Short-Answer

1. Assume you have collected information on the dividends that Verizon has paid over the past 12 months. You have also looked up Verizon's stock price today, a year ago, and on each of the dividend dates. How would you use this data to calculate an annual rate of return assuming no reinvestment of dividends? You should list the step or steps you would need.

   Find the rate that sets the present value of inflows equal to the present value of outflows
   Inflows = dividends and ending price
   Outflows = initial price

2. Given the following return distribution of possible returns on IBM, calculate the volatility (standard deviation of returns) for IBM. Note: assume you have already calculated the expected return on IBM (use E(R) for the expected return on IBM).

Probability	Return
.1	25%
.6	12%
.3	-15%

$$SD(R) = \sqrt{.1(25 - E(R))^2 + .6(12 - E(R))^2 + .3(-15 - E(R))^2}$$

3. Given the following return distribution of possible returns on Ford, calculate the expected return on Ford.

Probability	Return
.2	19%
.5	7%
.3	-30%

E(R) = .2(19) + .5(7) + .3(-30)

4. Based on the following forecasts you have calculated that the expected return on Gone Motors (GM) is X%. Calculate the standard deviation of returns on GM.

Prob	Return
.50	40%
.05	1%
.45	-50%

$$\sqrt{.5(40 - X)^2 + .05(1 - X)^2 + .45(-50 - X)^2}$$

Use the following data to answer questions 5 and 6

Date	Days	Dividend	Price
8/31	0	$0.00	$57.35
11/13	74	$0.43	$52.64
2/13	166	$0.47	$50.34
5/13	256	$0.47	$47.55
8/13	348	$0.47	$48.38
8/29	364	$0.00	$46.65

5. Calculate the return between 11/13 and 2/13.

$$\frac{.47}{52.64}+\frac{50.34-52.64}{52.64}$$

6. Assume that you bought 100 shares of stock on 8/31 and sold your stock on 2/13. Calculate your return (on an annualized basis) over this period assuming that you did not reinvest any dividends.

$$-57.35+\frac{.43}{(1+r)^{74/365}}+\frac{.47}{(1+r)^{166/365}}+\frac{50.34}{(1+r)^{166/365}}=0$$

Note: this gives the annualized rate of return, so solve for the rate for the period, calculate $(1+r)^{166/365}-1$

7. Given the following information on Bank of America, calculate the realized return between March 4 and September 2nd assuming you reinvested any dividends.

Date	Days	Dividend	Price
12/31/08	0	$0.00	$14.02
3/4/09	63	$0.01	$3.58
6/3/09	154	$0.02	$11.20
9/2/09	245	$0.03	$16.27
9/30/09	273	$0.00	$16.92

$$r_{6/3}=\frac{.02}{3.58}+\left(\frac{11.20-3.58}{3.58}\right)$$
$$r_{9/2}=\frac{.03}{11.20}+\left(\frac{16.27-11.20}{11.20}\right)$$
$$r_{3/4-9/2}=(1+r_{6/3})(1+r_{9/2})-1$$

8. Given the following data, calculate the realized return between March 7 and June 6.

Date	Days	Dividend	Price
12/31	0	$0.00	$60.18
3/7	66	$0.30	$62.75
6/6	157	$0.38	$65.19
9/5	248	$0.38	$67.94
12/5	339	$0.38	$76.27
12/31	366	$0.00	$75.90

$$\frac{.38}{62.75}+\left(\frac{65.19-62.75}{62.75}\right)$$

9. Based on the following probability distribution, what is the expected return on JeeEee Light Bulbs Inc.?

Return	Probability
0.35	15%
0.10	65%
-0.15	20%

.35(.15) + .1(.65) + (-.15)(.2)

10. Given the following quarterly returns, calculate the annual realized return on Oracle Eye Glasses Inc. if we assume all dividends were reinvested.

Quarter	Return
1	-3.4%
2	+5.8%
3	+8.7%
4	+9.8%

(1-.034)(1.058)(1.087)(1.098) – 1

Multiple-Choice

1. Based on the following information on Exxon Mobil Inc (XOM), which of the following calculates the annual return on Exxon Mobil assuming that dividends ARE reinvested?

