 1: NPV = \$230; IRR = 15%
- Project 2: NPV = \$4,000; IRR = 6%

Kelley should make which of the following recommendations concerning the two projects?

- X **A)** Accept Project 1 only.
- X **B)** Accept both projects.
- ✓ **C)** Accept Project 2 only.

#### Explanation

Because the investment projects are mutually exclusive, only one project can be chosen. The NPV and IRR criteria are giving conflicting project rankings. When decision criteria conflict, always use the NPV criteria because NPV evaluates projects using an appropriate discount rate, the weighted average cost of capital. The IRR may not be a market rate, therefore future cash flows associated with the project may not be capable of earning a rate of return equal to the IRR.

#### References

**Question From:** Session 2 > Reading 7 > LOS b

#### **Related Material:**

- Key Concepts by LOS
- 

### **Question #21 of 71**

Question ID: 412851

The internal rate of return (IRR) method and net present value (NPV) method of project selection will always provide the same accept or reject decision when:

- X **A)** the projects are mutually exclusive.
- X **B)** up-front project costs are under \$1.0 million.
- ✓ **C)** the projects are independent.

#### Explanation

If a project's IRR exceeds the cost of capital, the project's NPV will be positive. The only way in which accepting a positive NPV project would reduce firm value is if its selection precludes selection of a project that would have enhanced firm value to a greater extent (i.e., had a higher NPV). IRR and NPV method accuracy do not depend upon project duration or costs.

#### References

**Question From:** Session 2 > Reading 7 > LOS b

#### **Related Material:**

- Key Concepts by LOS
- 

### **Question #22 of 71**

Question ID: 412865

Which of the following statements regarding the money-weighted and time-weighted rates of return is *least* accurate?

- X **A)** The time-weighted rate of return is the standard in the investment management industry.
- ✓ **B)** The money-weighted rate of return removes the effects of the timing of additions and withdrawals to a portfolio.
- X **C)** The time-weighted rate of return reflects the compound rate of growth of one unit of currency over a stated measurement period.

### Explanation

The money-weighted return is actually highly sensitive to the timing and amount of withdrawals and additions to a portfolio. The time-weighted return removes the effects of timing and amount of withdrawals to a portfolio and reflects the compound rate of growth of \$1 over a stated measurement period. Because the time-weighted rate of return removes the effects of timing, it is the standard in the investment management industry.

### References

**Question From:** Session 2 > Reading 7 > LOS d

### **Related Material:**

- Key Concepts by LOS

## Question #23 of 71

Question ID: 412838

An investment with a cost of \$5,000 is expected to have cash inflows of \$3,000 in year 1, and \$4,000 in year 2. The internal rate of return (IRR) for this investment is *closest* to:

- X A) 30%.
- ✓ B) 25%.
- X C) 15%.

### Explanation

The IRR is the discount rate that makes the net present value of the investment equal to 0.

This means  $-\$5,000 + \$3,000 / (1 + \text{IRR}) + \$4,000 / (1 + \text{IRR})^2 = 0$

One way to compute this problem is to use trial and error with the existing answer choices and choose the discount rate that makes the PV of the cash flows closest to 5,000.

$\$3,000 / (1.25) + \$4,000 / (1.25)^2 = 4,960$ .

Alternatively: CFO = -5,000; CF1 = 3,000; CF2 = 4,000; CPT → IRR = 24.3%.

### References

**Question From:** Session 2 > Reading 7 > LOS a

### **Related Material:**

- Key Concepts by LOS

## Question #24 of 71

Question ID: 412850

The financial manager at Kyser Jones is considering two mutually exclusive projects with the following projected cash flows:

Projected Cash Flows		
Year	Project M	Project Z
0	-\$60,000	-\$60,000
1	22,500	0

2	22,500	0
3	22,500	0
4	22,500	111,000

If Kyser Jones' required rate of return is 11%, which project would be chosen and why?

- ✓ **A)** Project Z, because it has the higher net present value.
- X **B)** Both projects because their net present values are positive.
- X **C)** Project M, because it has the higher internal rate of return.

#### Explanation

Since the projects are mutually exclusive, only one of the projects may be chosen. Project Z has the higher NPV. On the exam, always use NPV for choosing between mutually exclusive projects.

Cash Flow Input Values		
	Project M	Project Z
CF <sub>0</sub>	-60,000	-60,000
CF <sub>1</sub>	22,500	0
F <sub>1</sub>	4	3
CF <sub>2</sub>		111,000
F <sub>2</sub>		1
Output Values		
	Project M	Project Z
NPV	\$9,805	\$13,119
IRR	18.45%	16.62%

#### References

**Question From:** Session 2 > Reading 7 > LOS b

#### **Related Material:**

- Key Concepts by LOS

## **Question #25 of 71**

Question ID: 412869

Assume an investor makes the following investments:

- Today, she purchases a share of stock in Redwood Alternatives for \$50.00.
- After one year, she purchases an additional share for \$75.00.
- After one more year, she sells both shares for \$100.00 each.

There are no transaction costs or taxes. The investor's required return is 35.0%.

During year one, the stock paid a \$5.00 per share dividend. In year two, the stock paid a \$7.50 per share dividend.

The time-weighted return is:

- X A) 51.7%.
- X B) 23.2%.
- ✓ C) 51.4%.

