Time Weighted vs Dollar Weighted Returns.

Question 1.

You have the following data on a mutual fund.

Year	Beginning Of Year Contributions	Year End Contributions	Year End Portfolio Value
1			1144
2	60	132	1256
3	89	0	1400

Assume that the **year-end portfolio value is measured after year-end contributions but before any contributions made at the beginning of the next year.**

a) Compute the time-weighted return on the fund over each of the two years .
b) Compute the dollar-weighted return on the fund over this period.
c) Briefly explain the difference in general between a time-weighted and a dollar-weighted rate of return. In what circumstances would you use one versus the other?

Solution

Year 2 return = (1256 - 132)/(1144 + 60) – 1 = (1124)/(1204) – 1 = -0.0664 or -6.64%
Year 3 return = (1400 – 0)/(1256 + 89) -1 = (1400)/(1345) – 1 = 0.0409 or 4.09%

$$r_{TW} = [(1+(-0.0664)(1+0.0409)]^{\frac{1}{2}} - 1 = -1.421\%$$

Dollar Weighted return solves
$1204*(1+R)^2 + 221*(1+R) – 1400 = 0$
The solution (1+R) = 0.990449 or R = -0.009551 or **-0.96%**

Question 2.

You have the following data on a mutual fund.

Year	Beginning Of Year Contributions	Year End Contributions	Year End Portfolio Value
1	50	120	1150
2	110	150	1310
3	90	30	1490

Assume that the year-end portfolio value is measured after year-end contributions but before any contributions made at the beginning of the next year.

a) Compute the time-weighted return on the fund from the end of year 1 through the end of year 3.
b) Compute the dollar-weighted return on the fund over this period.

Solution

Year 2 return = (1310-150)/(1150 + 110) – 1 = (1160)/(1260) – 1 = -0.07937 or -7.937%
Year 3 return = (1490-30)/(1310+90) -1 = (1460)/(1400) – 1 = 0.042857 or 4.286%

$$r_{TW} = -2.016\%$$

Dollar Weighted return solves
$1260*(1+R)^2 +240*(1+R) – 1460 = 0$
R = -1.459%