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CS183 - Startup

Assignment 2 – Solutions

PROBLEM1:

"Startup A" closed its Series A round at a post-money valuation of $7 million and a pre-money valuation of $5 million.

The option pool share count is set at 20% of the Series A pre-money share count and is created (added) after the Series A.

The angel investor invested $800,000 at a 20% discount, no interest, no cap.

The founder owns twice as many shares as the early employees.

Assume any Series A price per share you would like (a missing, unneeded variable for the questions below)

Questions:

a. What amount did the Series A investor invest in Startup A?

$2,000,000

b. What is the value of the shares owned by the founder and early employees after Series A? Assume they are holding common shares, with a value of 10% of the preferred share FMV.

$400,000

c. What is the ratio between the number of shares held by the angel investor and the number of shares held in the option pool? Assume the angel shares have already converted. (please express as a number with 2 decimal places, i.e. "0.XX")

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d. What fraction of the company does the founder now own after Series A? (please express as a number with 2 decimal places, i.e. "0.XX")

33%

STARTUP A		
Angel round	0.8	$M
discount	20%	
Angel converted	1	$M
Angel pre	4	$M
Angel post	5	$M
Angel shares	20	shares
Founder + EE	80	shares
Founder shares	53.3	shares
EE shares	26.7	shares

Pre-money A	5	$M
Money in	**2**	$M
Post-money A	**7**	**$M**
Series A shares	40	shares
Post-money shares	**140**	**shares**
Option pool	20	shares
	1	$M value
Post option pool	8	$M
Total shares	160	

For 1b) We needs to use the assumption that the fair market value of restricted stock or ISOs is can be set at 10% of fair market value of the price per share of the preferred in a given funding round. Assume that:
a. early employee stock prices off the angel round
b. the Series A option pool prices off the Series A round

PROBLEM2:

"Startup B" closes a $4mm Series A round with a pre-money valuation of $9.5mm.

The option pool value is set at 15% of the Series A pre-money valuation. The options granted immediately after the close of the Series A have an exercise price of $4.00, set at fair market value.

The early employees own 500,000 shares.

The angel round was a $909,090.91 convertible note with a 12% interest rate and a 20% discount that closed 10 months before the Series A.

Questions

a. What is the Series A post-money valuation for Startup B?
$13,500,000

b. How many shares are in the option pool?
356,250 shares

c. How many shares does the angel investor own at the moment the Series A closes?
312,500 shares

d. What is the value of the shares owned by the early employees after the Series A?
$200,000

STARTUP B	
Early employee	500,000
Angel money	$909,091

interest	10%
Angel w/interest	$1,000,000
discount	20%
Angel w/discount	$1,250,000
Angel shares	312,500
Pre-money A	$9,500,000
Money in	$4,000,000
Post-money A	$13,500,000
Series A PPS	$4.00
Shares A	1,000,000
Option pool	$1,425,000
	356,250

For 2d) We needs to use the assumption that the fair market value of restricted stock or ISOs is can be set at 10% of fair market value of the price per share of the preferred in a given funding round. Assume that:
a. early employee stock prices off the angel round
b. the Series A option pool prices off the Series A round

PROBLEM3:

"Startup C" had an angel investor invest $800,000 at a 20% discount to the next round, with 0% interest. The angel investor shares convert into common stock in this example.

The Series A round of $5,000,000 was priced at $.50 per share, closing 12 months after the angel round.

The post-money valuation was $20 million.

The two founders own 10,000,000 shares each.

Immediately after Series A, early employees have shares worth 10.25% of the post-money valuation.

The Series A option pool value was set at 13% of the Series A pre-money valuation. All of these options have been issued.

Six months later, Startup C accepts and closes a $25,000,000 cash buyout offer from a large company.

The Series A investor's liquidation terms are a 3x liquidation preference, participating, with no cap.

Questions

a. What was the pre-money value of the Series A deal?
$15,000,000

b. How many shares did the angel convert into?
2,000,000

c. What is the total payout to the Series A investors?

$17,500,000

d. What is the total payout to the founders?
5,000,000

e. If the offer instead closed at $60,000,000 what would be the total payout to the founders?
22,500,000

STARTUP C		
Angel amount	$800,000	
Angel discount	20%	
Angel converted	$1,000,000	
Series A PPS	$0.50	
Angel shares	**2,000,000**	
Series A money	$5,000,000	
Series A shares	10,000,000	
Series A post	$20,000,000	
Series A pre	**$15,000,000**	
Founder 1 shares	10,000,000	
Founder 2 shares	10,000,000	
Employee value	$2,050,000	10.25%
Employee shares	4,100,000	
Option pool value	$1,950,000	13.00%
Option shares issued	3,900,000	
Total shares outstanding	40,000,000	
Series A shares	10,000,000	
Series A money in	$5,000,000	
M&A value	$25,000,000	$60,000,000
Series A liq pref	$15,000,000	$15,000,000
Remaining	$10,000,000	$45,000,000
Series A remaining	2,500,000	11,250,000
Series A payout	**17,500,000**	26,250,000
Founder payout	**5,000,000**	**22,500,000**
Empl + angel + opt payout	2,500,000	11,250,000

PROBLEM4:

The Series A investors in Startup D receive a broad-based weighted average anti-dilution provision.