#### Explanation

To calculate the *time-weighted* return:

*Step 1: Separate the time periods into holding periods and calculate the return over that period:*

*Holding period 1:*  $P_0 = \$50.00$

$D_1 = \$5.00$

$P_1 = \$75.00$  (from information on second stock purchase)

$HPR_1 = (75 - 50 + 5) / 50 = 0.60$ , or 60%

*Holding period 2:*  $P_1 = \$75.00$

$D_2 = \$7.50$

$P_2 = \$100.00$

$HPR_2 = (100 - 75 + 7.50) / 75 = 0.433$ , or 43.3%.

*Step 2: Use the geometric mean to calculate the return over both periods*

Return =  $[(1 + HPR_1) \times (1 + HPR_2)]^{1/2} - 1 = [(1.60) \times (1.433)]^{1/2} - 1 = 0.5142$ , or **51.4%**.

#### References

**Question From:** Session 2 > Reading 7 > LOS d

**Related Material:**

- Key Concepts by LOS

## Question #26 of 71

Question ID: 412864

An analyst managed a portfolio for many years and then liquidated it. Computing the internal rate of return of the inflows and outflows of a portfolio would give the:

- X A) time-weighted return.
- X B) net present value.
- ✓ C) money-weighted return.

#### Explanation

The money-weighted return is the internal rate of return on a portfolio that equates the present value of inflows and outflows over a period of time.

#### References

**Question From:** Session 2 > Reading 7 > LOS d

**Related Material:**

- Key Concepts by LOS

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**Question #27 of 71**

Question ID: 412860

An investor is considering investing in Tawari Company for one year. He expects to receive \$2 in dividends over the year and feels he can sell the stock for \$30 at the end of the year. To realize a return on the investment over the year of 14%, the price the investor would pay for the stock today is *closest* to:

- ☐ A) \$29.
- ☒ B) \$28.
- ☐ C) \$32.

Explanation
$$\text{HPR} = [\text{Dividend} + (\text{Ending price} - \text{Beginning price})] / \text{Beginning price}$$

$$0.14 = [2 + (30 - P)] / P$$

$$1.14P = 32 \text{ so } P = \$28.07$$

References

**Question From:** Session 2 > Reading 7 > LOS c

**Related Material:**

- Key Concepts by LOS
- 

**Question #28 of 71**

Question ID: 412857

A bond that pays \$100 in interest each year was purchased at the beginning of the year for \$1,050 and sold at the end of the year for \$1,100. An investor's holding period return is:

- ☐ A) 10.5%.
- ☐ B) 10.0%.
- ☒ C) 14.3%.

Explanation

Input into your calculator: N = 1; FV = 1,100; PMT = 100; PV = -1,050; CPT → I/Y = 14.29

References

**Question From:** Session 2 > Reading 7 > LOS c

**Related Material:**

- Key Concepts by LOS
- 

**Question #29 of 71**

Question ID: 412834

Calabash Crab House is considering an investment in mutually exclusive kitchen-upgrade projects with the following cash flows:

	Project A	Project B

Initial Year	-\$10,000	-\$9,000
Year 1	2,000	200
Year 2	5,000	-2,000
Year 3	8,000	11,000
Year 4	8,000	15,000

Assuming Calabash has a 12.5% cost of capital, which of the following investment decisions is *most* appropriate?

- ✓ **A)** Accept Project B because its net present value is higher than that of Project A.
- X **B)** Accept both projects because they both have positive net present values.
- X **C)** Accept Project A because its internal rate of return is higher than that of Project B.

#### Explanation

When net present value (NPV) and internal rate of return (IRR) give conflicting project rankings, NPV is the most appropriate method for deciding between mutually exclusive projects. Here, the NPV of project A is \$6,341 and the NPV of Project B is \$6,688. Both NPVs are positive, so Calabash should select the Project B because of its higher NPV.

#### References

**Question From:** Session 2 > Reading 7 > LOS a

#### **Related Material:**

- Key Concepts by LOS

## Question #30 of 71

Question ID: 412855

An investor sold a 30-year bond at a price of \$850 after he purchased it at \$800 a year ago. He received \$50 of interest at the time of the sale. The annualized holding period return is:

- X **A)** 6.25%.
- X **B)** 15.0%.
- ✓ **C)** 12.5%.

#### Explanation

The holding period return (HPR) is calculated as follows:

$$\text{HPR} = (P_t - P_{t-1} + D_t) / P_{t-1}$$

where:

$P_t$  = price per share at the end of time period t

$D_t$  = cash distributions received during time period t.

**Here,**  $\text{HPR} = (850 - 800 + 50) / 800 = 0.1250$ , or **12.50%**.

#### References

**Question From:** Session 2 > Reading 7 > LOS c

#### **Related Material:**

- Key Concepts by LOS



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## Question #31 of 71

Question ID: 412859

Banca Hakala purchases two front row concert tickets over the Internet for \$90 per seat. One month later, the rock group announces that it is dissolving due to personality conflicts and the concert that Hakala has tickets for will be the "farewell" concert. Hakala sees a chance to raise some quick cash, so she puts the tickets up for sale on the same internet site. The auction closes at \$250 per ticket. After paying a 10% commission to the site on the amount of the sale and paying \$10 in shipping costs, Hakala's one-month holding period return is approximately:

- ☐ A) 44%.
- ☐ B) 139%.
- ☒ C) 144%.

### Explanation

The holding period return is calculated as: (ending price - beginning price +/- any cash flows) / beginning price. Here, the beginning and ending prices are given. The other cash flows consist of the commission of  $0.10 \times \$250 \times 2 \text{ tickets} = \$50$  and the shipping cost of \$10 (total for both tickets).

Thus, her one-month holding period return is:  $[(2 \times \$250) - (2 \times \$90) - \$50 - \$10] / (2 \times \$90) = 1.44$ , or approximately **144%**.

