Precalculus | (2nd Edition)

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Problem

Investing in bonds: A total of $12,000 is invested in two municipal bonds, one paying 10.5% and the other 12% simple interest. Last year the annual interest earned on the two investments was $1335. How much was invested at each rate?

Step-by-step solution

Step 1 of 1

A total of $12000 is invested in two municipal bonds, one paying 10.5% and the other 12% simple interest.

The annual interest earned on the two investments was $1335.

Find how much was invested at each rate.

Let a be the amount invested @10.5%.

Let b be the amount invested @12%.

The total investment is represented as follows.

$a+b=12000$.

The annual interest earned on the two investments is as follows.

$0.105a+0.12b=1335$.

$105a+120b=1335000$ Multiply each side with 1000.

Then the equations are represented as follows.

$a+b=12000$.

$105a+120b=1335000$.

Using $-120R1+R2\to R2$ will eliminate the b- term in $R2$ as follows.

$-120a-120b+105a+120b=1440000-1335000$.

$-15a=105000$ Simplify.

$a=-7000$ Divide each side by -15.

Substitute $a=-7000$ in the first equation as follows.

$a+b=12000$.

$-7000+b=12000$ Substitute $a=-7000$.

$b=19000$

Therefore, $\boxed{\$-7000}$ should be invested at a rate of 10.5% and $\boxed{\$19000}$ should be invested at a rate of 12%.

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