Question 1
L2R37TB-AC007-1512
LOS: LOS-8670
Lesson Reference: Lesson 1: The Residual Income Model
Difficulty: medium
In 2014, American Faucet Corporation (AFC) had earnings before interest and taxes of $150 million and interest expense during the period was $20 million. AFC is subject to a tax rate of 35 percent. The book value and market value of AFC's common equity at the beginning of 2014 was $500 million and $700 million, respectively. AFC's debt had a book value of $200 million at the beginning and end of 2014 and the company pays 10 percent interest on its debt. The company's cost of equity capital is estimated to be 11.5 percent. Based on this information, AFC's residual income will be *closest to*:

- ○ $4.5 million.
- ○ $20.0 million.
- ◉ $27.0 million.

Rationale

✗ **$4.5 million.**

The capital charge on common equity is based on the book value of equity at the beginning of the year. Thus, the equity charge is $57.5 million ($500 million x 0.115). Using this and the other data, we can calculate AFC's residual income (in millions of USD) as follows:

	EBIT	$150.0
Less:	Interest expense	20.0
	Pretax income	$130.0
Less:	Income tax expense (35%)	45.5
	Net income	$84.5
Less:	Common equity charge	57.5
	Residual income	$27.0

Rationale

✗ **$20.0 million.**

The capital charge on common equity is based on the book value of equity at the beginning of the year. Thus, the equity charge is $57.5 million ($500 million x 0.115). Using this and the other data, we can calculate AFC's residual income (in millions of USD) as follows:

	EBIT	$150.0
Less:	Interest expense	20.0
	Pretax income	$130.0
Less:	Income tax expense (35%)	45.5
	Net income	$84.5
Less:	Common equity charge	57.5

	Residual income	$27.0

Rationale

$27.0 million.

The capital charge on common equity is based on the book value of equity at the beginning of the year. Thus, the equity charge is $57.5 million ($500 million x 0.115). Using this and the other data, we can calculate AFC's residual income (in millions of USD) as follows:

	EBIT	$150.0
Less:	Interest expense	20.0
	Pretax income	$130.0
Less:	Income tax expense (35%)	45.5
	Net income	$84.5
Less:	Common equity charge	57.5
	Residual income	$27.0

Question 2
L2EQ-PQ3613-1411
LOS: LOS-8730
Lesson Reference: Lesson 1: The Residual Income Model
Difficulty: medium

Jacob is evaluating the stock of Saturn Inc., which is currently trading at a price of $28.70 per share. He gathers the following information regarding the company:

Current book value per share = $15.50

Expected long-term ROE = 15%

Required rate of return on equity = 12%

Given that the stock is fairly valued, the implied growth rate is *closest to*:

- (•) 8.48%
- ( ) 3.52%
- ( ) 6.90%

Rationale

This Answer is Correct

Growth rate = $r - \{[(ROE - r) \times B_0] / (V_0 - B_0)\}$

Growth rate = $0.12 - \{[(0.15 - 0.12) \times 15.50] / (28.70 - 15.50)\}$

Growth rate = 8.48%

Question 3
L2EQ-PQ3616-1411
LOS: LOS-8770
Lesson Reference: Lesson 3: Accounting and International Considerations
Difficulty: medium
When applying the residual income model to value a company, an analyst should *most* likely:

- (●) Include both separately identifiable intangible assets and goodwill resulting from an acquisition in the calculation of book value of equity.
- ( ) Include separately identifiable intangible assets in the calculation of book value of equity, but not any goodwill resulting from an acquisition.
- ( ) Exclude both separately identifiable intangible assets and goodwill resulting from an acquisition in the calculation of book value of equity.

Rationale

✔ **Include both separately identifiable intangible assets and goodwill resulting from an acquisition in the calculation of book value of equity.**
While intangible assets may warrant extra scrutiny when performing valuation due to the risk they may be of low quality, generally, separately identifiable assets and good will should be included in the book value of the company when performing residual income valuation.

Rationale

✘ **Include separately identifiable intangible assets in the calculation of book value of equity, but not any goodwill resulting from an acquisition.**
While intangible assets may warrant extra scrutiny when performing valuation due to the risk they may be of low quality, generally, separately identifiable assets and good will should be included in the book value of the company when performing residual income valuation.

Rationale

✘ **Exclude both separately identifiable intangible assets and goodwill resulting from an acquisition in the calculation of book value of equity.**
While intangible assets may warrant extra scrutiny when performing valuation due to the risk they may be of low quality, generally, separately identifiable assets and good will should be included in the book value of the company when performing residual income valuation.

Question 4
L2R37TB-AC014-1512
LOS: LOS-8670
Lesson Reference: Lesson 1: The Residual Income Model
Difficulty: medium
Using only beginning equity in its calculation, a firm had a return on equity (ROE) of 8.5 percent for the past two years. If the firm's cost of equity has been 10.0 percent during this two-year period, then the firm's residual income during this period has *most likely* been:

- zero.
- positive.
- negative.

Rationale
zero.
A firm with an ROE less than its cost of equity (r_c) will have negative residual income (RI). This can be seen with the following formula, where the final expression indicates that an ROE < r_c will result in negative RI:

$$\text{RI} = \text{Net income} - \text{Equity charge} = \text{ROE}(\text{Book value of equity} = r_c(\text{Book value of equity})$$

Rationale
positive.
A firm with an ROE less than its cost of equity (r_c) will have negative residual income (RI). This can be seen with the following formula, where the final expression indicates that an ROE < r_c will result in negative RI:

$$\text{RI} = \text{Net income} - \text{Equity charge} = \text{ROE}(\text{Book value of equity} = r_c(\text{Book value of equity})$$

Rationale
negative.
A firm with an ROE less than its cost of equity (r_c) will have negative residual income (RI). This can be seen with the following formula, where the final expression indicates that an ROE < r_c will result in negative RI:

$$\text{RI} = \text{Net income} - \text{Equity charge} = \text{ROE}(\text{Book value of equity} = r_c(\text{Book value of equity})$$

Question 5
L2R37TB-AC026-1512
LOS: LOS-8720
Lesson Reference: Lesson 1: The Residual Income Model
Difficulty: medium
Two analysts are valuing Johnson Corp. using identical fundamental information. They use the same forecast period and both apply a residual income model using a persistence factor to capture the fade of ROE toward the cost of equity. If analyst Roswell values Johnson Corp. using a persistence factor of 0.60 and calculates a higher valuation than analyst Patel, Patel's persistence factor will *most likely* be:

- negative.
- greater than 0.60.
- between 0.0 and 0.60.

Rationale
negative.
The persistence factor can range from 0.0 to 1.0. Everything else equal, a higher persistence factor results in a higher valuation because the residual income continues with greater persistence. For Patel to have a lower valuation, he must be applying a persistence factor that is below 0.60.

Rationale
greater than 0.60.
The persistence factor can range from 0.0 to 1.0. Everything else equal, a higher persistence factor results in a higher valuation because the residual income continues with greater persistence. For Patel to have a lower valuation, he must be applying a persistence factor that is below 0.60.

Rationale
between 0.0 and 0.60.
The persistence factor can range from 0.0 to 1.0. Everything else equal, a higher persistence factor results in a higher valuation because the residual income continues with greater persistence. For Patel to have a lower valuation, he must be applying a persistence factor that is below 0.60.

Question 6
L2R37TB-AC023-1512
LOS: LOS-8730
Lesson Reference: Lesson 1: The Residual Income Model
Difficulty: medium
ManBorg, Inc. has a current book value of $30.00. The firm's ROE is 14.0 percent and the dividend payout ratio is 40 percent. The cost of equity is 10.0 percent and the shares have a market price of $50.00. The implied growth rate priced into ManBorg's shares will be *closest to*:

- (•) 4.0 percent.
- ( ) 6.0 percent.
- ( ) 8.4 percent.

Rationale
4.0 percent.
Using the constant growth (single-stage) residual income model, we can solve for the implied growth rate by using the current stock price as the value today:

$$\begin{aligned} V_0 &= B_0 + \frac{\text{ROE} - r_c}{r_c - g} B_0 \\ \$50.00 &= \$30.00 + \frac{0.14 - 0.10}{0.10 - g}(\$30.00) \\ g &= 0.40 \text{ or } 4.0 \text{ percent} \end{aligned}$$

Rationale
6.0 percent.
Using the constant growth (single-stage) residual income model, we can solve for the implied growth rate by using the current stock price as the value today:

$$\begin{aligned} V_0 &= B_0 + \frac{\text{ROE} - r_c}{r_c - g} B_0 \\ \$50.00 &= \$30.00 + \frac{0.14 - 0.10}{0.10 - g}(\$30.00) \\ g &= 0.40 \text{ or } 4.0 \text{ percent} \end{aligned}$$

Rationale
8.4 percent.
Using the constant growth (single-stage) residual income model, we can solve for the implied growth rate by using the current stock price as the value today:

$$
\begin{aligned}
V_0 &= B_0 + \frac{\text{ROE} - r_c}{r_c - g} B_0 \\
\$50.00 &= \$30.00 + \frac{0.14 - 0.10}{0.10 - g} (\$30.00) \\
g &= 0.40 \text{ or } 4.0 \text{ percent}
\end{aligned}
$$

Question 7
L2EQ-TBB225-1412
LOS: LOS-8740
Lesson Reference: Lesson 1: The Residual Income Model
Difficulty: medium
An analyst who estimates continuing residual income to be constant in perpetuity at the forecast horizon should use a persistence parameter of:

- 0.
- 1.
- 10.

Rationale

This Answer is Correct
When forecasting continuing contestant residual income into perpetuity, an analyst should use a persistence parameter of 1, which represents the case of zero decay in residual income after the forecast horizon.

Question 8
L2R37TB-AC008-1512
LOS: LOS-8720
Lesson Reference: Lesson 1: The Residual Income Model
Difficulty: medium
Higher C Corporation's (HCC) current book value is $25 per share. The company's ROE has been 18 percent for the last several years and is expected to continue indefinitely. HCC maintains a dividend payout ratio of 75 percent. The current risk-free interest rate is 3.0 percent and the equity risk premium is 8.0 percent. HCC's stock has a beta of 1.00. The intrinsic value of HCC's shares using a single-stage (constant growth) residual income model is *closest to*:

- (●) $52.00
- ( ) $63.50
- ( ) $94.25

Rationale
$52.00

To solve this problem, we must first calculate *g* and *rc*:

$$g = \text{ROE} \times \text{RR} = 0.18 \times (1 - 0.75) = 0.045$$
$$r_c = r_f + \beta(r_m - r_f) = 0.03 + 1.00(0.08) = 0.11$$

Next, we use the single-stage RI model to estimate the intrinsic value per share:

$$V_0 = B_0 + \frac{\text{ROE} - r_c}{r_c - g} B_0 = \$25.00 + \frac{0.18 - 0.11}{0.11 - 0.045}(\$25.00) = \$51.92$$

Rationale
$63.50

To solve this problem, we must first calculate *g* and *rc*:

$$g = \text{ROE} \times \text{RR} = 0.18 \times (1 - 0.75) = 0.045$$
$$r_c = r_f + \beta(r_m - r_f) = 0.03 + 1.00(0.08) = 0.11$$

Next, we use the single-stage RI model to estimate the intrinsic value per share:

$$V_0 = B_0 + \frac{\text{ROE} - r_c}{r_c - g} B_0 = \$25.00 + \frac{0.18 - 0.11}{0.11 - 0.045}(\$25.00) = \$51.92$$

Rationale
$94.25

To solve this problem, we must first calculate *g* and *rc*:

$$g = \text{ROE} \times \text{RR} = 0.18 \times (1 - 0.75) = 0.045$$
$$r_c = r_f + \beta(r_m - r_f) = 0.03 + 1.00(0.08) = 0.11$$

Next, we use the single-stage RI model to estimate the intrinsic value per share:

$$V_0 = B_0 + \frac{\text{ROE} - r_c}{r_c - g} B_0 = \$25.00 + \frac{0.18 - 0.11}{0.11 - 0.045}(\$25.00) = \$51.92$$

Question 9
L2EQ-TBX116-1502
LOS: LOS-8770
Lesson Reference: Lesson 3: Accounting and International Considerations
Difficulty: easy
Which of the following transactions would breach the clean surplus accounting assumption?