### References

**Question From:** Session 2 > Reading 7 > LOS c

#### **Related Material:**

- Key Concepts by LOS

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## Question #32 of 71

Question ID: 412879

A Treasury bill has 40 days to maturity, a par value of \$10,000, and is currently selling for \$9,900. Its effective annual yield is *closest* to:

- ☐ A) 1.00%.
- ☒ B) 9.60%.
- ☐ C) 9.00%.

### Explanation

The effective annual yield (EAY) is based on a 365-day year and accounts for compound interest.  $EAY = (1 + \text{holding period yield})^{365/t} - 1$ . The holding period yield formula is (price received at maturity - initial price + interest payments) / (initial price) =  $(10,000 - 9,900 + 0) / (9,900) = 1.01\%$ .  $EAY = (1.0101)^{365/40} - 1 = 9.60\%$ .

### References

**Question From:** Session 2 > Reading 7 > LOS e

#### **Related Material:**

- Key Concepts by LOS
-

### Question #33 of 71

Question ID: 412835

The financial manager at Genesis Company is looking into the purchase of an apartment complex for \$550,000. Net after-tax cash flows are expected to be \$65,000 for each of the next five years, then drop to \$50,000 for four years. Genesis' required rate of return is 9% on projects of this nature. After nine years, Genesis Company expects to sell the property for after-tax proceeds of \$300,000. What is the respective internal rate of return (IRR) and net present value (NPV) on this project?

- ☐ A) 6.66%; -\$64,170.
- ☒ B) 7.01%; -\$53,765.
- ☐ C) 13.99%; \$166,177.

#### Explanation

IRR Keystrokes:  $CF_0 = -\$550,000$ ;  $CF_1 = \$65,000$ ;  $F_1 = 5$ ;  $CF_2 = \$50,000$ ;  $F_2 = 3$ ;  $CF_3 = \$350,000$ ;  $F_3 = 1$ .

NPV Keystrokes:  $CF_0 = -\$550,000$ ;  $CF_1 = \$65,000$ ;  $F_1 = 5$ ;  $CF_2 = \$50,000$ ;  $F_2 = 3$ ;  $CF_3 = \$350,000$ ;  $F_3 = 1$ .

Compute NPV,  $I = 9$ .

*Note: Although the rate of return is positive, the IRR is less than the required rate of 9%. Hence, the NPV is negative.*

#### References

**Question From:** Session 2 > Reading 7 > LOS a

#### **Related Material:**

- Key Concepts by LOS
- 

### Question #34 of 71

Question ID: 412839

In order to calculate the net present value (NPV) of a project, an analyst would *least likely* need to know the:

- ☐ A) opportunity cost of capital for the project.
- ☒ B) internal rate of return (IRR) of the project.
- ☐ C) timing of the expected cash flows from the project.

#### Explanation

The NPV is calculated using the opportunity cost, discount rate, expected cash flows, and timing of the expected cash flows from the project. The project's IRR is not used to calculate the NPV.

#### References

**Question From:** Session 2 > Reading 7 > LOS a

#### **Related Material:**

- Key Concepts by LOS
- 

### Question #35 of 71

Question ID: 412856

When Annette Famigletti hears that a baseball-loving friend is coming to visit, she purchases two premium-seating tickets for \$45 per ticket for an evening game. As the date of the game approaches, Famigletti's friend telephones and says that his trip has

been cancelled. Fortunately for Famigletti, the tickets she holds are in high demand as there is chance that the leading Major League Baseball hitter will break the home run record during the game. Seeing an opportunity to earn a high return, Famigletti puts the tickets up for sale on an internet site. The auction closes at \$150 per ticket. After paying a 10% commission to the site (on the amount of the sale) and paying \$8 total in shipping costs, Famigletti's holding period return is approximately:

- X **A)** 202%.
- ✓ **B)** 191%.
- X **C)** 182%.

#### Explanation

The holding period return is calculated as:  $(\text{ending price} - \text{beginning price} \pm \text{any cash flows}) / \text{beginning price}$ . Here, the beginning and ending prices are given. The other cash flows consist of the commission of \$30 ( $0.10 \times 150 \times 2$  tickets) and the shipping cost of \$8 (total for both tickets). Thus, her holding period return is:  $(2 \times 150 - 2 \times 45 - 30 - 8) / (2 \times 45) = 1.91$ , or approximately **191%**.

#### References

**Question From:** Session 2 > Reading 7 > LOS c

#### **Related Material:**

- Key Concepts by LOS
- 

## **Question #36 of 71**

Question ID: 412840

The capital budgeting director of Green Manufacturing is evaluating a laser imaging project with the following characteristics:

- Cost: \$150,000
- Expected life: 3 years
- After-tax cash flows: \$60,317 per year
- Salvage value: \$0

If Green Manufacturing's cost of capital is 11.5%, what is the project's internal rate of return (IRR)?

- ✓ **A)** 10.0%.
- X **B)** 13.6%.
- X **C)** \$3,875.

#### Explanation

Since we are seeking the IRR, the answer has to be in terms of a rate of return, this eliminates the option not written in a percentage.

Since they payments (cash flows) are equals, we can calculate the IRR as:  $N = 3$ ;  $PV = 150,000$ ;  $PMT = 60,317$ ;  $CPT \rightarrow I/Y = 9.999$

#### References

**Question From:** Session 2 > Reading 7 > LOS a

#### **Related Material:**

- Key Concepts by LOS
-

## Question #37 of 71

Question ID: 412875

An investor buys four shares of stock for \$50 per share. At the end of year one she sells two shares for \$50 per share. At the end of year two she sells the two remaining shares for \$80 each. The stock paid no dividend at the end of year one and a dividend of \$5.00 per share at the end of year two. What is the difference between the time-weighted rate of return and the money-weighted rate of return?