Day	Dividend	Price	Return
0	$0.00	$93.60	-
38	$0.35	$81.89	-12.22%
129	$0.40	$88.82	8.95%
223	$0.40	$78.16	-11.55%
311	$0.40	$73.95	-4.87%
365	$0.00	$79.83	7.95%

a. $\frac{-12.22+8.95-11.55-4.87+7.95}{5}$

b. $-93.60+\frac{.35}{(1+r)^{38/365}}+\frac{.40}{(1+r)^{129/365}}+\frac{.40}{(1+r)^{223/365}}+\frac{.40}{(1+r)^{311/365}}+\frac{79.83}{(1+r)^{365/365}}=0$

c. $\frac{.35+.40\times 3+79.83}{93.60}$

d. $-93.60+\frac{.35+81.89}{(1+r)^{38/365}}+\frac{.40+88.82}{(1+r)^{129/365}}+\frac{.40+78.16}{(1+r)^{223/365}}+\frac{.40+73.95}{(1+r)^{311/365}}+\frac{79.83}{(1+r)^{365/365}}=0$

E. (1-.1222)(1+.0895)(1-.1155)(1-.0487)(1+.0795) - 1

2. Based on the following information, which of the following calculates the rate of return on Used Books Inc. between 3/6/08 and 6/5/08?

Date	Dividend	Price
12/31/07	$0.00	$34.35
3/6/08	$0.15	$26.26
6/5/08	$0.25	$29.58
9/5/08	$0.30	$26.31
12/31/08	$0.00	$15.00

A. $\frac{.25}{26.26}+\frac{(29.58-26.26)}{26.26}$

b. $\frac{.15}{29.58}+\frac{(26.26-29.58)}{29.58}$

c. $\frac{29.58}{26.26}-1$

d. $\frac{.15}{26.26}+\frac{(29.58-26.26)}{26.26}$

e. $\frac{.25}{29.58}+\frac{(26.31-29.58)}{29.58}$

3. Alto Corp has an expected return of 15% and a volatility of 9% while Bango Corp has an expected return of 13% and a volatility of 65%. Which of the following combination of statements is most correct?

1) over any 10 year period an investor should earn a higher average return on Alto
2) over any 10 year period an investor should earn a higher average return on Bango
3) in any one year an investor is more likely to earn an extremely high return on Alto Corp
4) in any one year an investor is more likely to earn an extremely high return on Bango Corp
5) in any one year an investor is more likely to earn an extremely low return on Alto Corp
6) in any one year an investor is more likely to earn an extremely low return on Bango Corp

a. 2, 3, 6
b. 1, 3, 6
c. 1, 3, 5
D. 1, 4, 6
e. 2, 3, 5

4. Assume that the average return on Exxon Mobil over the past 7 years was X and that the annual returns on Exxon Mobil (XOM) and the Standard and Poor's 500 (S&P500) over the past 7 years were as follows.

Year	XOM	S&P500
1	-9	-23
2	21	26
3	28	9
4	12	3
5	39	14
6	24	4
7	-13	-38

Which of the following calculates the volatility of the returns on Exxon Mobil over the 7 years?

a. $\sqrt{\frac{1}{6}(-9-(-23))^2+(21-26)^2+(28-9)^2+(12-3)^2+(39-14)^2+(24-4)^2+(-13-(-38))^2}$

b. $\sqrt{\frac{1}{7}(-9-(-23))^2+(21-26)^2+(28-9)^2+(12-3)^2+(39-14)^2+(24-4)^2+(-13-(-38))^2}$

c. $\sqrt{\frac{1}{7}\left((-9-X)^2+(21-X)^2+(28-X)^2+(12-X)^2+(39-X)^2+(24-X)^2+(-13-X)^2\right)}$

D. $\sqrt{\frac{1}{6}\left((-9-X)^2+(21-X)^2+(28-X)^2+(12-X)^2+(39-X)^2+(24-X)^2+(-13-X)^2\right)}$

e. 39 – (– 13)