- Current service cost component of pension expense.
- Foreign exchange gains/losses from transactions in a foreign currency.
- Changes in the market value of available-for-sale securities.

Rationale

This Answer is Correct

The clean surplus relation is violated when a transaction that affects equity is not reflected in the income statement. The current service cost component of pension expense is recognized as part of the pension expense in the income statement, and gains and losses from transactions in a foreign currency are also recognized in the income statement (note that foreign exchange gains/losses due to translation of a foreign subsidiary is not recognized in the income statement under the current method). Changes in the market value of available-for-sale securities are reflected on the balance sheet; however, the resultant changes in equity are reflected in accumulated other comprehensive income, rather than impacting the income statement.

Question 10
L2R37TB-AC022-1512
LOS: LOS-8720
Lesson Reference: Lesson 1: The Residual Income Model
Difficulty: medium
Anacorp has beginning of period book value of EUR 16.95 per share. The firm has ROE of 11.8 percent and a dividend payout ratio of 40 percent. The required return on equity is 9.4 percent. An analyst following the company projects that the ROE will be stable for the next three years at the current rate. At the end of the three-year period, the analyst expects the market price per share for Anacorp to be 1.8 times the book value per share. The analyst's estimated intrinsic value per Anacorp share will be *closest to*:

- EUR 29.65
- EUR 30.75
- EUR 32.55

Rationale

EUR 29.65

First, we need to determine the residual income for each of the next three years:

Year	1	2	3
Beginning book value (B_{t-1})	€16.95	€18.15	€19.43
EPS (ROE$_t$ of 0.118 × B_{t-1})	2.00	2.14	2.29
Less: dividends (0.40 × EPS)	0.80	0.86	0.92
Ending book value (B_t)	€18.15	€19.43	€20.80
EPS	€2.00	€2.14	€2.29
Less: equity charge ($r_c B_{t-1}$)	1.59	1.71	1.83
Residual income (RI$_t$)	€0.41	€0.43	€0.46

For the share price at the end forecast horizon, we estimate the value as being at 1.8 times the book value at the end of the forecast horizon:

$$P_T = B_T \times \text{Expected P/B multiple} = 20.80 \times 1.8 = \$37.44$$

Now we can use the residual income model that uses a share price premium to book value:

$$\begin{aligned} V_0 &= B_0 + \sum_{t=1}^{T} \frac{(\text{ROE}_t - r_c)B_{t-1}}{(1+r_c)^1} + \frac{P_T - B_T}{(1+r_c)^T} \\ &= €16.95 + \frac{0.41}{(1+0.094)^1} + \frac{0.43}{(1+0.094)^2} + \frac{0.46}{(1+0.094)^3} + \frac{37.44-20.80}{(1+0.094)^3} = €30.74 \end{aligned}$$

Rationale

EUR 30.75

First, we need to determine the residual income for each of the next three years:

Year	1	2	3
Beginning book value (B_{t-1})	€16.95	€18.15	€19.43
EPS (ROE$_t$ of 0.118 × B_{t-1})	2.00	2.14	2.29
Less: dividends (0.40 × EPS)	0.80	0.86	0.92
Ending book value (B_t)	€18.15	€19.43	€20.80
EPS	€2.00	€2.14	€2.29
Less: equity charge ($r_c B_{t-1}$)	1.59	1.71	1.83
Residual income (RI$_t$)	€0.41	€0.43	€0.46

For the share price at the end forecast horizon, we estimate the value as being at 1.8 times the book value at the end of the forecast horizon:

$$P_T = B_T \times \text{Expected P/B multiple} = 20.80 \times 1.8 = \$37.44$$

Now we can use the residual income model that uses a share price premium to book value:

$$\begin{aligned} V_0 &= B_0 + \sum_{t=1}^{T} \frac{(\text{ROE}_t - r_c)B_{t-1}}{(1+r_c)^1} + \frac{P_T - B_T}{(1+r_c)^T} \\ &= €16.95 + \frac{0.41}{(1+0.094)^1} + \frac{0.43}{(1+0.094)^2} + \frac{0.46}{(1+0.094)^3} + \frac{37.44-20.80}{(1+0.094)^3} = €30.74 \end{aligned}$$

Rationale

EUR 32.55

First, we need to determine the residual income for each of the next three years:

Year	1	2	3
Beginning book value (B_{t-1})	€16.95	€18.15	€19.43
EPS (ROE$_t$ of 0.118 × B_{t-1})	2.00	2.14	2.29
Less: dividends (0.40 × EPS)	0.80	0.86	0.92
Ending book value (B_t)	€18.15	€19.43	€20.80
EPS	€2.00	€2.14	€2.29
Less: equity charge ($r_c B_{t-1}$)	1.59	1.71	1.83
Residual income (RI$_t$)	€0.41	€0.43	€0.46

For the share price at the end forecast horizon, we estimate the value as being at 1.8 times the book value at the end of the forecast horizon:

$$P_T = B_T \times \text{Expected P/B multiple} = 20.80 \times 1.8 = \$37.44$$

Now we can use the residual income model that uses a share price premium to book value:

$$\begin{aligned} V_0 &= B_0 + \sum_{t=1}^{T} \frac{(\text{ROE}_t - r_e) B_{t-1}}{(1+r_e)^1} + \frac{P_T - B_T}{(1+r_e)^T} \\ &= €16.95 + \frac{0.41}{(1+0.094)^1} + \frac{0.43}{(1+0.094)^2} + \frac{0.46}{(1+0.094)^3} + \frac{37.44 - 20.80}{(1+0.094)^3} = €30.74 \end{aligned}$$

Question 11
L2R37TB-AC029-1512
LOS: LOS-8720
Lesson Reference: Lesson 1: The Residual Income Model
Difficulty: medium
BF&T Industries dominates the market of its product. Each year, the company earns $3.00 per share, and it pays out all of its earnings as dividends. The current book value per share is $20.00. An analyst has determined that the cost of equity for BF&T is 10 percent. Using a residual income model, the value per share is *closest to*:

- ○ $20.00
- ◉ $30.00
- ○ $50.00

Rationale
✗ **$20.00**

First, we need to find the projected residual income (RI):

$$\text{RI} = E_t - r_c B_{t-1} = \$3.00 - 0.10(\$20.00) = \$1.00$$

This $1.00 in residual income is in perpetuity and we can find the value of the shares using the following residual income model:

$$V_0 = B_0 + \frac{\text{RI}}{r_c} = \$20.00 + \frac{\$1.00}{0.10} = \$30.00$$

Rationale
✓ **$30.00**

First, we need to find the projected residual income (RI):

$$\text{RI} = E_t - r_c B_{t-1} = \$3.00 - 0.10(\$20.00) = \$1.00$$

This $1.00 in residual income is in perpetuity and we can find the value of the shares using the following residual income model:

$$V_0 = B_0 + \frac{\text{RI}}{r_c} = \$20.00 + \frac{\$1.00}{0.10} = \$30.00$$

Rationale
✗ **$50.00**

First, we need to find the projected residual income (RI):

$$\text{RI} = E_t - r_c B_{t-1} = \$3.00 - 0.10(\$20.00) = \$1.00$$

This $1.00 in residual income is in perpetuity and we can find the value of the shares using the following residual income model:

$$V_0 = B_0 + \frac{\text{RI}}{r_c} = \$20.00 + \frac{\$1.00}{0.10} = \$30.00$$

Question 12
L200-PQ0034-1412
LOS: LOS-8750
Lesson Reference: Lesson 2: Residual Income Valuation in Relation to Other Approaches
Difficulty: medium
When using the residual income (RI) model, a significant proportion of the total intrinsic value of a stock comes from its ____?

- Estimate of future terminal value
- Current book value
- Current enterprise value

Rationale

This Answer is Correct
A significant proportion of the total intrinsic value of a stock comes from its current book value when using the RI model.

Question 13
L2R37TB-AC009-1512
LOS: LOS-8720
Lesson Reference: Lesson 1: The Residual Income Model
Difficulty: medium
Catapult Company has a current book value of $35 per share. As the result of an innovative product, the company earned an ROE of 14 percent. An analyst studying Catapult has estimated that the 14 percent ROE will continue for the next three years. At that point, he is uncertain what will happen to ROE, but he does observe that prior to last year, the share price was at a persistent 10 percent premium over book value, and he assumes this will be the case at the end of his three-year forecast. However, management has maintained an average market value over book value of 30 percent. The firm has a dividend payout ratio of 30 percent and the analyst estimates the cost of equity to be 10.2 percent. The intrinsic value per share for Catapult that the analyst will calculate is *closest to*:

- $47.00
- $49.00
- $50.00

Rationale

$47.00

To find the intrinsic value, we must first determine the residual incomes during the forecast period and the book value at the end of the forecast period. Then we can apply the multistage model using premium over book value in the terminal value calculation:

Year	1	2	3
Beginning book value (B_{t-1})	$35.00	$38.43	$42.20
EPS (ROE_t of 0.14 × B_{t-1})	4.90	5.38	5.91
Less: dividends (0.30 × EPS)	1.47	1.61	1.77
Ending book value (B_t)	$38.43	$42.20	$46.34
EPS	$4.90	$5.38	$5.91
Less: equity charge ($r_c B_{t-1}$)	3.57	3.92	4.30
Residual income (RI_t)	$1.33	$1.46	$1.61

For the share price at the end forecast horizon, we estimate the value as being at a 30 percent premium to the book value at the end of the forecast horizon:

$$P_T = B_T \times (1 + \%\text{Premium}) = \$46.34 \times (1 + 0.30) = \$60.24$$

Now we can use the residual income model that uses a share price premium to book value:

$$
\begin{aligned}
V_0 &= B_0 + \sum_{t=1}^{T} \frac{(\text{ROE}_t - r_e)B_{t-1}}{(1+r_e)^T} + \frac{P_T - B_T}{(1+r_e)^T} \\
&= \$35.00 + \frac{1.33}{(1+0.102)^1} + \frac{1.46}{(1+0.102)^2} + \frac{1.61}{(1+0.102)^3} + \frac{60.24-46.24}{(1+0.102)^3} = \$49.00
\end{aligned}
$$

Rationale

$49.00

To find the intrinsic value, we must first determine the residual incomes during the forecast period and the book value at the end of the forecast period. Then we can apply the multistage model using premium over book value in the terminal value calculation:

Year	1	2	3
Beginning book value (B_{t-1})	$35.00	$38.43	$42.20
EPS (ROE$_t$ of 0.14 × B_{t-1})	4.90	5.38	5.91
Less: dividends (0.30 × EPS)	1.47	1.61	1.77
Ending book value (B_t)	$38.43	$42.20	$46.34
EPS	$4.90	$5.38	$5.91
Less: equity charge ($r_e B_{t-1}$)	3.57	3.92	4.30
Residual income (RI$_t$)	$1.33	$1.46	$1.61