- ☐ A) 20.52%.
- ☒ B) 9.86%.
- ☐ C) 14.48%.

### Explanation

T = 0: Purchase of four shares = -\$200.00

T = 1: Dividend from four shares = +\$0.00

Sale of two shares = +\$100.00

T = 2: Dividend from two shares = +\$10.00

Proceeds from selling shares = +\$160.00

The money-weighted return is the rate that solves the equation:

$$\$200.00 = \$100.00 / (1 + r) + \$170.00 / (1 + r)^2.$$

$$Cfo = -200, CF1 = 100, Cf2 = 170, CPT \rightarrow IRR = 20.52\%.$$

The holding period return in year one is  $(\$50.00 - \$50.00 + \$0.00) / \$50.00 = 0.00\%$ .

The holding period return in year two is  $(\$80.00 - \$50.00 + \$5.00) / \$50 = 70.00\%$ .

The time-weighted return is  $[(1 + 0.00)(1 + 0.70)]^{1/2} - 1 = 30.38\%$ .

The difference between the two is  $30.38\% - 20.52\% = 9.86\%$ .

### References

**Question From:** Session 2 > Reading 7 > LOS d

### **Related Material:**

- Key Concepts by LOS

## Question #38 of 71

Question ID: 412866

The money-weighted return also is known as the:

- ☐ A) return on invested capital.
- ☐ B) measure of the compound rate of growth of \$1 over a stated measurement period.
- ☒ C) internal rate of return (IRR) of a portfolio.

### Explanation

It is the IRR of a portfolio, taking into account all of the cash inflows and outflows.

## References

**Question From:** Session 2 > Reading 7 > LOS d

**Related Material:**

- Key Concepts by LOS
- 

### Question #39 of 71

Question ID: 412890

What is the effective annual yield for a Treasury bill priced at \$98,853 with a face value of \$100,000 and 90 days remaining until maturity?

- ☐ A) 4.64%.
- ☐ B) 1.16%.
- ☒ C) 4.79%.

#### Explanation

$$\text{HPY} = (100,000 - 98,853) / 98,853 = 1.16\%$$

$$\text{EAY} = (1 + 0.0116)^{365/90} - 1 = 4.79\%$$

## References

**Question From:** Session 2 > Reading 7 > LOS e

**Related Material:**

- Key Concepts by LOS
- 

### Question #40 of 71

Question ID: 710129

Fisher, Inc., is evaluating the benefits of investing in a new industrial printer. The printer will cost \$28,000 and increase after-tax cash flows by \$7,000 during each of the next four years and \$6,000 in each of the two years after that. The internal rate of return (IRR) of the printer project is *closest* to:

- ☐ A) 11.8%
- ☐ B) 12.0%
- ☒ C) 11.6%

#### Explanation

IRR Keystrokes:  $\text{CF}_0 = -\$28,000$ ;  $\text{CF}_1 = \$7,000$ ;  $F_1 = 4$ ;  $\text{CF}_2 = \$6,000$ ;  $F_2 = 2$ ; CPT  $\rightarrow$  IRR = 11.6175%.

## References

**Question From:** Session 2 > Reading 7 > LOS a

**Related Material:**

- Key Concepts by LOS
-

## Question #41 of 71

Question ID: 412893

A Treasury bill, with 45 days until maturity, has an effective annual yield of 12.50%. The bill's holding period yield is *closest* to:

- ☐ A) 1.54%.
- ☐ B) 1.57%.
- ☒ C) 1.46%.

### Explanation

The effective annual yield (EAY) is equal to the annualized holding period yield (HPY) based on a 365-day year.  $EAY = (1 + HPY)^{365/t} - 1$ .  $HPY = (EAY + 1)^{t/365} - 1 = (1.125)^{45/365} - 1 = 1.46\%$ .

### References

**Question From:** Session 2 > Reading 7 > LOS f

### **Related Material:**

- Key Concepts by LOS
- 

## Question #42 of 71

Question ID: 412899

A broker calls with a proposal to buy a Treasury bill (T-bill) with 186 days to maturity. He says the effective annual yield on the T-bill is 4.217%. What is the holding period yield if you hold the bill until maturity?

- ☐ A) 8.44%.
- ☐ B) 2.02%.
- ☒ C) 2.13%.

### Explanation

To calculate the HPY from the EAY, the formula is:  $(1 + EAY)^{(t/365)} - 1$ . Therefore, the HPY is:  $(1.04217)^{(186/365)} - 1 = 0.0213$ , or 2.13%.

### References

**Question From:** Session 2 > Reading 7 > LOS f

### **Related Material:**

- Key Concepts by LOS
- 

## Question #43 of 71

Question ID: 412847

Which of the following is NOT a problem with the internal rate of return (IRR)?

- ☒ A) Sometimes the IRR exceeds the cost of capital.
- ☐ B) A higher IRR does not necessarily indicate a more-profitable project.
- ☐ C) Non-normal cash flow patterns may result in multiple IRRs.

### Explanation

If the IRR exceeds the cost of capital, that merely indicates that the project is acceptable-this is not a problem associated with IRR. Non-normal cash flow patterns such as cash outflows during the project's life can result in multiple IRRs, leaving open the question as to which one is valid. A higher IRR will only be realized if the project's cash flows can be reinvested at the IRR, and the true profitability of a project also depends on project size, not just IRR.

