Assume that the risk-free rate equals 2%, that Blend stock currently trades for $70 per share, and that for each of the next two years Blend's stock will either rise by $6 per share or fall by $3 per share. Assume that you would like to create a portfolio that generates the same payoffs as a put on Blend with a $75 strike price. *Note: use a "+" for inflows + a "−" for outflows.*

a. What transactions would be required today to create the portfolio? What would be the total cost to set up the portfolio?

b. Assume the price of Blend Corp. falls a year from today. What transactions would be required to balance your portfolio? What cash flows will each transaction create? What is your total net cash flow a year from today?

c. Assume the price of Blend Corp. rises a year from today and again two years from today. What transactions will be required to liquidate your portfolio? What cash flows will each transaction create? What is your total net cash flow two years from today?

$S_u = 76 = 70+6; \quad S_d = (67) = 70-3; \quad S_{uu} = 82 = 76+6; \quad S_{ud} = S_{du} = 73 = 76-3; \quad S_{dd} = 64 = 67-3$

$P_{uu} = 0; \quad P_{ud} = P_{du} = 2; \quad P_{dd} = 11$

$\Delta_u = \dfrac{0-2}{82-73} = -0.2222; \quad B_u = \dfrac{2-73(-.2222)}{1.02} = +17.8649; \quad P_u = 76(-.2222) + 17.8649 = 0.976$

$\Delta_d = \dfrac{2-11}{73-64} = -1; \quad B_d = \dfrac{11-64(-1)}{1.02} = 73.5294; \quad P_d = 67(-1) + 73.5294 = 6.5294$

$\Delta = \dfrac{0.976-6.5294}{76-67} = -.6170; \quad B = \dfrac{6.5294-67(-.617)}{1.02} = 46.9326; \quad P = 70(-.6170) + 46.9326 = 3.7396$

a. Short sell .6170 shares; Buy 46.9326 of bonds. Cost = 3.7396

b. Short 0.383 shares (−1−(−.617)); CF = +25.6582 = .383×67

   Buy 25.6582 bonds; CF = −25.6582

   Net = 0

c. Buy to cover 0.2222 shares; CF = −18.2222 = −.2222×82

   Sell $18.2222 (17.8649×1.02) of bonds; CF = +18.2222

   Net = $0