



Corporate Finance

Residential

Note that these are cut and pastes of material on the DVD. I have provided this document to cut down on the time needed to search for the questions that I would like to cover in the webinar.

Disclaimer:

These questions are designed to provide the student with a general review of areas covered on the CMA Entrance Examination. While the topic coverage is consistent with that on the Entrance Examination, the number of stems (there are five on the entrance exam); the length of question (entrance exam questions tend to be longer requiring more time to read); the types of distracters (the entrance examination tends to use distracters such as none of the above, all of the above and both x and y to a larger degree than other examinations); and the direction of the calculation (the entrance examination will often have you work back to front, middle to either front to back and so on).

Use of the Material

These questions will be covered in depth in the review session. The pace will be quick (frantic?) so students are advised to at least have read them (and at best have worked through them under exam conditions).

Time Value of Money

TV 5

1998 2.6

A bond having a face value of \$1,000, an annual coupon rate of 12% payable semi-annually and six years remaining to maturity, sells in the market for \$1,220.

Calculate the effective annual yield of this bond.

- 1220 PV [use +/- key to change sign]

1000 FV

12 n [n = # of 6 mo periods;
6 x 2 = 12]

60 pmt [per 6 mo period =>
12% x 1000 x 6/12]

CPT , [interest per 6 mo
period]

i = 3.7%

↓

Ignoring interval

$(1 + .037)^2 - 1$

Compounding

7.53%

3.7% x 2 = 7.4% / yr.

↓

using Convert

Nom 7.393786 enter

↓

↓ CY = 2 enter.

↑ CPT EFF.

Financial Management

Valuation of Equity

Valuation of Equity

VE 1

An issue of preferred stock is paying an annual dividend of \$5. (The growth rate for the firm's common stock is 15%.) What is the preferred stock price if the required rate of return is 12%?

- a) \$45.45
- b) \$41.67
- c) \$33.33
- d) none of the above
- e) not enough information given to tell

$$K_p = \frac{D}{NP}$$

$$.12 = \frac{5}{NP}$$

$$.12 NP = 5$$

$$NP = \frac{5}{.12} = 41.67$$

VE 4

An issue of common stock is selling for \$35.75. The year-end dividend is expected to be \$1.45 assuming a constant growth rate of 6%. What is the required rate of return?

- a) 10.3%
- b) 10.1%
- c) .1%
- d) none of the above
- e) not enough information given to tell

 D_0

just paid

 D_1

expected

$$K_e = \frac{D_1}{WP} + g$$

$$= \frac{1.45}{35.75} + .06$$

$$= 10.056 \%$$

VE 3

An issue of common stock has just paid a dividend of \$2.50. Its growth rate is 8%. What is its price if the market's rate of return is 16%?

- a) \$16.67
- b) \$31.25
- c) \$33.75
- d) none of the above
- e) not enough information given to tell

$$\begin{array}{ccc}
 D_0 & & D_1 \\
 2.50 & & \\
 & \curvearrowright & \\
 & 2.50 \times 1.08 = 2.70 &
 \end{array}$$

$$K_e = \frac{D_1}{NP} + g$$

$$.16 = \frac{2.70}{NP} + .08$$

$$.16 - .08 = \frac{2.70}{NP} + .08 - .08$$

$$.08 = \frac{2.70}{NP} \Rightarrow .08 NP = 2.70$$

$$NP = 33.75$$

VE 5

An issue of common stock is expected to pay a dividend of \$4 at the end of the year. Its growth rate is equal to 8%. If the required rate of return is 13%, what is its current price?

- a) \$86.40
- b) \$30.77
- c) \$80.00
- d) \$65.00
- e) none of the above

$$K_e = \frac{D_1}{NP} + g$$

$$.13 = \frac{4}{NP} + .08$$

$$.05 = \frac{4}{NP} \Rightarrow NP = \$80$$

Financial Management

Valuation of Equity

VE 6

If expected dividends grow at 8% and the appropriate discount rate is 12%, what is the value of a stock with an expected dividend of \$1.37?

- a) \$36.99
- b) \$11.42
- c) \$17.13
- d) \$34.25
- e) not enough information given to tell

$$K_e = \frac{D_1}{NP} + g$$

$$.12 = \frac{1.37}{NP} + .08$$

$$.04 = \frac{1.37}{NP} \Rightarrow 34.25$$

VE 7

Question 7.12

The measurement of the systematic risk associated with Avery Inc. shares results in a value of 3. The market risk premium is 12% and the current return on short-term government bonds is 5.5%. Avery Inc.'s rate of return on equity is

- a) 41.5%.
- b) 36.0%.
- c) 28.5%.
- d) 25.0%.
- e) 16.5%.

$$R_j = R_F + B_j (R_m - R_F)$$

R_m = Rate of Return on Mkt portfolio
(eg TSX)

R_F = Risk free rate (eg TBills)

$(R_m - R_F)$ = Mkt price of risk
Mkt risk premium

$$\begin{aligned} R_j &= .055 + 3(.12) \\ &= .415 \end{aligned}$$

VE 9

The current market price of the common shares of Largeco Inc. is \$4.00 per share. Largeco paid a dividend of \$0.25 per share last year. Historically, dividends have grown at an average rate of 2%, and investment analysts have indicated that this growth rate can be maintained indefinitely. The analysts have also indicated that the risk-free rate of return is 3% and the expected return on the market is 9%. What is the beta of Largeco common shares?