#### References

**Question From:** Session 2 > Reading 7 > LOS b

#### **Related Material:**

- Key Concepts by LOS
- 

### **Question #44 of 71**

Question ID: 412845

Which of the following statements regarding making investment decisions using net present value (NPV) and internal rate of return (IRR) is *least* accurate?

- X **A)** Projects with a positive NPVs increase shareholder wealth.
- ✓ **B)** If two projects are mutually exclusive, one should always choose the project with the highest IRR.
- X **C)** If a firm undertakes a zero-NPV project, the firm will get larger, but shareholder wealth will not change.

#### Explanation

If two projects are mutually exclusive, the firm should always choose the project with the highest NPV rather than the highest IRR. If two projects are mutually exclusive, the firm may only choose one. It is possible for NPV and IRR to give conflicting decisions for projects of different sizes. Because NPV is a direct measure of the change in shareholder wealth, NPV criteria should be used when NPV and IRR decisions conflict.

When a project has a positive NPV, it will add to shareholder wealth because the project is earning more than the opportunity cost of capital needed to undertake the project. If a firm takes on a zero-NPV project, the firm will earn exactly enough to cover the opportunity cost of capital. The firm will increase in size by taking the project, but shareholder wealth will not change.

#### References

**Question From:** Session 2 > Reading 7 > LOS b

#### **Related Material:**

- Key Concepts by LOS
- 

### **Question #45 of 71**

Question ID: 412895

What is the effective annual yield of a T-bill that has a money market yield of 5.665% and 255 days to maturity?

- X **A)** 5.92%.
- ✓ **B)** 5.79%.
- X **C)** 4.01%.

#### Explanation

Holding Period Yield =  $4.0127\% = 5.665\% \times (255 / 360)$

Effective Annual Yield =  $(1.040127)^{365/255} - 1 = 5.79\%$ .

#### References

**Question From:** Session 2 > Reading 7 > LOS f

#### **Related Material:**

- Key Concepts by LOS
- 

## Question #46 of 71

Question ID: 412862

Why is the time-weighted rate of return the preferred method of performance measurement?

- ✓ **A)** Time-weighted returns are not influenced by the timing of cash flows.
- X **B)** Time weighted allows for inter-period measurement and therefore is more flexible in determining exactly how a portfolio performed during a specific interval of time.
- X **C)** There is no preference for time-weighted versus money-weighted.

#### Explanation

Money-weighted returns are sensitive to the timing or recognition of cash flows while time-weighted rates of return are not.

#### References

**Question From:** Session 2 > Reading 7 > LOS d

#### **Related Material:**

- Key Concepts by LOS
- 

## Question #47 of 71

Question ID: 412902

A Treasury bill, with 80 days until maturity, has an effective annual yield of 8%. Its holding period yield is *closest* to:

- ✓ **A)** 1.70%.
- X **B)** 1.75%.
- X **C)** 1.72%.

#### Explanation

The effective annual yield (EAY) is equal to the annualized holding period yield (HPY) based on a 365-day year.  $EAY = (1 + HPY)^{365/t} - 1$ .  $HPY = (EAY + 1)^{t/365} - 1 = (1.08)^{80/365} - 1 = 1.70\%$ .

#### References

**Question From:** Session 2 > Reading 7 > LOS f

#### **Related Material:**

- Key Concepts by LOS
-



## Question #48 of 71

Question ID: 412882

A Treasury bill has 40 days to maturity, a par value of \$10,000, and was just purchased by an investor for \$9,900. Its holding period yield is *closest* to:

- ✓ **A)** 1.01%.
- ✗ **B)** 9.00%.
- ✗ **C)** 1.00%.

### Explanation

The holding period yield is the return that the investor will earn if the bill is held until it matures. The holding period yield formula is  $(\text{price received at maturity} - \text{initial price} + \text{interest payments}) / (\text{initial price}) = (10,000 - 9,900 + 0) / (9,900) = 1.01\%$ . Recall that when buying a T-bill, investors pay the face value less the discount and receive the face value at maturity.

### References

**Question From:** Session 2 > Reading 7 > LOS e

### **Related Material:**

- Key Concepts by LOS
- 

## Question #49 of 71

Question ID: 412880

What is the yield on a discount basis for a Treasury bill priced at \$97,965 with a face value of \$100,000 that has 172 days to maturity?

- ✗ **A)** 3.95%.
- ✓ **B)** 4.26%.
- ✗ **C)** 2.04%.

### Explanation

$(\$2,035 / \$100,000) \times (360 / 172) = 0.04259 = 4.26\% = \text{bank discount yield}.$

### References

**Question From:** Session 2 > Reading 7 > LOS e

### **Related Material:**

- Key Concepts by LOS
- 

## Question #50 of 71

Question ID: 412897

The effective annual yield for an investment is 10%. What is the yield for this investment on a bond-equivalent basis?

- ✗ **A)** 4.88%.
- ✗ **B)** 10.00%.
- ✓ **C)** 9.76%.

### Explanation

First, the annual yield must be converted to a semiannual yield. The result is then doubled to obtain the bond-equivalent yield.

Semiannual yield =  $1.1^{0.5} - 1 = 0.0488088$ .

The bond-equivalent yield =  $2 \times 0.0488088 = 0.097618$ .

### References

**Question From:** Session 2 > Reading 7 > LOS f

**Related Material:**

- Key Concepts by LOS
- 

## Question #51 of 71

Question ID: 412863

Time-weighted returns are used by the investment management industry because they:

- ☐ A) take all cash inflows and outflows into account using the internal rate of return.
- ☐ B) result in higher returns versus the money-weighted return calculation.
- ☒ C) are not affected by the timing of cash flows.

