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

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

$$-15a = 105000 \text{ Simplify.}$$

$$a = -7000 \text{ Divide each side by -15.}$$

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

$$a + b = 12000.$$

$$-7000 + b = 12000 \text{ Substitute } a = -7000.$$

$$b = 19000$$

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

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