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The screenshot shows the 'actuarial e-learning portal' interface. At the top, there are navigation links: Home, Seminar Administrator, Seminar Users, Support, and Log Off. Below that is a search bar and a 'GOAL' button. The main content area displays a question: 'A loan is being repaid with 2 payments: A first payment of \$1,500 at the end 2 years and a second payment of \$1,600 at the end of 7 years. Determine the loan amount given an annual effective rate of discount of 2%.' There are four multiple-choice options: A) 2,834.65, B) 2,829.60, C) 2,829.60, and D) 2,759.65. A tooltip for option B explains that the user used the formula  $1,500(0.98)^{-2} + 1,600(0.98)^{-7}$  instead of PVs. Below the question is a 'Help Me Start' section with a prompt to 'Sketch a time diagram showing the two payments.' The 'Solution' section shows a time diagram with payments of 1500 at year 2 and 1600 at year 7. The solution text states: 'The loan is the PV of the two payments using the annual effective discount rate of 2%:  $L = 1,500(1 - .02)^2 + 1,600(1 - .02)^7 = 1,500(0.98)^2 + 1,600(0.98)^7 = 2,829.60$ .' At the bottom, there is a 'Common Questions & Errors' section with a note: '**Common Error 1:** Finding the amount  $2000v^{15-4+1}$  which is the principal repaid in the 4th payment. Subtract the answer from the annual payment amount to get the interest paid.'

Flag for review,  
record notes &  
email the professor

Monitor difficulty level

Got it wrong?  
Often there is a  
simple reason why

Helpful strategies  
to get you started

Graphs and other solution  
techniques demonstrated  
when applicable

Commonly  
encountered errors

# Practice. Quiz. Test. PASS.

- Review the results of your progress by topic
- Quickly identify topics that need improvement
- Test your strengths & weaknesses before exam day

Review Results				
Time Value of Money				
	Flagged	Skipped	Incorrect	Correct
Accumulation Functions and Effective Rates	0	0	2	14
Simple and Compound Interest	0	<input type="checkbox"/> 1	<input type="checkbox"/> 1	4
Force of Interest: Calculating PV and AV	2	<input type="checkbox"/> 1	11	1

actuarial e-learning portal

Home Seminar Administrator Seminar Users Support Log Off

GOAL Problem #  Go! Problem 1 of 5

Question Difficulty: Mastery

Andrew borrows a certain amount of money at an annual effective interest rate of 7%. He will repay this loan by making payments of 2000 at the end of each year for 15 years, using the amortization method. Calculate the amount of interest paid in the 4th payment.

A 888

B The correct formula is  $I_t = 2000(1 - v^{15-4+1})$ . You didn't add the 1 to the exponent.

C 1112

D 1134

E 1165

Help Me Start

The amount of interest paid in the  $t^{th}$  payment:  $I_t = R(1 - v^{n-t+1})$ .

Another way is to find the principal repaid and subtract it from the payment amount:  $I_t = R - P_t$ .

You can also find the outstanding balance at time  $(t - 1)$  and multiply by  $i$ :  $I_t = iB_{t-1}$ .

Solution

The principal repaid:  $P_4 = 2000v^{15-4+1} = 2000v^{12} = 2000(1.07)^{-12} = 888.02$

So,  $I_4 = R - P_4 = 2000 - 888.02 = 1111.98$

Calculator Solution

Common Questions & Errors

- Flag for review, record notes & email the professor
- Monitor difficulty level
- Got it wrong? Often there is a simple reason why
- Helpful strategies to get you started
- Multiple solutions provided when applicable
- Calculator solutions provided when available
- Commonly encountered errors