### Explanation

Time-weighted returns are not affected by the timing of cash flows. Money-weighted returns, by contrast, will be higher when funds are added at a favorable investment period or will be lower when funds are added during an unfavorable period. Thus, time-weighted returns offer a better performance measure because they are not affected by the timing of flows into and out of the account.

### References

**Question From:** Session 2 > Reading 7 > LOS d

**Related Material:**

- Key Concepts by LOS
- 

## Question #52 of 71

Question ID: 412841

The financial manager at Johnson & Smith estimates that its required rate of return is 11%. Which of the following independent projects should Johnson & Smith accept?

- ☐ A) Project A requires an up-front expenditure of \$1,000,000 and generates an NPV of -\$4,600.
- ☒ B) Project C requires an up-front expenditure of \$600,000 and generates a positive internal rate of return of 12.0%.
- ☐ C) Project B requires an up-front expenditure of \$800,000 and generates a positive IRR of 10.5%.

### Explanation

When projects are independent, you can use either the NPV method or IRR method to make the accept or reject decision. Only Project C has an IRR in excess of 11%. Acceptance of Project A reduces the firm's value by \$4,600.

#### References

**Question From:** Session 2 > Reading 7 > LOS b

**Related Material:**

- Key Concepts by LOS
- 

### Question #53 of 71

Question ID: 412887

A T-bill with a face value of \$100,000 and 140 days until maturity is selling for \$98,000. What is its holding period yield?

- ☐ A) 5.14%.
- ☒ B) 2.04%.
- ☐ C) 5.25%.

#### Explanation

The holding period yield is the return the investor will earn if the T-bill is held to maturity.  $HPY = (100,000 - 98,000) / 98,000 = 0.0204$ , or 2.04%.

#### References

**Question From:** Session 2 > Reading 7 > LOS e

**Related Material:**

- Key Concepts by LOS
- 

### Question #54 of 71

Question ID: 412892

A 10% coupon bond was purchased for \$1,000. One year later the bond was sold for \$915 to yield 11%. The investor's holding period yield on this bond is *closest* to:

- ☐ A) 18.5%.
- ☒ B) 1.5%.
- ☐ C) 9.0%.

#### Explanation

$HPY = [(interest + ending value) / beginning value] - 1$   
 $= [(100 + 915) / 1,000] - 1$   
 $= 1.015 - 1 = 1.5\%$

#### References

**Question From:** Session 2 > Reading 7 > LOS e

**Related Material:**

- Key Concepts by LOS

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## Question #55 of 71

Question ID: 412877

An investor buys one share of stock for \$100. At the end of year one she buys three more shares at \$89 per share. At the end of year two she sells all four shares for \$98 each. The stock paid a dividend of \$1.00 per share at the end of year one and year two. What is the investor's time-weighted rate of return?

- ☐ A) 11.24%.
- ☒ B) 0.06%.
- ☐ C) 6.35%.

### Explanation

The holding period return in year one is  $(\$89.00 - \$100.00 + \$1.00) / \$100.00 = -10.00\%$ .

The holding period return in year two is  $(\$98.00 - \$89.00 + \$1.00) / \$89 = 11.24\%$ .

The time-weighted return is  $[(1 + (-0.1000))(1 + 0.1124)]^{1/2} - 1 = 0.06\%$ .

### References

**Question From:** Session 2 > Reading 7 > LOS d

### **Related Material:**

- Key Concepts by LOS
- 

## Question #56 of 71

Question ID: 412853

If an investor bought a stock for \$32 and sold it one year later for \$37.50 after receiving \$2 in dividends, what was the holding period return on this investment?

- ☒ A) 23.44%.
- ☐ B) 17.19%.
- ☐ C) 6.25%.

### Explanation

$HPR = [D + \text{End Price} - \text{Beg Price}] / \text{Beg Price}$

$HPR = [2 + 37.50 - 32] / 32 = 0.2344$ .

### References

**Question From:** Session 2 > Reading 7 > LOS c

### **Related Material:**

- Key Concepts by LOS
- 

## Question #57 of 71

Question ID: 412883

A Treasury bill (T-bill) with 38 days until maturity has a bank discount yield of 3.82%. Which of the following is *closest* to the money market yield on the T-bill?

- X **A)** 3.87%.
- ✓ **B)** 3.84%.
- X **C)** 3.81%.

#### Explanation

The formula for the money market yield is:  $[360 \times \text{bank discount yield}] / [360 - (t \times \text{bank discount yield})]$ . Therefore, the money market yield is:  $[360 \times 0.0382] / [360 - (38 \times 0.0382)] = (13.752) / (358.548) = 0.0384$ , or 3.84%.

Alternatively: Actual discount =  $3.82\%(38 / 360) = 0.4032\%$ .

T-Bill price =  $100 - 0.4032 = 99.5968\%$ .

HPR =  $(100 / 99.5968) - 1 = 0.4048\%$ .

MMY =  $0.4048\% \times (360 / 38) = 3.835\%$ .

#### References

**Question From:** Session 2 > Reading 7 > LOS e

#### **Related Material:**

- Key Concepts by LOS

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## Question #58 of 71

Question ID: 487947

An investor started the year with a \$10,000 portfolio. He made a \$1,000 contribution at the end of the first quarter, a \$2,000 withdrawal at the end of the third quarter, and ended the year with a portfolio value of \$10,553. The quarterly holding period returns for the investor's portfolio are as follows.