- 0.5625
- 0.5972
- 0.8750
- 0.8958
- None of the above

$$\begin{array}{ccc}
 D_0 & & D_1 \\
 .25 & \xrightarrow{\quad \times 1.02 \quad} & .255
 \end{array}$$

$$K_e = \frac{.255}{4.00} + .02$$

$$= .08375$$

$$R_j = R_f + \beta_j (R_m - R_f)$$

$$.08375 = .03 + \beta_j (.09 - .03)$$

$$.05375 = .06 \beta_j$$

$$= .8958$$

VE 10

The common shares of Jonco Corp. are currently priced to provide investors with a return of 14%. Jonco paid a dividend of \$2.50 per share last year. Historically, dividends have grown at an average rate of 8% and investment analysts have indicated that this growth rate can be maintained indefinitely. What should the current price of Jonco's shares be?

- a. \$17.86
- b. \$41.67
- c. \$45.00
- d. \$47.50
- e. None of the above

$$K_e = \frac{D_1}{NP} + g$$

$$.14 = \frac{2.50 \times 1.08}{NP} + .08$$

$$.14 = \frac{2.7}{NP} + .08$$

$$.06 = \frac{2.7}{NP}$$

$$.06 NP = 2.70$$

$$NP = 45$$

20. Michigan Motor Company is currently paying a dividend of \$1.50 per year. The dividends are expected to grow at a rate of 20% for the next three years and then a constant rate of 6 % thereafter. What is the expected dividend per share in year 5?
- a. \$2.59
 - b. \$2.00
 - c. \$2.91
 - d. \$1.50
 - e. \$1.41

t_0

$$1.50 \times 1.20^3 \times 1.06^2$$

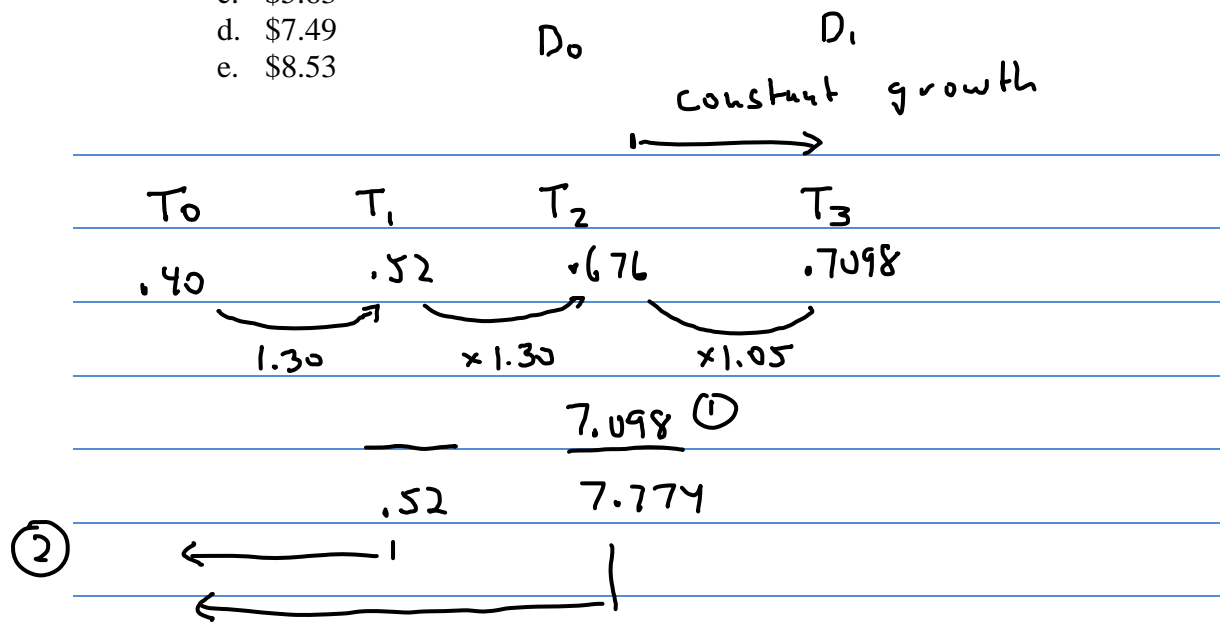
$$= 2.912$$

21. Great Lakes Co. is currently paying a dividend of \$2.20 per share. The dividends are expected to grow at 25% per year for the next four years and then grow 5% per year thereafter. Calculate the expected dividend in year 6.
- a. \$5.37
 - b. \$2.95
 - c. \$5.92
 - d. \$8.39
 - e. \$10.42

