

EXAM FM QUESTIONS OF THE WEEK

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Week of February 19/07

100 is deposited into an investment account on January 1, 1998. You are given the following information on investment activity that takes place during the year:

	April 19, 1998	October 30, 1998
Value immediately prior to deposit	95	105
Deposit	2X	X

The amount in the account on January 1, 1999 is 115.

During 1998, the dollar-weighted return is 0% and the time-weighted return is y .

Calculate y .

- A) -1.5% B) -0.7% C) 0.0% D) 0.7% E) 1.5%

The solution can be found below.

Week of February 19/07 - Solution

The dollar-weighted return is the solution to i_D in the equation $100(1 + i_D) + 2X[1 + (1 - t_1)i_D] + X[1 + (1 - t_2)i_D] = 115$, where t_1 and t_2 are the fractional points in the year corresponding to April 19 and October 30. Since we are told $i_D = 0$, it follows that $100 + 2X + X = 115$, and therefore, $X = 5$.

The time-weighted return is $i_T = (a_1)(a_2)(a_3) - 1$, where a_1 is the growth factor for the fund from Jan. 1 to Apr. 19, a_2 is the growth factor for the fund from Apr. 19 to Oct. 30, a_3 is the growth factor for the fund from Oct. 30 to Jan. 1.

The fund value is 100 on Jan. 1, and the fund value on Apr. 19 (before the deposit) is 95, so that $a_1 = \frac{95}{100}$. After the deposit of $2X = 10$ on Apr. 19, the fund value is 105, and the fund value on Oct. 30 (before the deposit) is 105, so that $a_2 = \frac{105}{105}$. After the deposit of $X = 5$ on Oct. 30, the fund value is 110, and the fund value on Jan. 1 (before the deposit) is 115, so that $a_3 = \frac{115}{110}$.

$i_T = \left(\frac{95}{100}\right)\left(\frac{105}{105}\right)\left(\frac{115}{110}\right) - 1 = - .0068$, or $- .7\%$. Answer: B