

## Session 9: Post class test solutions

1. **d. 2.5%.** The payout ratio is 80% (80/100) and the return on equity is 12.5% (100/800). The expected growth rate in earnings per share = (1- Payout ratio) (Return on equity) = (1-.8) (.125) = 2.5%.
2. **a. 3.33%.** First, compute the non-cash ROE and equity reinvestment rate
  - Non-cash Net Income= 10 -1 = \$9
  - Non-cash ROE = (10-1)/ (110-20) = 10%
  - Equity reinvestment rate = (4+2-3)/ 9 = 33.33%
  - Expected growth rate = 10% (.3333) = 3.33%
3. **b. 8%.** The keys are the reinvestment rate and return on invested capital:
  - ROIC = 50/ (400 +250-150) = 10%
  - Reinvestment Rate = (75-30-5)/50 = 80% (Decrease in WC reduces reinvestment)
  - Expected growth rate = 10% (.80) = 8%
4. **c. 14.51%.** Since the return on capital is changing on existing and new investments, there are two components to the expected growth:
  - Expected growth from new investments = .6\*.18 = 10.8%
  - Expected efficiency growth over 5 years = (.18-.15)/.15 = 20%
  - Expected efficiency growth per year= (1.20)<sup>1/5</sup>-1 = 3.71%
  - Expected annual growth = 10.8% + 3.71% = 14.51%
5. **c. 20%.** The key is to estimate the reinvestment each year, based upon the change in revenues and the sales to capital ratio. That reinvestment adds to the invested capital each year:

	Last year	1	2	3	4
Revenues	\$100	\$200	\$320	\$450	\$600
Operating Margin	-10%	-5%	0%	5%	10%
Operating Income	-\$10.00	-\$10.00	\$0.00	\$22.50	\$60.00
Reinvestment		\$50.00	\$60.00	\$65.00	\$75.00
Invested Capital	\$50.00	\$100.00	\$160.00	\$225.00	\$300.00
Return on capital	-20%	-10%	0%	10%	20%