For the share price at the end forecast horizon, we estimate the value as being at a 30 percent premium to the book value at the end of the forecast horizon:

$$P_T = B_T \times (1 + \%\text{Premium}) = \$46.34 \times (1 + 0.30) = \$60.24$$

Now we can use the residual income model that uses a share price premium to book value:

$$
\begin{aligned}
V_0 &= B_0 + \sum_{t=1}^{T} \frac{(\text{ROE}_t - r_e)B_{t-1}}{(1+r_e)^T} + \frac{P_T - B_T}{(1+r_e)^T} \\
&= \$35.00 + \frac{1.33}{(1+0.102)^1} + \frac{1.46}{(1+0.102)^2} + \frac{1.61}{(1+0.102)^3} + \frac{60.24-46.24}{(1+0.102)^3} = \$49.00
\end{aligned}
$$

Rationale

$50.00

To find the intrinsic value, we must first determine the residual incomes during the forecast period and the book value at the end of the forecast period. Then we can apply the multistage model using premium over book value in the terminal value calculation:

Year	1	2	3

Year	1	2	3
Beginning book value (B_{t-1})	$35.00	$38.43	$42.20
EPS (ROE_t of 0.14 × B_{t-1})	4.90	5.38	5.91
Less: dividends (0.30 × EPS)	1.47	1.61	1.77
Ending book value (B_t)	$38.43	$42.20	$46.34
EPS	$4.90	$5.38	$5.91
Less: equity charge ($r_c B_{t-1}$)	3.57	3.92	4.30
Residual income (RI_t)	$1.33	$1.46	$1.61

For the share price at the end forecast horizon, we estimate the value as being at a 30 percent premium to the book value at the end of the forecast horizon:

$$P_T = B_T \times (1 + \%\text{Premium}) = \$46.34 \times (1 + 0.30) = \$60.24$$

Now we can use the residual income model that uses a share price premium to book value:

$$\begin{aligned} V_0 &= B_0 + \sum_{t=1}^{T} \frac{(\text{ROE}_t - r_c) B_{t-1}}{(1+r_c)^T} + \frac{P_T - B_T}{(1+r_c)^T} \\ &= \$35.00 + \frac{1.33}{(1+0.102)^1} + \frac{1.46}{(1+0.102)^2} + \frac{1.61}{(1+0.102)^3} + \frac{60.24 - 46.24}{(1+0.102)^3} = \$49.00 \end{aligned}$$

Question 14
L2EQ-TB0039-1412
LOS: LOS-8720
Lesson Reference: Lesson 1: The Residual Income Model
Difficulty: medium
Buster Jackman, CFA, is evaluating a purchase of Oxford Silicon Radio Plc. Current book value per share is £3.59, and the current price per share is £4.25. Jackman expects long-term ROE to be 15% and long-term growth to be 3%. Assuming a cost of equity of 10%, which of the following is closest to the intrinsic value of Oxford Silicon Radio stock using a single-stage residual income model?

- ○ £4.79
- ○ £5.73
- ◉ £6.15

Rationale

This Answer is Correct

Under the single-stage residual income model:

$$V_0 = B_0 + [(\text{ROE} - r) \times B_0/(r - g)] = 3.59 + [(0.15 - 0.1) \times 3.59/(0.1 - 0.03)] = 6.15$$

Question 15
L2EQ-TBB224-1412
LOS: LOS-8730
Lesson Reference: Lesson 1: The Residual Income Model
Difficulty: medium

An analyst is investigating the potential growth rates in residual income of companies in the technology sector. He collects the following data on Lesta Corp., a manufacturer of consumer electronics:

Current share price	$355
Return on equity	12%
Required return on equity	11%
Book value per share	$105

Which of the following percentages is closest to the market implied growth rate of residual income for Lesta Corp. using the single-stage residual income valuation model?

- (●) 10.58%.
- ( ) 11.00%.
- ( ) 12.52%.

Rationale
This Answer is Correct

The single-stage residual income model states that:

Fair Price = Bo + [(RoE – *r*) / (*r* – *g*)]*Bo

Where:

Bo = current book value per share

RoE = return on equity

r = required rate of return

g = long-term sustainable growth rate

Hence, in this case: $356 = $105 + [(0.12 – 0.11) / (0.11 – g)] * $105.

This implies that g is 10.58%.

Question 16
L2R37TB-AC025-1512
LOS: LOS-8770
Lesson Reference: Lesson 3: Accounting and International Considerations
Difficulty: medium
Which of the following will *most likely* require net income adjustments, but not book value adjustments, when preparing a residual income model forecast?

- (●) Consistently recording losses in available-for-sale securities.
- ( ) Accelerating revenues and deferring expenses to later periods.
- ( ) Consistently capitalizing expenditures that should have been expensed in the current period.

Rationale

✔ **Consistently recording losses in available-for-sale securities.**

Gains and losses on available-for-sale securities bypass the income statement under both IFRS and U.S. GAAP. These gains or losses are recorded directly to equity. From an analytical standpoint, consistent recording of losses on available-for-sale securities should be adjusted for in the net income used for finding the residual income. But, book value is correct because these losses have reduced the book value of equity. Therefore, no adjustment is needed to book value.

Accelerating revenues and deferring expenses results in overstated net income and overstated book value. In addition, capitalizing expenditures that should have been expensed will also overstate net income and book value. Thus, these sets of items should require adjustments to net income and book value before using a residual income model.

Rationale

✘ **Accelerating revenues and deferring expenses to later periods.**

Gains and losses on available-for-sale securities bypass the income statement under both IFRS and U.S. GAAP. These gains or losses are recorded directly to equity. From an analytical standpoint, consistent recording of losses on available-for-sale securities should be adjusted for in the net income used for finding the residual income. But, book value is correct because these losses have reduced the book value of equity. Therefore, no adjustment is needed to book value.

Accelerating revenues and deferring expenses results in overstated net income and overstated book value. In addition, capitalizing expenditures that should have been expensed will also overstate net income and book value. Thus, these sets of items should require adjustments to net income and book value before using a residual income model.

Rationale

Consistently capitalizing expenditures that should have been expensed in the current period.

Gains and losses on available-for-sale securities bypass the income statement under both IFRS and U.S. GAAP. These gains or losses are recorded directly to equity. From an analytical standpoint, consistent recording of losses on available-for-sale securities should be adjusted for in the net income used for finding the residual income. But, book value is correct because these losses have reduced the book value of equity. Therefore, no adjustment is needed to book value.

Accelerating revenues and deferring expenses results in overstated net income and overstated book value. In addition, capitalizing expenditures that should have been expensed will also overstate net income and book value. Thus, these sets of items should require adjustments to net income and book value before using a residual income model.

Question 17
L2R37TB-AC015-1512
LOS: LOS-8680
Lesson Reference: Lesson 1: The Residual Income Model
Difficulty: medium
Which of the following would be the *most likely* use for a residual income model?

- (●) Determine goodwill impairment.
- ( ) Valuation of a firm with unrecorded intangible assets that are of an unknown value.
- ( ) Valuation of a firm that has hidden (off-balance sheet liabilities) that cannot be estimated.

Rationale

✔ **Determine goodwill impairment.**

Residual income can be used to test for goodwill impairment, and as a way to measure management's performance (i.e., has management added value) and determine executive compensation. A residual income model is not useful when we cannot identify the book value of equity (assets minus liabilities) because either assets or liabilities cannot be reasonably estimated.

Rationale

✘ **Valuation of a firm with unrecorded intangible assets that are of an unknown value.**

Residual income can be used to test for goodwill impairment, and as a way to measure management's performance (i.e., has management added value) and determine executive compensation. A residual income model is not useful when we cannot identify the book value of equity (assets minus liabilities) because either assets or liabilities cannot be reasonably estimated.

Rationale

✘ **Valuation of a firm that has hidden (off-balance sheet liabilities) that cannot be estimated.**

Residual income can be used to test for goodwill impairment, and as a way to measure management's performance (i.e., has management added value) and determine executive compensation. A residual income model is not useful when we cannot identify the book value of equity (assets minus liabilities) because either assets or liabilities cannot be reasonably estimated.

Question 18
L2R37TB-AC010-1512
LOS: LOS-8720
Lesson Reference: Lesson 1: The Residual Income Model
Difficulty: medium
The analyst looking at Catapult Company has been asked to revise his assumption that the shares will sell at a 30 percent premium over forecasted end of period book value. Instead, he has been told to assume that the ROE in year 4 will be 12.0 percent and that the ROE will slowly decline toward the cost of equity, which is estimated to be 10.2 percent. He believes that the persistence factor to use in his analysis is 0.70. In addition, the analyst decides to utilize his previous residual income projections of $1.33, $1.46, and $1.61 for years 1, 2, and 3, respectively, and his projected year 3 ending book value of $46.34. The current book value of the shares is $35.00. Assuming ROE will fade toward the cost of equity, the intrinsic value per share for Catapult that the analyst will calculate is *closest to*:

- $39.39
- $40.15
- $40.65

Rationale
$39.39

We will first estimate the year 4 residual income by finding the projected year 4 earnings and the appropriate equity charge to apply.

$$\begin{aligned}\text{Year 4 earnings} &= E_T = \text{ROE}_T \times B_{T-1} = 0.12 \times \$46.34 = \$5.56\\ \text{Year 4 equity charge} &= r_c \times B_{T-1} = 0.102 \times \$46.34 = \$4.73\\ \text{Year 4 residual income} &= \$5.56 - 4.73 = \$0.83\end{aligned}$$

Now we use the following residual income model to find the intrinsic value:

$$V_0 = B_0 + \sum_{t=1}^{T-1} \frac{(E_t - r_c B_{t-1})}{(1+r_c)^t} + \frac{E_T - r_c B_{T-1}}{(1+r_c-\omega)^T (1+r_c)^{T-1}}$$

$$V_0 = \$35.00 + \frac{1.33}{(1+0.102)^1} + \frac{1.46}{(1+0.102)^2} + \frac{1.61}{(1+0.102)^3} + \frac{\$0.83}{(1+0.102-0.70)(1+0.102)^3}$$

$$V_0 = \$35.00 + 1.207 + 1.2022 + 1.203 + 1.543 = \$40.15$$

Rationale
$40.15

We will first estimate the year 4 residual income by finding the projected year 4 earnings and the appropriate equity charge to apply.

$$\begin{aligned}\text{Year 4 earnings} &= E_T = \text{ROE}_T \times B_{T-1} = 0.12 \times \$46.34 = \$5.56\\ \text{Year 4 equity charge} &= r_c \times B_{T-1} = 0.102 \times \$46.34 = \$4.73\\ \text{Year 4 residual income} &= \$5.56 - 4.73 = \$0.83\end{aligned}$$

Now we use the following residual income model to find the intrinsic value:

$$V_0 = B_0 + \sum_{t=1}^{T-1} \frac{(E_t - r_c B_{t-1})}{(1+r_c)^t} + \frac{E_T - r_c B_{T-1}}{(1+r_c-\omega)^T (1+r_c)^{T-1}}$$

$$V_0 = \$35.00 + \frac{1.33}{(1+0.102)^1} + \frac{1.46}{(1+0.102)^2} + \frac{1.61}{(1+0.102)^3} + \frac{\$0.83}{(1+0.102-0.70)(1+0.102)^3}$$

$$V_0 = \$35.00 + 1.207 + 1.2022 + 1.203 + 1.543 = \$40.15$$

Rationale

$40.65

We will first estimate the year 4 residual income by finding the projected year 4 earnings and the appropriate equity charge to apply.

$$\begin{aligned}\text{Year 4 earnings} &= E_T = \text{ROE}_T \times B_{T-1} = 0.12 \times \$46.34 = \$5.56\\ \text{Year 4 equity charge} &= r_c \times B_{T-1} = 0.102 \times \$46.34 = \$4.73\\ \text{Year 4 residual income} &= \$5.56 - 4.73 = \$0.83\end{aligned}$$

Now we use the following residual income model to find the intrinsic value:

$$V_0 = B_0 + \sum_{t=1}^{T-1} \frac{(E_t - r_c B_{t-1})}{(1+r_c)^t} + \frac{E_T - r_c B_{T-1}}{(1+r_c-\omega)^T (1+r_c)^{T-1}}$$

$$V_0 = \$35.00 + \frac{1.33}{(1+0.102)^1} + \frac{1.46}{(1+0.102)^2} + \frac{1.61}{(1+0.102)^3} + \frac{\$0.83}{(1+0.102-0.70)(1+0.102)^3}$$

$$V_0 = \$35.00 + 1.207 + 1.2022 + 1.203 + 1.543 = \$40.15$$

Question 19

L200-PQ0035-1412

LOS: LOS-8760

Lesson Reference: Lesson 2: Residual Income Valuation in Relation to Other Approaches

Difficulty: medium

Which of the following is not a strength of the residual income (RI) models?