$$2.20 \times 1.25^4 \times 1.05^2 = 5.9216$$

22. Y2K Technology Corporation has just paid a dividend of \$0.40 per share. The dividends are expected to grow at 30% per year for the next two years and at 5% per year thereafter. If the required rate of return in the stock is 15% (APR), calculate the current value of the stock.

- a. \$1.42
- b. \$6.33**
- c. \$5.63
- d. \$7.49
- e. \$8.53



①
$$K_e = \frac{D_1}{NP} + g$$

$$.15 = \frac{.7098}{NP} + .05$$

$$.10 = \frac{.7098}{NP} \Rightarrow 7.098 = NP$$

② CF ; 2nd Clr Work.

$$CF_0 = 0$$

$$CF_1 = .52 \text{ enter}$$

$$CF_2 = 7.774 \text{ enter}$$

$$NPV \quad i = 15 \quad \text{CPT} \quad NPV$$

CB 10

- (a) A firm contemplates the purchase of a \$10,000 machine that would save labor costs of \$5,000 in each of years 1 and 2, and \$6,000 in each of years 3 and 4. The machine is not expected to have a salvage value at the end of the fourth year, and capital cost allowances on a declining balance may be claimed at a rate of 30 percent. If the company's tax rate is 40 percent and its cost of capital is 8 percent, calculate:
- (1) The net cash flows that the investment would generate during the first 4 years;
 - (2) The net present value of this proposal; and
 - (3) The internal rate of return.
- (b) Calculate the net present value of the proposal in part (a) if a salvage value of \$1,000 is expected at the end of the 4-year life of the machine.
- (c) Assume that, in order to stimulate investment, the government allows a fast write-off on the machine, with linear depreciation taken over 2 years. What is the net present value of the investment if the machine is expected to have no salvage value?

Net initial investment (10,000)

PV of CCA tax shield

$$C \times \frac{d}{d+k} \times \frac{2+k}{2(1+k)}$$

$$10,000 \times \frac{.30 \times .40}{.30 + .08} \times \frac{2 + .08}{2(1 + .08)}$$

$$10,000 \times \boxed{.3158} \times \frac{2.08}{2.16} = 3040$$

STO 0

PV of Cash Savings

1	2	3	4
5000	5000	6000	6000
× (1 - .40) →			
3000	3000	3600	3600

CF, 2nd Clr Work

CF0 = 0

10854

CO1 = 3000 enter

F01 = 2

CO2 = 3600

F02 = 2

NPV, 1 = 8 enter ↓ NPV CPT

a)

NPV

3894

PU w/o SU (brought fwd)

3894

b) SU of 1000

PU of SU.

1000 FV, 4 n, 8% opmt

CPT PU

735

PU of lost CCA tax shield

$$\frac{S_n}{(1+k)^n} \times \left[\frac{d}{d+k} \right]$$

PU of SU

735 × .3158 =

(232)

RCL PU × RCL 0

NPV

4397

c) with 1/2 yr rule PU of CCA tax shield would be.

$\frac{10,000}{2} = 5000$	1	2	3	
	2500	5000	2500	Tax Ded ⁿ
	× 40%	× 40%	× 40%	Tax rate
	1000	2000	1000	Cash equiv

CF CF₀ = 0, CF₁ = 1000, CF₂ = 2000, CF₃ = 1000
 NPV₁ = 8% NPV CPT

PU of CCA Tax shield now 3434

NPV now (10,000) + 3434 + 10854 = 4288

CB 11

A firm currently operates a machine that was purchased 5 years ago at a cost of \$150,000. If currently sold, its market value would be \$100,000. The machine is expected to last another 5 years, by which time it will have no salvage value. A new and improved version of the machine could replace the old one and is now on the market at a cost of \$130,000. Its expected economic life is 5 years. Operating costs for the old machine, which is more labor intensive, are \$15,000 per year, whereas the new machine would only require operating costs of \$9,000 per year. Both machines belong to the same asset class, and capital cost allowances can be taken at a rate of 30 percent on the declining balance. The corporate tax rate is 40 percent, and the cost of capital is 10 percent.

