Problem-Based Task: Optimized Savings Options

Coaching Sample Responses

a. What is the monthly interest rate for Option 2?

Divide the APR by 12 to find the monthly interest rate.

$1.2 \div 12 = 0.1\%$

The monthly interest rate is 0.1%, or 0.001.

b. How would you find the one-month interest payment for Option 2 given the previous balance?

Let P represent the previous balance and A represent the interest amount. The interest payment can be found by multiplying the previous balance by the monthly interest rate. Therefore, $A = 0.001P$.

c. What is the monthly interest rate for Option 1?

Divide the APR by 12 to find the monthly interest rate.

$2.4 \div 12 = 0.2\%$

The monthly interest rate is 0.2%, or 0.002.

d. How would you find the one-month interest payment for Option 1 given the previous balance?

Let P represent the previous balance and A represent the interest amount. The interest payment can be found by multiplying the previous balance by the monthly interest rate. Therefore, $A = 0.002P$.

e. What unknown value determines the size of the interest payment?

The previous balance determines the size of the interest payment.

f. How much would Ricardo have to invest in Option 1 for the one-month interest payment to cover the maintenance fee?

The maintenance fee is $5. The interest payment for Option 1 can be found using the formula $A = 0.002P$.

In this case, the interest payment must be greater than or equal to the maintenance fee. Symbolically, this can be written as $5 \leq 0.002P$.

Simplifying, we get $P \geq 2500$.

Ricardo must invest at least $2,500 in Option 1 for the one-month interest payment to cover the maintenance fee.

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g. What would the one-month interest payment for Option 2 be for this amount?

Under Option 2, the interest payment can be found using the formula $A = 0.001P$. If $P = 2500$, then $A = 0.001(2500) = \$2.50$.

If Ricardo invests \$2,500 in Option 2, the one-month interest payment is \$2.50.

h. When would the one-month interest payment for Option 1 minus the fee be equal to the one-month interest payment for Option 2?

The two values will be equal when the equations representing them are equal. The interest payment for Option 1 is modeled by the equation $A = 0.002P$. To find the difference between the interest payment and the maintenance fee for Option 1, subtract the value of the fee from the expression. This gives $A = 0.002P - 5$.

The interest payment for Option 2 is modeled by the equation $A = 0.001P$.

When the two quantities are equal, it must be that $0.002P - 5 = 0.001P$.

i. How much would Ricardo have to invest in Option 1 for that account to yield a greater one-month return than the account in Option 2?

Solve the equation from the previous step.

$0.002P - 5 = 0.001P$

$0.001P - 5 = 0$

$0.001P = 5$

$P = 5000$

Ricardo must invest more than \$5,000 for the account in Option 1 to yield a greater one-month return than the account in Option 2 with the fee factored in.

Recommended Closure Activity

Select one or more of the essential questions for a class discussion or as a journal entry prompt.

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