- RI models use accounting data, which is readily available.
- RI models are applicable to companies that pay any dividends and to those that have positive free cash flows.
- RI models are applicable to companies with unpredictable cash flows and focus on economic profitability.

Rationale

This Answer is Correct

RI models are applicable to companies that do not pay any dividends and to those that have negative free cash flows.

Question 20
L2EQ-PQ3601-1411
LOS: LOS-8670
Lesson Reference: Lesson 1: The Residual Income Model
Difficulty: medium

Consider the following information:

Total book value of the company's assets = $8 million

Debt-to-equity ratio = 1.5

Cost of equity = 7%

Cost of debt = 4%

Tax rate = 40%

Given that EBIT for the Year 2011 was $600,000, the company's accounting net income and residual income are *closest to*:

	Net Income	Residual Income
A	$244,800	$224,000
B	$955,200	$731,200
C	$244,800	$20,800

- Row A
- Row B
- Row C

Rationale

This Answer is Correct

Amount of debt in the capital structure = 1.5/2.5 × $8m = $4.8 million

Amount of equity in the capital structure = 1/2.5 × $8m = $3.2 million

Interest expense = $4.8m × 0.04 = $192,000

	2011 ($)
EBIT	600,000
Less: Interest expense	192,000
Pre-tax income	408,000
Less: Income tax expense @ 40%	163,200
Net income	**244,800**

Residual income = Net income − Equity charge

Equity charge = Cost of equity capital × Equity capital

Equity charge = 0.07 × $3.2m = $224,000

Residual income = $244,800 − $224,000 = $20,800

Question 21
L2R37TB-AC027-1512
LOS: LOS-8770
Lesson Reference: Lesson 3: Accounting and International Considerations
Difficulty: medium
The accounting convention in IFRS, but not in U.S. GAAP, which will *most likely* result in a direct effect on common equity without passing through the income statement is:

- (●) revaluation of fixed assets.
- ( ) foreign currency translation adjustments.
- ( ) fair value changes in available-for-sale securities.

Rationale
✔ **revaluation of fixed assets.**
IFRS allows revaluation of fixed assets, which will affect common equity without passing through the income statement. The other choices will affect common equity in U.S. GAAP.

Rationale
✘ **foreign currency translation adjustments.**
IFRS allows revaluation of fixed assets, which will affect common equity without passing through the income statement. The other choices will affect common equity in U.S. GAAP.

Rationale
✘ **fair value changes in available-for-sale securities.**
IFRS allows revaluation of fixed assets, which will affect common equity without passing through the income statement. The other choices will affect common equity in U.S. GAAP.

Question 22
L2EQ-TBX115-1502
LOS: LOS-8750
Lesson Reference: Lesson 2: Residual Income Valuation in Relation to Other Approaches
Difficulty: easy

Harmony Liein, CFA, is an equity analyst discussing alternative equity valuation techniques with her work colleagues. One of her colleagues, Martin Adams, makes the following two statements:

Statement 1:

“The dividend discount model and residual income model are in theory mutually consistent, and hence under consistent assumptions they will produce exactly the same valuations.”

Statement 2:

“Given that residual income models produce exactly the same value as dividend discount models, there is no advantage to be gained of using the more complicated residual income model and dividend discount models will always be preferred.”

How many of Adam's statements are correct?

- None.
- One.
- Two.

Rationale

This Answer is Correct

Statement 1 is correct. Statement 2 is incorrect since residual income models will be preferred over dividend discount models when an analyst wishes to value a company that does not pay dividends or when the analyst prefers not to rely on predicting terminal values for the company.

Question 23

L2R37TB-ITEMSET-AC004-1512
LOS: LOS-8670
LOS: LOS-8720
LOS: LOS-8730
Lesson Reference: Lesson 1: The Residual Income Model
Difficulty: N/A

Use the following information to answer the next 3 questions:

Ichiro Watanabe has recently been appointed head of the Investment Policy Committee for a pension fund in Johannesburg's Sandton financial district. Shortly after his appointment, Watanabe brought in Alan Mutombo, an analyst at the firm, for a discussion regarding his use of a residual income approach with proprietary adjustments to make value recommendations on common equity shares.

Watanabe congratulated Mutombo on his stellar record of predicting investment success or failure and wanted to learn more about his proprietary adjustments for possible firm-wide application. In the course of the discussion, Watanabe asked Mutombo whether he makes the following adjustments:

Adjustment 1: Amortize future goodwill expense.
Adjustment 2: Subtract capitalized leases from total capital.
Adjustment 3: Defer the capital charge on strategic investments.

Mutombo has recently been investigating KWS, Ltd., a water sports firm with South African-based manufacturing plants. Mutombo feels that KWS has a market leadership position and, while he can forecast the first three years out, he feels that using a residual income model with a persistence factor will result in the best estimate of the value of the continuing residual income. He prepared the information on KWS in Exhibit 1 using proprietary adjustments.

Exhibit 1: KWS, Ltd. (South African Rand – ZAR)

Current book value per share	20.00
Expected return on equity through year 4	0.12
Cost of equity	0.10
Projected dividend payout ratio	0.30
Persistence factor	0.75

Later, when Mutombo is preparing his first recommendation for Watanabe, he realizes he should have the current market price on hand in order to facilitate an immediate decision. He finds KWS is currently trading at ZAR 28.58. Knowing that Watanabe will likely ask the average growth rate implied by that market price, he prepares that estimate as well based on the assumption that the 12 percent ROE will continue indefinitely.

i.

Which of the adjustments questioned by Watanabe would be *most appropriate* in a residual income (RI) analysis?

- Adjustment 1.
- Adjustment 2.
- Adjustment 3.

Rationale

This Answer is Correct

When doing a RI analysis, it is reasonable to defer the capital charge on strategic investments. In addition, the investment should be removed from total capital until it generates a return.

Rationale

This Answer is Correct

When doing a RI analysis, it is reasonable to defer the capital charge on strategic investments. In addition, the investment should be removed from total capital until it generates a return.

Rationale

This Answer is Correct

When doing a RI analysis, it is reasonable to defer the capital charge on strategic investments. In addition, the investment should be removed from total capital until it generates a return.

ii.

Based on the information in Exhibit 1, Mutombo will calculate an intrinsic value per share for KWS, Ltd that is *closest to*:

- ZAR 20.75
- ZAR 21.50
- ZAR 22.15

Rationale

This Answer is Incorrect

The first step is to find the residual income amounts for the three-year forecast horizon.

Year	Year 1	Year 2	Year 3
Beginning book value (B_{t-1})	20.00	21.68	23.50
EPS (ROE_t of 0.12 × B_{t-1})	2.40	2.60	2.82

Year	Year 1	Year 2	Year 3
Less: dividends (0.30 × EPS)	0.72	0.78	0.85
Ending book value (B_t)	21.68	23.50	25.47
EPS	2.40	2.60	2.82
Less: equity charge ($r_c B_{t-1}$)	2.00	2.17	2.35
Residual income (RI_t)	0.40	0.43	0.47

Next we use the multistage residual income model that has a persistence factor:

$$V_0 = B_0 + \sum_{t=1}^{T-1} \frac{(E_t - r_c B_{t-1})}{(1+r_c)^t} + \frac{E_T - r_c B_{T-1}}{(1+r_c-\omega)(1+r_c)^{T-1}} = B_0 + \sum_{t=1}^{T-1} \frac{RI_t}{(1+r_c)^t} + \frac{(ROE_T$$

Rationale

This Answer is Incorrect

The first step is to find the residual income amounts for the three-year forecast horizon.

Year	Year 1	Year 2	Year 3
Beginning book value (B_{t-1})	20.00	21.68	23.50
EPS (ROE_t of 0.12 × B_{t-1})	2.40	2.60	2.82
Less: dividends (0.30 × EPS)	0.72	0.78	0.85
Ending book value (B_t)	21.68	23.50	25.47
EPS	2.40	2.60	2.82
Less: equity charge ($r_c B_{t-1}$)	2.00	2.17	2.35
Residual income (RI_t)	0.40	0.43	0.47

Next we use the multistage residual income model that has a persistence factor:

$$V_0 = B_0 + \sum_{t=1}^{T-1} \frac{(E_t - r_c B_{t-1})}{(1+r_c)^t} + \frac{E_T - r_c B_{T-1}}{(1+r_c-\omega)(1+r_c)^{T-1}} = B_0 + \sum_{t=1}^{T-1} \frac{RI_t}{(1+r_c)^t} + \frac{(ROE_T$$

Rationale

This Answer is Incorrect

The first step is to find the residual income amounts for the three-year forecast horizon.

Year	Year 1	Year 2	Year 3

Year	Year 1	Year 2	Year 3
Beginning book value (B_{t-1})	20.00	21.68	23.50
EPS (ROE_t of 0.12 × B_{t-1})	2.40	2.60	2.82
Less: dividends (0.30 × EPS)	0.72	0.78	0.85
Ending book value (B_t)	21.68	23.50	25.47
EPS	2.40	2.60	2.82
Less: equity charge ($r_c B_{t-1}$)	2.00	2.17	2.35
Residual income (RI_t)	0.40	0.43	0.47

Next we use the multistage residual income model that has a persistence factor:

$$V_0 = B_0 + \sum_{t=1}^{T-1} \frac{(E_t - r_c B_{t-1})}{(1+r_c)^t} + \frac{E_T - r_c B_{T-1}}{(1+r_c-\omega)(1+r_c)^{T-1}} = B_0 + \sum_{t=1}^{T-1} \frac{RI_t}{(1+r_c)^t} + \frac{(ROE_T$$

iii.

Assuming that ROE remains at 12 percent forever and based on the current price per share in the market, Mutombo will calculate an implied growth rate based on the current market that is *closest to*:

- 3.3 percent.
- 5.3 percent.
- 7.3 percent.