<u>Q1</u>	<u>Q2</u>	<u>Q3</u>	<u>Q4</u>
3%	-5%	8%	10%

The effective annual money-weighted and time-weighted returns are *closest to*:

<u>Money-weighted</u>	<u>Time-weighted</u>
X <b>A)</b> 15.13%	3.84%
X <b>B)</b> 3.59%	16.25%
✓ <b>C)</b> 15.13%	16.25%

#### Explanation

The money-weighted return is simply the IRR. To calculate the quarterly IRR for the portfolio, use the cash flow functions of the financial calculator. Cash inflows are input as negative numbers and cash outflows are positive numbers. The value of the portfolio at the end of the year is considered a cash outflow because that is the amount you could potentially withdraw if you liquidated the portfolio.

CF0 = -10,000; CF1 = -1,000; CF2 = 0; CF3 = 2,000; CF4 = 10,553; CPT IRR = 3.5856%. This is the periodic IRR (quarterly).  
The effective annual return is  $(1 + 0.035856)^4 - 1 = 15.13\%$ .

The time-weighted return is the geometrically linked subperiod returns:  
 $(1.03)(0.95)(1.08)(1.10) - 1 = 16.25\%$ .

#### References

**Question From:** Session 2 > Reading 7 > LOS d

#### **Related Material:**

- Key Concepts by LOS
- 

## Question #59 of 71

Question ID: 412837

The estimated annual after-tax cash flows of a proposed investment are shown below:

Year 1: \$10,000

Year 2: \$15,000

Year 3: \$18,000

After-tax cash flow from sale of investment at the end of year 3 is \$120,000

The initial cost of the investment is \$100,000, and the required rate of return is 12%. The net present value (NPV) of the project is *closest* to:

X **A)** \$63,000.

✓ **B)** \$19,113.

X **C)** -\$66,301.

#### Explanation

$$10,000 / 1.12 = 8,929$$

$$15,000 / (1.12)^2 = 11,958$$

$$138,000 / (1.12)^3 = 98,226$$

$$\text{NPV} = 8,929 + 11,958 + 98,226 - 100,000 = \$19,113$$

Alternatively: CFO = -100,000; CF1 = 10,000; CF2 = 15,000; CF3 = 138,000; I = 12; CPT → NPV = \$19,112.

#### References

**Question From:** Session 2 > Reading 7 > LOS a

#### **Related Material:**

- Key Concepts by LOS
- 

## Question #60 of 71

Question ID: 412876

An investor buys one share of stock for \$100. At the end of year one she buys three more shares at \$89 per share. At the end of year two she sells all four shares for \$98 each. The stock paid a dividend of \$1.00 per share at the end of year one and year two. What is the investor's money-weighted rate of return?

☐ A) 0.06%.

☐ B) 5.29%.

☒ C) 6.35%.

#### Explanation

T = 0: Purchase of first share = -\$100.00

T = 1: Dividend from first share = +\$1.00

Purchase of 3 more shares = -\$267.00

T = 2: Dividend from four shares = +4.00

Proceeds from selling shares = +\$392.00

The money-weighted return is the rate that solves the equation:

$$\$100.00 = -\$266.00 / (1 + r) + 396.00 / (1 + r)^2.$$

CFO = -100; CF1 = -266; CF2 = 396; CPT → IRR = 6.35%.

#### References

**Question From:** Session 2 > Reading 7 > LOS d

**Related Material:**

- Key Concepts by LOS

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## Question #61 of 71

Question ID: 412898

If the holding period yield on a Treasury bill (T-bill) with 197 days until maturity is 1.07%, what is the effective annual yield?

☐ A) 1.07%.

☐ B) 0.58%.

☒ C) 1.99%.

#### Explanation

To calculate the EAY from the HPY, the formula is:  $(1 + \text{HPY})^{(365/t)} - 1$ . Therefore, the EAY is:  $(1.0107)^{(365/197)} - 1 = 0.0199$ , or 1.99%.

#### References

**Question From:** Session 2 > Reading 7 > LOS f

**Related Material:**

- Key Concepts by LOS
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## Question #62 of 71

Question ID: 412873

Which of the following statements about money-weighted and time-weighted returns is *least* accurate?

- ✓ **A)** If a client adds funds to an investment prior to an unfavorable market, the time-weighted return will be depressed.
- X **B)** If the investment period is greater than one year, an analyst must use the geometric mean to calculate the annual time-weighted return.
- X **C)** The money-weighted return applies the concept of internal rate of return to investment portfolios.

### Explanation

The time-weighted method is not affected by the timing of cash flows. The other statements are true.

### References

**Question From:** Session 2 > Reading 7 > LOS d

### **Related Material:**

- Key Concepts by LOS
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## Question #63 of 71

Question ID: 412885

A Treasury bill (T-bill) with a face value of \$10,000 and 219 days until maturity is selling for 97.375% of face value. Which of the following is *closest* to the holding period yield on the T-bill if held until maturity?

- X **A)** 2.81%.
- X **B)** 2.63%.
- ✓ **C)** 2.70%.

### Explanation

The formula for holding period yield is:  $(P_1 - P_0 + D_1) / (P_0)$ , where  $D_1$  for a T-bill is zero (it does not have a coupon). Therefore, the HPY is:  $(\$10,000 - \$9,737.50) / (\$9,737.50) = 0.0270 = 2.70\%$ .

Alternatively  $(100 / 97.375) - 1 = 0.02696$ .

### References

**Question From:** Session 2 > Reading 7 > LOS e

### **Related Material:**

- Key Concepts by LOS
- 

## Question #64 of 71

Question ID: 412894

A Treasury bill has 90 days until its maturity and a holding period yield of 3.17%. Its effective annual yield is *closest* to:

- X **A)** 12.68%.
- ✓ **B)** 13.49%.



