

19. Solution: C

Key formulas for estimating dollar-weighted rate of return:

Fund January 1 + deposits during year – withdrawals during year + interest = Fund December 31.

Estimate of dollar-weighted rate of return = amount of interest divided by the weighted average amount of fund exposed to earning interest

Then for Account K, dollar-weighted return:

Amount of interest $I = 125 - 100 - 2x + x = 25 - x$

$$i = \frac{25 - x}{100 - x\left(\frac{1}{2}\right) + 2x\left(\frac{1}{4}\right)} = (25 - x)/100; \text{ or } (1 + i)^K = (125 - x)/100$$

Key concepts for time-weighted rate of return:

Divide the time period into subintervals for each time there is a deposit or withdrawal

For each subinterval, calculate the ratio of the amount in the fund at the end of the subinterval (*before* the deposit or withdrawal at the end of the subinterval) to the amount in the fund at the beginning of the subinterval (*after* the deposit or withdrawal)

Multiply the ratios together to cover the desired time period

Then for Account L time-weighted return:

$$(1 + i) = 125/100 \cdot 105.8/(125 - x) = 132.25/(125 - x)$$

$$\text{But } (1 + i) = (1 + i) \text{ for Account K. So } 132.25/(125 - x) = (125 - x)/100 \text{ or } (125 - x)^2 = 13,225$$

$$\therefore x = 10 \text{ and } i = (25 - x)/100 = 15\%$$