Rationale

This Answer is Incorrect

For this calculation, Mutombo must assume ROE remains constant indefinitely. Then he can use the single-stage constant growth residual income model to find the implied growth rate based on the current market price per share:

$$V_0 = B_0 + \frac{ROE - r_c}{r_c - g} B_0$$

$$28.58 = 20.00 + \frac{0.12 - 0.10}{0.10 - g}(20.00)$$

$$g = 0.053 \text{ or } 5.3 \text{ percent}$$

Rationale

This Answer is Incorrect

For this calculation, Mutombo must assume ROE remains constant indefinitely. Then he can use the single-stage constant growth residual income model to find the implied growth rate based on the current market price per share:

$$\mathrm{V}_0 = \mathrm{B}_0 + \frac{\mathrm{ROE} - r_c}{r_c - g}\mathrm{B}_0$$

$$28.58 = 20.00 + \frac{0.12 - 0.10}{0.10 - g}(20.00)$$

$$g = 0.053 \text{ or } 5.3 \text{ percent}$$

Rationale

This Answer is Incorrect

For this calculation, Mutombo must assume ROE remains constant indefinitely. Then he can use the single-stage constant growth residual income model to find the implied growth rate based on the current market price per share:

$$\mathrm{V}_0 = \mathrm{B}_0 + \frac{\mathrm{ROE} - r_c}{r_c - g}\mathrm{B}_0$$

$$28.58 = 20.00 + \frac{0.12 - 0.10}{0.10 - g}(20.00)$$

$$g = 0.053 \text{ or } 5.3 \text{ percent}$$

Question 24
L2EQ-PQ3602-1411
LOS: LOS-8670
Lesson Reference: Lesson 1: The Residual Income Model
Difficulty: medium

Consider the following information:

Total invested capital = $10.5 million

Debt-to-equity ratio = 0.6

Cost of equity = 8%

Before-tax cost of debt = 5%

Tax rate = 40%

EBIT for the Year 2011 = $1.3 million

Given that research and development expenditure amounting to $270,000 have been deducted to arrive at EBIT, the company's residual income and economic value added are *closest to*:

	Residual Income	Economic Value Added
A	$298,875	$298,875
B	$136,875	$298,875
C	$136,875	$926,875

- Row A
- Row B
- Row C

Rationale

This Answer is Correct

Amount of equity in the capital structure = 1/1.6 × $10.5m = $6,562,500

Amount of debt in the capital structure = 0.6/1.6 × $10.5m = $3,937,500

After-tax cost of debt capital = $3,937,500 × [0.05 × (1 − 0.40)] = $118,125

Equity charge = Cost of equity capital × Equity capital

Equity charge = 0.08 × $6,562,500 = $525,000

	2011 ($)
EBIT	1,300,000

Less: Income tax expense @ 40%	520,000
Operating profi t after tax	780,000
Less: After-tax cost of debt capital	118,125
Less: Equity charge	525,000
Residual Income	**136,875**

Economic value added (EVA) = NOPAT − (Cost of capital × Total capital)

Weighted average cost of capital = [0.6/1.6 × 0.05 × (1 − 0.4)] + (1/1.6 × 0.08) = 6.125%

EBIT adjusted for R&D expenses = $1,300,000 + $270,000 = $1,570,000

*In order to compute EVA, R&D costs that have been expensed must be added back.

NOPAT = EBIT (1 − t)

NOPAT = $1,570,000 (1 − 0.4) = $942,000

EVA = $942,000 − (0.06125 × $10,500,000) = **$298,875**

Question 25
L2R37TB-AC028-1512
LOS: LOS-8780
Lesson Reference: Lesson 1: The Residual Income Model
Difficulty: medium
Valuspend, Inc. has book value of $30.00 per share, ROE of 14 percent, required return of 12 percent, and a dividend payout ratio of 60 percent. Market price for Valuspend is currently $43.25. An analyst reviewing Valuspend using the residual income model and planning to hold the security indefinitely would *most likely* conclude that Valuspend is:

- (●) overvalued.
- ( ) fairly valued.
- ( ) undervalued.

Rationale
overvalued.

To solve this problem, we must first calculate *g*:

$$g = \text{ROE} \times \text{RR} = 0.14 \times (1 - 0.60) = 0.056$$

Next, we use the single-stage RI model to estimate the intrinsic value per share:

$$V_0 = B_0 + \frac{\text{ROE} - r_c}{r_c - g} B_0 = \$30.00 + \frac{0.14 - 0.12}{0.12 - 0.056}(\$30.00) = \$39.38$$

The market price of $43.25 is approximately 10 greater than the calculated value of $39.38. Therefore, the shares are overvalued.

Rationale
fairly valued.

To solve this problem, we must first calculate *g*:

$$g = \text{ROE} \times \text{RR} = 0.14 \times (1 - 0.60) = 0.056$$

Next, we use the single-stage RI model to estimate the intrinsic value per share:

$$V_0 = B_0 + \frac{\text{ROE} - r_c}{r_c - g} B_0 = \$30.00 + \frac{0.14 - 0.12}{0.12 - 0.056}(\$30.00) = \$39.38$$

The market price of $43.25 is approximately 10 greater than the calculated value of $39.38. Therefore, the shares are overvalued.

Rationale

undervalued.

To solve this problem, we must first calculate *g*:

$$g = \text{ROE} \times \text{RR} = 0.14 \times (1 - 0.60) = 0.056$$

Next, we use the single-stage RI model to estimate the intrinsic value per share:

$$V_0 = B_0 + \frac{\text{ROE} - r_c}{r_c - g} B_0 = \$30.00 + \frac{0.14 - 0.12}{0.12 - 0.056} (\$30.00) = \$39.38$$

The market price of $43.25 is approximately 10 greater than the calculated value of $39.38. Therefore, the shares are overvalued.

Question 26
L2R37TB-AC018-1512
LOS: LOS-8750
Lesson Reference: Lesson 2: Residual Income Valuation in Relation to Other Approaches
Difficulty: medium
Hannibal Company has several off-balance sheet items that are difficult to measure. In addition, translation adjustments have caused earnings to be higher than what would have been anticipated based on ROE and book value of equity. However, earnings growth and the dividend payout percentage have been stable. But, much of the growth has been financed by an extensive amount of external debt capital. Which of the following approaches would an analyst be *most likely* to use in valuing Hannibal Company?

- Residual income model.
- Dividend discount model.
- Free cash flow to equity on a per-share basis.

Rationale
Residual income model.
An analyst would most likely use the dividend discount model (DDM). The numerous violations of the clean surplus relationship will cause problems in using a residual income model and the changes in capital structure from new debt being used to finance growth will likely lead to distortions of the free cash flow to equity calculations.

Rationale
Dividend discount model.
An analyst would most likely use the dividend discount model (DDM). The numerous violations of the clean surplus relationship will cause problems in using a residual income model and the changes in capital structure from new debt being used to finance growth will likely lead to distortions of the free cash flow to equity calculations.

Rationale
Free cash flow to equity on a per-share basis.
An analyst would most likely use the dividend discount model (DDM). The numerous violations of the clean surplus relationship will cause problems in using a residual income model and the changes in capital structure from new debt being used to finance growth will likely lead to distortions of the free cash flow to equity calculations.

Question 27
L2EQ-PQ3615-1411
LOS: LOS-8700
LOS: LOS-8710
Lesson Reference: Lesson 1: The Residual Income Model
Difficulty: medium

Consider the following statements:

Statement 1: As long as a company's ROE is greater than the cost of capital, the intrinsic value estimate from the residual income model will be greater than the stock's current book value.

Statement 2: Tobin's q equals the market value of the company's debt and equity divided by the replacement cost of the company's assets.

Which of the following is *most* likely?

- (●) Only Statement 1 is incorrect.
- ( ) Only Statement 2 is incorrect.
- ( ) Both statements are incorrect.

Rationale

This Answer is Correct

As long as a company's ROE is greater than the cost of **equity**, the intrinsic value estimate from the residual income model will be greater than the stock's current book value.

Question 28
L2R37TB-AC012-1512
LOS: LOS-8670
Lesson Reference: Lesson 1: The Residual Income Model
Difficulty: medium
The equity charge in a residual income calculation would *most likely* involve multiplying the required return on equity by the firm's:

- net income.
- book value of common equity.
- market value of common equity.

Rationale
net income.
The equity charge equals the book value of equity multiplied by required return on common equity capital.

Rationale
book value of common equity.
The equity charge equals the book value of equity multiplied by required return on common equity capital.

Rationale
market value of common equity.
The equity charge equals the book value of equity multiplied by required return on common equity capital.

Question 29
L2R37TB-AC020-1512
LOS: LOS-8740
Lesson Reference: Lesson 1: The Residual Income Model
Difficulty: medium
Continuing residual income would *most likely* be used to calculate:

- (●) terminal value.
- ( ) forecast periods.
- ( ) market value added.

Rationale
✓ **terminal value.**
Continuing residual income describes the residual income after the forecast period and it is often used as an input in a constant growth model to calculate a terminal value.

Rationale
✗ **forecast periods.**
Continuing residual income describes the residual income after the forecast period and it is often used as an input in a constant growth model to calculate a terminal value.

Rationale
✗ **market value added.**
Continuing residual income describes the residual income after the forecast period and it is often used as an input in a constant growth model to calculate a terminal value.

Question 30
L2R37TB-AC024-1512
LOS: LOS-8750
Lesson Reference: Lesson 2: Residual Income Valuation in Relation to Other Approaches
Difficulty: medium
Assuming a clean surplus relationship and minimal adjustments for accruals and deferred expenses, an analyst would *most likely* calculate a value using a residual income model that is:

- less than DDM valuation.
- greater than DDM valuation.
- close to the same as a DDM valuation.

Rationale
less than DDM valuation.
Residual income models should, depending on assumptions and adjustments, provide the same calculation of value as DDM and free cash flow (FCF) models. Based on the specified conditions, there should be little distortion between accounting and economic reality.

Rationale
greater than DDM valuation.
Residual income models should, depending on assumptions and adjustments, provide the same calculation of value as DDM and free cash flow (FCF) models. Based on the specified conditions, there should be little distortion between accounting and economic reality.

Rationale
close to the same as a DDM valuation.
Residual income models should, depending on assumptions and adjustments, provide the same calculation of value as DDM and free cash flow (FCF) models. Based on the specified conditions, there should be little distortion between accounting and economic reality.

Question 31
L2R37TB-AC021-1512
LOS: LOS-8760
Lesson Reference: Lesson 2: Residual Income Valuation in Relation to Other Approaches
Difficulty: medium
An analyst is using a multistage residual income model where the expectation is that the ROE fades toward the cost of equity over time. The persistence factor the analyst will use for the fade will be *closest* to 1.0 for a company that has:

- (●) a strong leadership position.
- ( ) a low earnings retention rate.
- ( ) extremely high returns on equity.

Rationale
✔ **a strong leadership position.**
A firm with a strong leadership position in the industry would be likely to have a slower rate of fade. A persistence factor of 1.0 is representative of no fade, so the company's strong leadership position will likely have a persistence factor closer to 1.0. Low earnings retention means there is a high dividend payout ratio. When this is the case, very little is being retained to fund growth and it is likely that ROE will fade more quickly (low persistence factor) toward the cost of equity. When ROE has been extremely high, it is likely to fade quickly (low persistence factor) as it may not be sustainable.