X **C)** 13.30%.

#### Explanation

The effective annual yield (EAY) is equal to the annualized holding period yield (HPY) based on a 365-day year.  $EAY = (1 + HPY)^{365/t} - 1 = (1.0317)^{365/90} - 1 = 13.49\%$ .

#### References

**Question From:** Session 2 > Reading 7 > LOS f

**Related Material:**

- Key Concepts by LOS
- 

### Question #65 of 71

Question ID: 412878

The bank discount of a \$1,000,000 T-bill with 135 days until maturity that is currently selling for \$979,000 is:

- ✓ **A)** 5.6%.
- X **B)** 5.8%.
- X **C)** 6.1%.

#### Explanation

$(\$21,000 / 1,000,000) \times (360 / 135) = 5.6\%$ .

#### References

**Question From:** Session 2 > Reading 7 > LOS e

**Related Material:**

- Key Concepts by LOS
- 

### Question #66 of 71

Question ID: 412889

A T-bill with a face value of \$100,000 and 140 days until maturity is selling for \$98,000. What is the effective annual yield (EAY)?

- ✓ **A)** 5.41%.
- X **B)** 2.04%.
- X **C)** 5.14%.

#### Explanation

The EAY takes the holding period yield and annualizes it based on a 365-day year accounting for compounding.  $HPY = (100,000 - 98,000) / 98,000 = 0.0204$ .  $EAY = (1 + HPY)^{365/t} - 1 = (1.0204)^{365/140} - 1 = 0.05406 = 5.41\%$ .

#### References

**Question From:** Session 2 > Reading 7 > LOS e

**Related Material:**

- Key Concepts by LOS
- 

### Question #67 of 71

Question ID: 412884

A Treasury bill (T-bill) with a face value of \$10,000 and 44 days until maturity has a holding period yield of 1.1247%. Which of the following is *closest* to the effective annual yield on the T-bill?

- ✓ **A)** 9.72%.
- ✗ **B)** 12.47%.
- ✗ **C)** 8.76%.

#### Explanation

The formula for the effective annual yield is:  $((1 + \text{HPY})^{365/t}) - 1$ . Therefore, the EAY is:  $((1.011247)^{(365/44)}) - 1 = 0.0972$ , or 9.72%

#### References

**Question From:** Session 2 > Reading 7 > LOS e

#### **Related Material:**

- Key Concepts by LOS
- 

### Question #68 of 71

Question ID: 412896

The holding period yield of a T-bill that has a bank discount yield of 4.70% and a money market yield of 4.86% and matures in 240 days is *closest to*:

- ✗ **A)** 4.9%.
- ✓ **B)** 3.2%.
- ✗ **C)** 2.8%.

#### Explanation

$4.86 \times (240/360) = 3.24\%$ .

#### References

**Question From:** Session 2 > Reading 7 > LOS f

#### **Related Material:**

- Key Concepts by LOS
- 

### Question #69 of 71

Question ID: 412844

Williams Warehousing currently has a warehouse lease that calls for five annual payments of \$120,000. The warehouse owner, who needs cash, is offering Williams a deal wherein Williams will pay \$200,000 this year and then pay only \$80,000 each of the remaining 4 years. (Assume that all lease payments are made at the beginning of the year.) Should Williams Warehousing accept the offer if its required rate of return is 9%, and why?

- ☐ A) No, there is an additional \$80,000 payment in this year.
- ☐ B) Yes, there is a savings of \$45,494 in present value terms.
- ☒ C) Yes, there is a savings of \$49,589 in present value terms.

#### Explanation

The present value of the current lease is \$508,766.38, while the present value of the lease being offered is \$459,177.59; a savings of 49,589. Alternatively, the present value of the extra \$40,000 at the beginning of each of the next 4 years is \$129,589 which is \$49,589 more than the extra \$80,000 added to the payment today.

#### References

**Question From:** Session 2 > Reading 7 > LOS b

#### **Related Material:**

- Key Concepts by LOS
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### **Question #70 of 71**

Question ID: 412848

Which of the following is *least likely* a problem associated with the internal rate of return (IRR) method for making investment decisions?

- ☐ A) An investment project may have more than one internal rate of return.
- ☒ B) The IRR method determines the discount rate that sets the net present value of a project equal to zero.
- ☐ C) IRR and NPV criteria can give conflicting decisions for mutually exclusive projects.

#### Explanation

The IRR method equates an investment's present value of inflows to its present value of outflows. The IRR by definition is the discount rate that sets the net present value of a project equal to zero. Therefore, the decision rule for independent projects is as follows: if the IRR is above the firm's cost of capital, the project should be accepted, and if the IRR is below the cost of capital, the project should be rejected.

#### References

**Question From:** Session 2 > Reading 7 > LOS b

#### **Related Material:**

- Key Concepts by LOS
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### **Question #71 of 71**

Question ID: 412861

An investor expects a stock currently selling for \$20 per share to increase to \$25 by year-end. The dividend last year was \$1 but he expects this year's dividend to be \$1.25. What is the expected holding period return on this stock?

- ☐ A) 28.50%.
- ☐ B) 24.00%.
- ☒ C) 31.25%.

### Explanation

Return = [dividend + (end – begin)] / beginning price

$$R = [1.25 + (25 - 20)] / 20 = 6.25 / 20 = 0.3125$$

### References

**Question From:** Session 2 > Reading 7 > LOS c

### **Related Material:**

- Key Concepts by LOS