Series A investors have invested $4mm for 3 mm shares of Startup D.

The angel investor in Startup D owns 500,000 shares.

The two founders own 5,000,000 shares collectively, pre-Series A employees 1,000,000 shares (all I.S.O.), and there is an option pool with 1,500,000 shares. There are no other contracts, rights or securities convertible into stock in Startup D.

At the next round of funding, Series B invests $3 million for 6mm shares.

Questions

a. How many shares of common stock outstanding (CSO) are there immediately prior to the Series B round?
11,000,000

b. How many shares would the Series B amount invested purchase, if converted at the Series A price?
2,250,000

c. What is the new conversion price (NCP) for the preferred shares?
$1.04

d. How many shares do the original Series A investors control after the Series B round closes?
3,849,057

e. To the nearest 1%, what percentage of the company does each founder then own? Assume each founder owns an equal number of shares. (please express as a number with 2 decimal places, i.e. "0.XX")
14%

STARTUP D	
Series A money	$4,000,000
Series A shares	3,000,000
Series A PPS	$1.33
Angel shares	500,000
Founders	5,000,000
Employees	1,000,000
Options	1,500,000
Series B money	$3,000,000
Series B shares	6,000,000
Series B PPS	$0.50

OCP	$1.33
CSO	11,000,000
CSP	2,250,000
CSAP	6,000,000
NCP	**$1.04**
Series A revised	**3,849,057**
Total shares	17,849,057
Post-money B	$8,924,528

For 4b) we need to use Series A PPS 1.33 as the price. So the number of shares Series B amount invested would purchase are $3mm/1.33 = 2,250,000 shares.

For 4c) we need to use the formula NCP = OCP*(CSO+CSP)/(CSO+CSAP), which can be found in course slides Thiel's Law p73.

PROBLEM5:

Assume the following combined federal and state tax rates:
ordinary income and short term capital gains: 40%
alternative minimum tax ("AMT"): 25%
long-term capital gains (held over 12 months): 20%

Employees X and Y are issued equity in "Startup E" at the same time, at the start of year 0.

Employee X is issued 10,000 shares of restricted stock with price at FMV, and elects 83(b).

Employee Y is issued 10,000 incentive stock options (I.S.O.) with exercise price at FMV.

The fair market value of ("FMV ") at issue was $0.10.

Assume both X and Y are subject to AMT in all years, and have four-year vesting with a one-year cliff.

The FMV's of Startup E in all years is:

Year	0	1	2	3	4	5
FMV	$0.10	$1.50	$3.50	$4.00	$20.00	$60.00

Y exercises all vested stock in year 3 and sells 35% of this exercised stock, partially to pay AMT.

The company does an I.P.O. at the end of year 4.

In year 5, both X and Y sell all their remaining equity in the company.

Assume Y has 100% AMT recovery in year 5.

Questions

a. What is the total value of sales proceeds minus taxes, as realized by X? (assume discount rate of 0%)
$479,200

b. What is the total value of sales proceeds minus taxes, as realized by Y? (assume discount rate of 0%)
$331,200

Employee Y			**Employee X**	
ISO options	10,000		83B shares	10,000
Exercise, year 3			**Sale, year 5**	
FMV	$4.00		FMV	$60.00
Exercise price	$0.10		Issue price	$0.10
Difference	$3.90		Difference	$59.90
% shares	100%		% shares	100%
# shares	10,000		# shares	10,000
AMT basis	$39,000		LTCG basis	$599,000
AMT paid	**$9,750**		**LTCG paid**	**$119,800**
Sale, year 3				
Sale FMV	$4.00		TOTAL PROCEEDS	$599,000
Exercised FMV	$4.00		TOTAL TAXES	$119,800
% shares	35%			
# shares	3,500		TOTAL NPV	$479,200
Proceeds	**$14,000**			
STCG basis	$-			
STCG paid	$-			
Sale, year 5				
Sale FMV	$60.00			
Exercised FMV	$4.00			
% shares	65%			
# shares	6,500			
Proceeds	**$390,000**			
LTCG basis	$364,000			
LTCG paid	**$72,800**			
AMT recovered	**$9,750**			
TOTAL PROCEEDS	$404,000			
TOTAL TAXES	$72,800			
TOTAL NPV	$331,200			