Rationale
✘ **a low earnings retention rate.**
A firm with a strong leadership position in the industry would be likely to have a slower rate of fade. A persistence factor of 1.0 is representative of no fade, so the company's strong leadership position will likely have a persistence factor closer to 1.0. Low earnings retention means there is a high dividend payout ratio. When this is the case, very little is being retained to fund growth and it is likely that ROE will fade more quickly (low persistence factor) toward the cost of equity. When ROE has been extremely high, it is likely to fade quickly (low persistence factor) as it may not be sustainable.

Rationale
✘ **extremely high returns on equity.**
A firm with a strong leadership position in the industry would be likely to have a slower rate of fade. A persistence factor of 1.0 is representative of no fade, so the company's strong leadership position will likely have a persistence factor closer to 1.0. Low earnings retention means there is a high dividend payout ratio. When this is the case, very little is being retained to fund growth and it is likely that ROE will fade more quickly (low persistence factor) toward the cost of equity. When ROE has been extremely high, it is likely to fade quickly (low persistence factor) as it may not be sustainable.

Question 32
L2EQ-PQ3603-1411
LOS: LOS-8670
Lesson Reference: Lesson 1: The Residual Income Model
Difficulty: medium

An analyst gathered the following information regarding a company:

Total number of shares outstanding = 5 million

Market price per share = $14.25

Book value of equity = $50 million

Market value of debt = $50 million

Book value of debt = $40 million

The market value added (MVA) for the company is *closest to*:

- (●) $31.25 million
- ( ) $21.25 million
- ( ) $121.25 million

Rationale

This Answer is Correct

Market value added = Market value of the company − Accounting book value of total capital

Market value added = [(5m × $14.25) + $50m] − ($50m + $40m) = $31.25 million

Question 33
L2R37TB-AC030-1512
LOS: LOS-8720
Lesson Reference: Lesson 1: The Residual Income Model
Difficulty: medium
HPK Fabricators was just founded in order to complete a three-year project. It is expected to earn £2.50, £3.50, and £5.00 per share during the next three years. It plans to pay annual dividends of £1.00, £2.00, and £18.00 for the same period. The last dividend includes a liquidating payment to shareholders, as the company will sell its assets at the end of the three years. HPK's book value is £10.00 and its required return on equity is 12 percent. Using a residual income model, the value per share is *closest to*:

- £13.65
- £14.20
- £15.30

Rationale
£13.65

The first step is to calculate each year's residual income, which is done using the following table:

Year	1	2	3
Beginning book value (B_{t-1})	£10.00	£11.50	£13.00
EPS	2.50	3.50	5.00
Less: dividends	1.00	2.00	18.00
Ending book value (B_t)	£11.50	£13.00	£0
EPS	£2.50	£3.50	£5.00
Less: equity charge ($r_c B_{t-1}$)	1.20	1.38	1.56
Residual income (RI_t)	£1.30	£2.12	£3.44

Next, we can find the value using the RI model:

$$V_0 = B_0 + \sum_{t=1}^{n} \frac{\text{RI}_t}{(1+r_c)^t} = £10.00 + \frac{£1.30}{(1+0.12)^1} + \frac{£2.12}{(1+0.12)^2} + \frac{£3.44}{(1+0.12)^3} = £15.30$$

Rationale
£14.20

The first step is to calculate each year's residual income, which is done using the following table:

Year	1	2	3
Beginning book value (B_{t-1})	£10.00	£11.50	£13.00
EPS	2.50	3.50	5.00
Less: dividends	1.00	2.00	18.00
Ending book value (B_t)	£11.50	£13.00	£0
EPS	£2.50	£3.50	£5.00
Less: equity charge ($r_c B_{t-1}$)	1.20	1.38	1.56
Residual income (RI_t)	£1.30	£2.12	£3.44

Next, we can find the value using the RI model:

$$V_0 = B_0 + \sum_{t=1}^{n} \frac{\text{RI}_t}{(1+r_c)^t} = £10.00 + \frac{£1.30}{(1+0.12)^1} + \frac{£2.12}{(1+0.12)^2} + \frac{£3.44}{(1+0.12)^3} = £15.30$$

Rationale

£15.30

The first step is to calculate each year's residual income, which is done using the following table:

Year	1	2	3
Beginning book value (B_{t-1})	£10.00	£11.50	£13.00
EPS	2.50	3.50	5.00
Less: dividends	1.00	2.00	18.00
Ending book value (B_t)	£11.50	£13.00	£0
EPS	£2.50	£3.50	£5.00
Less: equity charge ($r_c B_{t-1}$)	1.20	1.38	1.56
Residual income (RI_t)	£1.30	£2.12	£3.44

Next, we can find the value using the RI model:

$$V_0 = B_0 + \sum_{t=1}^{n} \frac{\text{RI}_t}{(1+r_c)^t} = £10.00 + \frac{£1.30}{(1+0.12)^1} + \frac{£2.12}{(1+0.12)^2} + \frac{£3.44}{(1+0.12)^3} = £15.30$$

Question 34
L2R37TB-AC019-1512
LOS: LOS-8700
Lesson Reference: Lesson 1: The Residual Income Model
Difficulty: medium
Return on equity (ROE) for residual income forecasting purposes will *most likely* be based on:

- ○ end of period book value.
- ○ weighted average book value.
- ◉ beginning of period book value.

Rationale
✗ **end of period book value.**
The residual income model implicitly assumes that it takes some time (about a year) for assets to become productive. Therefore, beginning book value is used for the ROE calculation.

Rationale
✗ **weighted average book value.**
The residual income model implicitly assumes that it takes some time (about a year) for assets to become productive. Therefore, beginning book value is used for the ROE calculation.

Rationale
✓ **beginning of period book value.**
The residual income model implicitly assumes that it takes some time (about a year) for assets to become productive. Therefore, beginning book value is used for the ROE calculation.

Question 35
L2R37TB-AC017-1512
LOS: LOS-8670
Lesson Reference: Lesson 1: The Residual Income Model
Difficulty: medium
An analyst is valuing a firm with book value of $17 per share, return on equity (ROE) of 10 percent, a required return on equity of 9 percent, and an earnings retention rate of 50 percent. The firm has 20 million common shares outstanding that are trading at $30 per share. In addition, it has debt outstanding that requires it to pay 6.5 percent interest. The debt is recorded at $350 million on the balance sheet and is trading at $400 million in the market. The firm's market value added (MVA) is *closest to*:

- (●) $310 million.
- ( ) $260 million.
- ( ) $210 million.

Rationale
$310 million.

Market value added is equal to the market value of the company minus the accounting book value of total capital. We need to first find the market and book value of the equity:

$$\begin{aligned}\text{Market value of equity} &= 20 \text{ million shares} \times \$30(\text{market price}) = \$600 \text{ million} \\ \text{Book value of equity} &= 20 \text{ million shares} \times \$17(\text{BVPS}) = \$340 \text{ million}\end{aligned}$$

Now MVA can be calculated:

$$\begin{aligned}\text{MVA} &= \text{MV of company} - \text{Accounting BV of total capital} \\ &= (\$600 + 400) - (\$340 + 350) = \$310 \text{ million}\end{aligned}$$

Rationale
$260 million.

Market value added is equal to the market value of the company minus the accounting book value of total capital. We need to first find the market and book value of the equity:

$$\begin{aligned}\text{Market value of equity} &= 20 \text{ million shares} \times \$30(\text{market price}) = \$600 \text{ million} \\ \text{Book value of equity} &= 20 \text{ million shares} \times \$17(\text{BVPS}) = \$340 \text{ million}\end{aligned}$$

Now MVA can be calculated:

$$\begin{aligned}\text{MVA} &= \text{MV of company} - \text{Accounting BV of total capital} \\ &= (\$600 + 400) - (\$340 + 350) = \$310 \text{ million}\end{aligned}$$

Rationale

$210 million.

Market value added is equal to the market value of the company minus the accounting book value of total capital. We need to first find the market and book value of the equity:

$$\begin{aligned}\text{Market value of equity} &= 20\text{ million shares} \times \$30(\text{market price}) = \$600\text{ million}\\ \text{Book value of equity} &= 20\text{ million shares} \times \$17(\text{BVPS}) = \$340\text{ million}\end{aligned}$$

Now MVA can be calculated:

$$\begin{aligned}\text{MVA} &= \text{MV of company} - \text{Accounting BV of total capital}\\ &= (\$600 + 400) - (\$340 + 350) = \$310\text{ million}\end{aligned}$$

Question 36
L2R37TB-AC031-1512
LOS: LOS-8720
Lesson Reference: Lesson 1: The Residual Income Model
Difficulty: medium

Tempo & Krause (T&K) HPK is being valued by an analyst using a multistage residual income model. As of 1 January 2015, the analyst has gathered the following data:

T&K Data			
Current market price per share	€23.50		
Book value per share at end of 2014	€12.60		
Cost of equity	11%		
Expected ROE in 2018	20%		
Persistence factor	0.65		
	2015	**2016**	**2017**
Expected earnings per share	€3.15	€3.33	€3.55
Expected dividend per share	€1.89	€2.00	€2.13

The intrinsic value per share of the equity of Tempo & Krause is *closest* to:

- €18.50
- €19.40
- €20.00

Rationale
✗ **€18.50**

The first step is to calculate each year's residual income, which is done using the following table:

Year	**2015**	**2016**	**2017**	**2018**
Beginning book value (B_{t-1})	€12.60	€13.86	€15.19	€16.61
EPS (given for 2015–2017, while 2018 is $ROE_{2018} \times B_{\text{beginning of 2018}}$	3.15	3.33	3.55	3.32
Less: dividends	1.89	2.00	2.13	Not needed
Ending book value (B_t)	€13.86	€15.19	€16.61	Not needed
EPS	€3.15	€3.33	€3.55	€3.32
Less: equity charge ($r_c B_{t-1}$)	1.39	1.52	1.67	1.83
	€1.76	€1.81	€1.88	€1.49

Year	2015	2016	2017	2018
Residual income (RI_t)				

Now we use the following residual income model to find the intrinsic value:

$$V_0 = B_0 + \sum_{t=1}^{T-1} \frac{(E_t - r_c B_{t-1})}{(1+r_c)^t} + \frac{E_t - r_c B_{T-1})}{(1+r_c-\omega)(1+r_c)^{T-1}}$$

$$V_0 = €12.60 + \frac{1.76}{(1+0.11)^t} + \frac{1.81}{(1+0.11)^2} + \frac{1.88}{(1+0.11)^3} + \frac{1.49}{(1+0.11-0.65)(1+0.11)^3}$$

$$V_0 = €12.60 + 1.59 + 1.47 + 1.37 + 2.37 = €19.40$$

Rationale

€19.40

The first step is to calculate each year's residual income, which is done using the following table:

Year	2015	2016	2017	2018
Beginning book value (B_{t-1})	€12.60	€13.86	€15.19	€16.61
EPS (given for 2015–2017, while 2018 is $ROE_{2018} \times B_{\text{beginning of 2018}}$	3.15	3.33	3.55	3.32
Less: dividends	1.89	2.00	2.13	Not needed
Ending book value (B_t)	€13.86	€15.19	€16.61	Not needed
EPS	€3.15	€3.33	€3.55	€3.32
Less: equity charge ($r_c B_{t-1}$)	1.39	1.52	1.67	1.83
Residual income (RI_t)	€1.76	€1.81	€1.88	€1.49