- (a) The net present value of this investment opportunity is (\$7,761.40) assuming no salvage value for the new machine, and a NPV of +\$931 assuming a salvage value of \$20,000 for the new machine. Provide proof for these numbers.
- (b) How high would the salvage value of the new machine have to be in order for it just to become attractive?

	t_0		t_5
New	(130,000)	New	
old	100,000	old	
net "C"	(30,000)		
			$(15,000 - 9,000)(1 - .40)$
			3600
Net initial investment			(30,000)
PV of CCA tax shield			
	$C \times \frac{d+1}{d+k} \times \frac{2+k}{2(1+k)}$		
	$30,000 \times \frac{130 \times .40}{630 + 110} \times \frac{2.10}{2.20}$		
	$30,000 \times .30$	$\times \frac{2.10}{2.20}$	8591
PV of cash saved (after tax)			
	3600 pmt	S_n , 10, 0 FV	13647
	CPT	PV	<7762>
SU			
PV of SU	20,000 FV	0 pmt	12418
PV of lost CCA tax shield			
	$\frac{S_n}{(1+k)^n} \times \frac{d+1}{d+k}$		
	12418	$\times .30$	(3726)
			<hr/>
		NPV	930

b) NPV no SU (7762)

PV of SU + x
 (where x is PV of SU)

less PV of CCA tax shield - .3x

Target NPV 0

$$-7762 + 1x - .3x = 0$$

$$-7762 + .7x = 0$$

$$.7x = 7762$$

$$x = 11,089$$

11,089 PV

5 n

8 i

0 pmt

CPT FV

17858
=

CB 12

Capital Budgeting Review Question

The Arid Burger Company (ABC) operates several snack food centers at the Edmonton International Airport. On January 1, 2004, ABC purchased a meat processing machine that it uses to process buffalo meat into burgers. The machine has been in use for three years. ABC is considering the purchase of a new, more efficient machine. If purchased, the new machine would be acquired on January 2, 2007. ABC expects to sell 300,000 buffalo burgers in each of the next four years. The selling price of each burger is expected to be \$3.50.

ABC has two options. First it can continue to operate the old machine. Second it can sell the old machine and purchase the new machine. The following information has been assembled to help management decide which option is more desirable. ABC has several other buffalo burger forming machines in Class 8 (20% db) which are used at other airports across Canada.

	Old Machine	New machine
Original cost of machine at acquisition	\$ 80,000	\$120,000
Useful life at date of acquisition	7 years	4 years
Expected annual cash operating costs		
Variable per burger	\$ 3.20	\$3.14
Total fixed	\$ 15,000	\$ 14,000
Estimated residual values of machines		
January 2, 2007	\$ 40,000	\$ 120,000
December 31, 2010	\$ 7,000	\$ 20,000

ABC has a 40% income tax rate. Assume that all operating revenues and costs occur at the end of the year. ABC has a weighted average costs of capital of 16%

Required:

1. Using the net present value method, determine whether ABC should retain the old machine or purchase the new machine.
2. What non qualitative factors should ABC take into consideration prior to purchasing this machine.

	t_0	$t_1 - t_4$		t_4
New	(120,000)	V/C $(3.20 - 3.14) \times 300,000$ $= 18,000$		20,000
Old	40,000	F/C $(15,000 - 14,000)$ $= 1,000$	opp cost	(7,000)
C	(80,000)	19,000 $(1 - 40\%)$ <u>11,400</u>	Net SV S_n	13,000

Net initial investment (80,000)

PV of CCA Tax Shield

$$C \times \frac{d+1}{d+k} \times \frac{2+k}{2(1+k)}$$

$$80,000 \times \frac{.20 \times .40}{.20 + .16} \times \frac{2.16}{2.32}$$

$$80,000 \times .2222 \times .931 \quad 16552$$

PV of Cash Saving

$$11,400 \text{ pmt}, 4n, 16\%, 0FV \quad 31899$$

PV of SV net of opp cost 7180

13000 FU, oppmt

PV of lost CCA Tax shield

$$\frac{S_n}{(1+k)^n} \times \frac{d+1}{d+k} \quad (1596)$$

$$7180 \times .2222$$

NPV

$$(25965)$$

Don't invest

=

b) taste, quality, healthy
faster cycle time etc.

2. (+) Assume that, for purposes of determining the weighted average cost of capital, the appropriate after-tax cost of debt is 4.8% and the appropriate cost of preferred shares is 13.3%. What is YG Inc.'s weighted average cost of capital (rounded to the nearest tenth of a percent)?
- a) 7.7%
 - b) 11.7%
 - c) 13.7%
 - d) 13.3%
 - e) 9.3%

	wt'g		Cost		
debt	.3	x	4.8%	=	1.44
pref	.1	x	13.3%	=	1.33
Common	.6	x	18.25%	=	10.95
			WACC		<u>13.72</u>

$$K_e = \frac{D_1}{NP} + g$$

$$= \frac{3 \times 1.10}{40} + .10$$

$$\rightarrow .1825 = 18.25\%$$