Now we use the following residual income model to find the intrinsic value:

$$V_0 = B_0 + \sum_{t=1}^{T-1} \frac{(E_t - r_c B_{t-1})}{(1+r_c)^t} + \frac{E_t - r_c B_{T-1})}{(1+r_c-\omega)(1+r_c)^{T-1}}$$

$$V_0 = €12.60 + \frac{1.76}{(1+0.11)^t} + \frac{1.81}{(1+0.11)^2} + \frac{1.88}{(1+0.11)^3} + \frac{1.49}{(1+0.11-0.65)(1+0.11)^3}$$

$$V_0 = €12.60 + 1.59 + 1.47 + 1.37 + 2.37 = €19.40$$

Rationale

€20.00

The first step is to calculate each year's residual income, which is done using the following table:

Year	2015	2016	2017	2018
Beginning book value (B_{t-1})	€12.60	€13.86	€15.19	€16.61
EPS (given for 2015–2017, while 2018 is $\text{ROE}_{2018} \times B_{\text{beginning of 2018}}$)	3.15	3.33	3.55	3.32
Less: dividends	1.89	2.00	2.13	Not needed
Ending book value (B_t)	€13.86	€15.19	€16.61	Not needed
EPS	€3.15	€3.33	€3.55	€3.32
Less: equity charge ($r_c B_{t-1}$)	1.39	1.52	1.67	1.83
Residual income (RI_t)	€1.76	€1.81	€1.88	€1.49

Now we use the following residual income model to find the intrinsic value:

$$V_0 = B_0 + \sum_{t=1}^{T-1} \frac{(E_t - r_c B_{t-1})}{(1+r_c)^t} + \frac{E_t - r_c B_{T-1})}{(1+r_c-\omega)(1+r_c)^{T-1}}$$

$$V_0 = €12.60 + \frac{1.76}{(1+0.11)^t} + \frac{1.81}{(1+0.11)^2} + \frac{1.88}{(1+0.11)^3} + \frac{1.49}{(1+0.11-0.65)(1+0.11)^3}$$

$$V_0 = €12.60 + 1.59 + 1.47 + 1.37 + 2.37 = €19.40$$

Question 37

L2EQ-TBB223-1412

LOS: LOS-8710

Lesson Reference: Lesson 1: The Residual Income Model

Difficulty: medium

Which of the following statements regarding residual income valuation is most accurate?

- If residual income is forecast to be zero, then the forecast fundamental price-to-book value will be zero.
- If residual income is forecast to be zero, then the forecast fundamental price-to-book value will be less than one.
- If residual income is forecast to be zero, then the forecast fundamental price-to-book value will be one.

Rationale

This Answer is Correct

Under the residual income model, the fair value of a security is its book value plus the present value of future residual income. If the residual income is expected to be zero, then the security should be trading at book value and hence will have a fundamental price-to-book value of 1.

Question 38
L2EQ-TB0037-1412
LOS: LOS-8690
Lesson Reference: Lesson 1: The Residual Income Model
Difficulty: medium
Stonebridge Utilities Ltd. is a company that has projected earnings per share of $2.35. The current book value per share is $20 and the cost of equity is 10%. Which of the following is closest to the residual income expected in the next period for the company?

- Zero.
- $0.15.
- $0.35.

Rationale

This Answer is Correct
Residual income = Earnings per share – (Book value per share Cost of equity) = $2.35 – ($20 0.10) = $0.35.

Question 39
L2R37TB-ITEMSET-AC001-1512
LOS: LOS-8690
LOS: LOS-8700
LOS: LOS-8780
Lesson Reference: Lesson 1: The Residual Income Model
Difficulty: N/A

Use the following information to answer the next 3 questions:

Godfrey Small, CFO for Jamaica Cement, Ltd., recently hired Dalmain Whitehall to oversee financial planning for the company. Small and Whitehall met to discuss several analysis projects at the beginning of the financial cycle for that year.

Small believes he has identified a potential opportunity to repurchase the company's shares at below fair value and requests Whitehall to determine how Jamaica Cement's fair value compares with the market price of the shares. Small makes the following statements with regard to using the residual income method of determining fair value:

> Statement 1: From a theoretical standpoint, the residual income model is superior to a free cash flow model.
> Statement 2: We accelerate revenues to the current period and defer expenses until later periods, so relative valuation will not work. But residual income will work without adjustment.
> Statement 3: A dividend discount model will not work because we only payout 20 percent of net income as dividends and the model will work only when the payout ratio is much higher.

Small makes the following disclosures regarding his recommended adjustments for purposes of the internal data:

> Disclosure 1: I suggest adjusting net income downward for losses we have recorded on available-for-sale securities to correspond with book value adjustments required by accounting practices.
> Disclosure 2: Because we have recorded our foreign currency translation losses over many years and expect these practices to continue, I do not think we should adjust net income downward in making any estimates.
> Disclosure 3: We have been accelerating revenue to the current period and deferring expenses to later periods to improve operating performance metrics. Since we only started doing this for the period just ended and we have not done it every year, we do not need to adjust net income.

Based on his knowledge of the residual income model, Dalmain Whitehall decides to make his own adjustments to net income and book value. He has gathered the following adjusted financial and current data for the company.

Exhibit 1: Jamaica Cement, Ltd.

Adjusted Financial and Current Data, (Jamaican dollars – JMD)

EBIT (year just ended)	707,903
Interest paid (year just ended)	135,971
Taxes (year just ended)	155,494
Market value of debt	1,950,450
Current share price	6.03
Current book value per share	4.56
Book value per share one year ago	4.07
Cost of equity	11.0 percent
Total shares outstanding (000)	851,868
Dividend payout ratio	20.0 percent

i.
With regard to Small's statements concerning why a residual income model should be used rather than other approaches, he is *most likely*:

- correct for Statement 1, only.
- correct for Statement 2, only.
- incorrect in making all three statements.

Rationale

This Answer is Correct

All three statements are incorrect. If applied consistently with consistent adjustments, a free cash flow model and a residual income model should come to the same value. Thus, Statement 1 is incorrect in stating that one is theoretically superior to the other. Statement 2 is incorrect because these aggressive accounting practices will require adjustment in whatever model is used. Statement 3 is incorrect in that a dividend discount model can be used with a low payout ratio—the offsetting effect is higher growth.

Rationale

This Answer is Correct

All three statements are incorrect. If applied consistently with consistent adjustments, a free cash flow model and a residual income model should come to the same value. Thus, Statement 1 is incorrect in stating that one is theoretically superior to the other. Statement 2 is incorrect because these aggressive accounting practices will require adjustment in whatever model is used. Statement 3 is incorrect in that a dividend discount model can be used with a low payout ratio—the offsetting effect is higher growth.

Rationale

This Answer is Correct
All three statements are incorrect. If applied consistently with consistent adjustments, a free cash flow model and a residual income model should come to the same value. Thus, Statement 1 is incorrect in stating that one is theoretically superior to the other. Statement 2 is incorrect because these aggressive accounting practices will require adjustment in whatever model is used. Statement 3 is incorrect in that a dividend discount model can be used with a low payout ratio—the offsetting effect is higher growth.

ii.
Which of Small's disclosures describes a *correct* adjustment for forecasting residual income?

- (•) Disclosure 1.
- ( ) Disclosure 2.
- ( ) Disclosure 3.

Rationale
This Answer is Incorrect
Without the downward adjustment in net income, ROE will be overstated against book value and future net income forecasts will be overstated. Alternatively, Whitehall could adjust ROE downward if this were ongoing.

Rationale
This Answer is Incorrect
Without the downward adjustment in net income, ROE will be overstated against book value and future net income forecasts will be overstated. Alternatively, Whitehall could adjust ROE downward if this were ongoing.

Rationale
This Answer is Incorrect
Without the downward adjustment in net income, ROE will be overstated against book value and future net income forecasts will be overstated. Alternatively, Whitehall could adjust ROE downward if this were ongoing.

iii.
Using a single-stage (constant growth) residual income model, Whitehall will *most likely* determine that the firm's shares are:

- ( ) overvalued.
- ( ) fairly valued.
- (•) undervalued.

Rationale

This Answer is Incorrect

First, we need to find return on equity (ROE) for the residual income model, which is earnings per share (EPS) for the year just ended divided by book value per share at the beginning of the year. In this case, the EPS and ROE are calculated using the adjusted financial data from the exhibit:

EBIT	707,903
Less: interest paid	135,971
Less: taxes	155,494
Net income	416,438
Shares outstanding	851,868
Earnings per share	0.49
Return on equity (EPS/$B_{\text{beginning of year}}$)	12.0 percent

The growth rate is calculated as follows:

g = ROE × RR = ROE × (1 – payout ratio) = 0.12 × (1 – 0.20) = 9.6 percent

The intrinsic value of the shares using the single-stage residual income model is calculated as follows:

$$V_0 = B_0 + \frac{ROE - r_c}{r_c - g} B_0 = 4.56 + \frac{0.12 - 0.11}{0.11 - 0.096}(4.56) = 7.82$$

The market price is 6.03, so the shares are undervalued if the intrinsic value is 7.82.

Rationale

This Answer is Incorrect

First, we need to find return on equity (ROE) for the residual income model, which is earnings per share (EPS) for the year just ended divided by book value per share at the beginning of the year. In this case, the EPS and ROE are calculated using the adjusted financial data from the exhibit:

EBIT	707,903
Less: interest paid	135,971
Less: taxes	155,494
Net income	416,438
Shares outstanding	851,868
Earnings per share	0.49

Return on equity (EPS/$B_{\text{beginning of year}}$)	12.0 percent

The growth rate is calculated as follows:

g = ROE × RR = ROE × (1 – payout ratio) = 0.12 × (1 – 0.20) = 9.6 percent

The intrinsic value of the shares using the single-stage residual income model is calculated as follows:

$$V_0 = B_0 + \frac{ROE - r_c}{r_c - g} B_0 = 4.56 + \frac{0.12 - 0.11}{0.11 - 0.096}(4.56) = 7.82$$

The market price is 6.03, so the shares are undervalued if the intrinsic value is 7.82.

Rationale

This Answer is Incorrect

First, we need to find return on equity (ROE) for the residual income model, which is earnings per share (EPS) for the year just ended divided by book value per share at the beginning of the year. In this case, the EPS and ROE are calculated using the adjusted financial data from the exhibit:

EBIT	707,903
Less: interest paid	135,971
Less: taxes	155,494
Net income	416,438
Shares outstanding	851,868
Earnings per share	0.49
Return on equity (EPS/$B_{\text{beginning of year}}$)	12.0 percent

The growth rate is calculated as follows:

g = ROE × RR = ROE × (1 – payout ratio) = 0.12 × (1 – 0.20) = 9.6 percent

The intrinsic value of the shares using the single-stage residual income model is calculated as follows:

$$V_0 = B_0 + \frac{ROE - r_c}{r_c - g} B_0 = 4.56 + \frac{0.12 - 0.11}{0.11 - 0.096}(4.56) = 7.82$$

The market price is 6.03, so the shares are undervalued if the intrinsic value is 7.82.

Question 40
L2R37TB-AC013-1512
LOS: LOS-8670
Lesson Reference: Lesson 1: The Residual Income Model
Difficulty: medium
Destiny Corp. has total invested capital of $5 million, with 40 percent of this being debt financed at 7 percent. The company's required return on equity is 11 percent. Destiny had EBIT of $1 million and was taxed at a rate of 36 percent. Destiny Corp's residual income for the period will be *closest to*:

- $130,800
- $220,400
- $270,800

Rationale

$130,800

There are two possible approaches: find net operating profit after tax (NOPAT) and subtract the capital charge or find net income and subtract the equity charge.

We will first do the approach using NOPAT and the capital charge. The capital charge is calculated as follows:

$$\begin{aligned}\text{Capital charge} &= [(0.40)(\$5\text{ million})(0.07)(1-0.36)+(0.60)(\$5\text{ million})(0.11)] \\ &= \$419{,}600\end{aligned}$$

Since this capital charge takes into account after-tax interest cost, we subtract the capital charge from NOPAT. But, we have EBIT and need NOPAT. When starting with EBIT, NOPAT is calculated as follows:

$$\text{NOPAT} = \text{EBIT} \times (1-\text{t}) = \$1{,}000{,}000 \times (1-0.36) = \$640{,}000$$

The residual income is then found as follows:

NOPAT	$640,000
Less capital charge	419,600
Residual income	$220,400

The alternative approach is to find net income and subtract the equity charge. The equity charge is calculated as follows:

$$\text{Equity charge} = (0.60)(\$5\text{ million})(0.11) = \$330{,}000$$

We need to now find the net income and then subtract this charge in order to get the residual income:

EBIT	$1,000,000

Less interest	140,000	(0.40)($5 million)(0.07)
Pretax income (EBT)	$860,000	
Less taxes	309,600	$860,000 × 0.36
Net income	$550,400	
Less equity charge	330,000	
Residual income	$220,400	

Rationale

$220,400

There are two possible approaches: find net operating profit after tax (NOPAT) and subtract the capital charge or find net income and subtract the equity charge.

We will first do the approach using NOPAT and the capital charge. The capital charge is calculated as follows:

$$\begin{aligned}\text{Capital charge} &= [(0.40)(\$5 \text{ million})(0.07)(1-0.36)+(0.60)(\$5 \text{ million})(0.11)] \\ &= \$419{,}600\end{aligned}$$

Since this capital charge takes into account after-tax interest cost, we subtract the capital charge from NOPAT. But, we have EBIT and need NOPAT. When starting with EBIT, NOPAT is calculated as follows:

$$\text{NOPAT} = \text{EBIT} \times (1-\text{t}) = \$1{,}000{,}000 \times (1-0.36) = \$640{,}000$$

The residual income is then found as follows:

NOPAT	$640,000
Less capital charge	419,600
Residual income	$220,400

The alternative approach is to find net income and subtract the equity charge. The equity charge is calculated as follows:

$$\text{Equity charge} = (0.60)(\$5 \text{ million})(0.11) = \$330{,}000$$

We need to now find the net income and then subtract this charge in order to get the residual income:

EBIT	$1,000,000	
Less interest	140,000	(0.40)($5 million)(0.07)
Pretax income (EBT)	$860,000	
Less taxes	309,600	$860,000 × 0.36
Net income	$550,400	

Less equity charge	330,000
Residual income	$220,400

Rationale

$270,800

There are two possible approaches: find net operating profit after tax (NOPAT) and subtract the capital charge or find net income and subtract the equity charge.

We will first do the approach using NOPAT and the capital charge. The capital charge is calculated as follows:

$$\begin{aligned}\text{Capital charge} &= [(0.40)(\$5 \text{ million})(0.07)(1-0.36)+(0.60)(\$5 \text{ million})(0.11)] \\ &= \$419{,}600\end{aligned}$$

Since this capital charge takes into account after-tax interest cost, we subtract the capital charge from NOPAT. But, we have EBIT and need NOPAT. When starting with EBIT, NOPAT is calculated as follows:

$$\text{NOPAT} = \text{EBIT} \times (1-\text{t}) = \$1{,}000{,}000 \times (1-0.36) = \$640{,}000$$

The residual income is then found as follows:

NOPAT	$640,000
Less capital charge	419,600
Residual income	$220,400

The alternative approach is to find net income and subtract the equity charge. The equity charge is calculated as follows:

$$\text{Equity charge} = (0.60)(\$5 \text{ million})(0.11) = \$330{,}000$$

We need to now find the net income and then subtract this charge in order to get the residual income:

EBIT	$1,000,000	
Less interest	140,000	(0.40)($5 million)(0.07)
Pretax income (EBT)	$860,000	
Less taxes	309,600	$860,000 × 0.36
Net income	$550,400	
Less equity charge	330,000	
Residual income	$220,400	

Question 41
L2R37TB-AC016-1512
LOS: LOS-8670
Lesson Reference: Lesson 1: The Residual Income Model
Difficulty: medium
In the absence of non-operating income, economic value added (EVA) during a particular period will be *closest* to the firm's:

- ○ Market value added.
- ○ Net operating profit after taxes.
- ◉ Net income available to common less a common equity capital charge.

Rationale
✗ **Market value added.**
Economic value added is residual income which, by definition, equals EBIT less interest, taxes, and a capital charge on common equity. Assuming little nonoperating income, this should be fairly close. Market value added is the present value of EVA for all periods, and NOPAT must have the charge on total capital deducted.

Rationale
✗ **Net operating profit after taxes.**
Economic value added is residual income which, by definition, equals EBIT less interest, taxes, and a capital charge on common equity. Assuming little nonoperating income, this should be fairly close. Market value added is the present value of EVA for all periods, and NOPAT must have the charge on total capital deducted.

Rationale
✓ **Net income available to common less a common equity capital charge.**
Economic value added is residual income which, by definition, equals EBIT less interest, taxes, and a capital charge on common equity. Assuming little nonoperating income, this should be fairly close. Market value added is the present value of EVA for all periods, and NOPAT must have the charge on total capital deducted.

Question 42

L2EQ-TB0038-1412

LOS: LOS-8700

Lesson Reference: Lesson 1: The Residual Income Model

Difficulty: medium

Which of the following companies is *most likely* to have future positive residual income?

- A company with book value per share greater than its justified price per share.
- A company earning with a required return on equity that is less than its return on equity.
- A company with positive book value.

Rationale

This Answer is Correct

A company with a book value per share greater than its justified price per share will have a justified P/B of less than one, which implies the company is expected to earn negative residual value. Answer B is correct since a company that earns a return on equity greater than its required return on equity will have positive residual income. Answer C is incorrect since all companies are expected to have a positive book value regardless of the level of residual income.

Question 43

L200-PQ0036-1412

LOS: LOS-8760

Lesson Reference: Lesson 2: Residual Income Valuation in Relation to Other Approaches

Difficulty: medium

In which of the following scenarios would the residual income model not be an appropriate valuation model?

- The company does not have a history of paying dividends, or dividends cannot be predicted with certainty.
- The company's free cash flows are expected to remain positive for the foreseeable future.
- The estimates of terminal value using alternative valuation models entail a great amount of uncertainty.

Rationale

This Answer is Correct

The residual income model would be used when the company's free cash flows are expected to remain negative for the foreseeable future.

Question 44
L2EQ-PQ3604-1411
LOS: LOS-8690
Lesson Reference: Lesson 1: The Residual Income Model
Difficulty: medium

Consider the following information:

- Market price of stock at December 31, 2010 = $47
- Book value per share at December 31, 2010 = $21
- Consensus annual EPS forecasts:
  - 2011 = $2.18
  - 2012 = $2.75
- The company's dividend payout ratio is expected to remain constant at 40%.

Given a cost of equity of 11%, the company's residual income per share for 2011 and 2012 is *closest to*:

	2011 ($)	2012 ($)
A	-0.27	-0.11
B	-0.13	0.30
C	-3.13	-2.75

- Row A
- Row B
- Row C

Rationale

This Answer is Correct

	2011 ($)	2012 ($)
Beginning book value per share (B_{t-1})	21.00	22.31
Add: Forecasted EPS	2.18	2.75
Less: Forecasted dividends per share	0.87	1.10
Ending book value per share	22.31	23.96
Equity charge per share ($B_{t-1} \times r$)	2.31	2.45
Residual income per share	**-0.13**	**0.30**

Question 45
L2EQ-PQ3614-1411
LOS: LOS-8770
Lesson Reference: Lesson 3: Accounting and International Considerations
Difficulty: medium
XYZ has reported a loss from a decline in the fair value of available-for-sale securities in other comprehensive income for each of the last 7 years. When applying the residual income model to value XYZ, an analyst who believes that this trend will continue into the foreseeable future will *most* likely:

- Adjust net income and the book value of equity downward.
- Make no adjustments to net income or the book value of equity.
- Adjust net income downward but make no adjustment to the book value of equity.

Rationale

This Answer is Correct

The residual income model starts with net income and assumes that there are no violations of clean surplus accounting. Since the company's AFS securities have persistently declined in value, these losses have been recorded in OCI and therefore there is a violation of clean surplus accounting. The analyst should adjust NI downward to reflect these losses. Note that ROE will also decline.

No adjustment is required to the book value of equity as the decline in value of these securities has already been recognized in accumulated OCI (part of shareholders' equity).

Question 46
L2R37TB-AC011-1512
LOS: LOS-8770
Lesson Reference: Lesson 3: Accounting and International Considerations
Difficulty: medium
An analyst is using the residual income model to value a company. She noted a relatively consistent $10 million reduction to equity each year for “translation differences.” The analyst's *best* course of action is to:

- Do nothing.
- Reduce the net income forecast.
- Increase book value of common equity for the amount.

Rationale
Do nothing.
An analyst that expects continued adjustments directly to equity should reduce the ROE forecast, which will reduce the net income forecast. Otherwise, the net income forecast will overstate the likely case because net income should have been reduced for the other comprehensive income amounts.

Rationale
Reduce the net income forecast.
An analyst that expects continued adjustments directly to equity should reduce the ROE forecast, which will reduce the net income forecast. Otherwise, the net income forecast will overstate the likely case because net income should have been reduced for the other comprehensive income amounts.

Rationale
Increase book value of common equity for the amount.
An analyst that expects continued adjustments directly to equity should reduce the ROE forecast, which will reduce the net income forecast. Otherwise, the net income forecast will overstate the likely case because net income should have been reduced for the other comprehensive income amounts.

Question 47
L2EQ-ITEMSET-PQ3605-1411
LOS: LOS-8690
LOS: LOS-8780
Lesson Reference: Lesson 1: The Residual Income Model
Difficulty: medium

Use the following information to answer the next 2 questions:

Ana wants to value the stock of Moon Industries, which is currently trading at $17.25. She gathers the following information:

- The company's current book value per share = $7.80.
- The company's EPS forecasts for the next 3 years are $2.75, $3.25 and $4.10.
- The company's dividend payout ratio is expected to remain 40% for the next two years, while the dividend for the third year is expected to be a liquidating dividend.
- The required rate of return is 11%.

i.
The company's residual income at the end of the second year is *closest to*:

- ○ $1.71
- ◉ $2.21
- ○ $2.00

Rationale
This Answer is Correct

	2011 ($)	2012 ($)
Beginning book value per share	7.80	9.45
Add: Forecasted EPS	2.75	3.25
Less: Forecasted dividends per share	1.10	1.30
Ending book value per share	9.45	11.40
Equity charge per share	0.86	1.04
Residual income per share	**1.89**	**2.21**

ii.
The company's stock today is *most likely*:

- ○ Undervalued
- ○ Fairly valued
- ◉ Overvalued

Rationale
This Answer is Correct

Equity charge for Year 3 = $11.40 x 0.11 = $1.254

Residual income for Year 3 = $4.10 - $1.254 = $2.85

[CF] [2ND] [CE|C]
7.80 [ENTER] [↓]
1.89 [ENTER] [↓] [↓]
2.21 [ENTER] [↓] [↓]
2.85 [ENTER] [NPV]
11 [ENTER] [↓] [CPT]
NPV = $13.38