HW 2.1(a) Key

1. Deposits of 60 are placed into a fund at the end of each year for 12 years. The effective annual interest rate is 9%. Calculate the present value of the series of payments.

A) 429.64 B) 390.98 C) 468.31 D) 506.98 E) 545.65

$$60\,a_{\overline{12}|9\%} = 60\,\frac{1-(1.09)^{-12}}{0.09}$$

$$= \boxed{429.64}$$

2. Deposits of 60 are placed into a fund at the end of each year for 12 years. The effective annual interest rate is 9%. Calculate the accumulated value of the series of payments at the end of the 12th year.

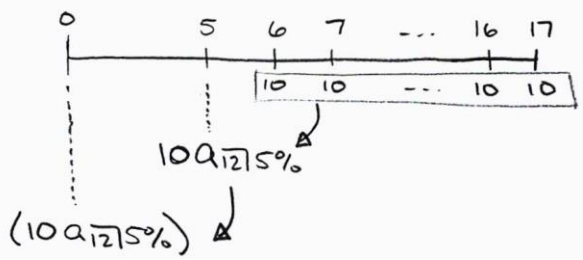
A) 1,208.44 B) 1,102.78 C) 1,158.49 D) 1,269.91 E) 1,225.62

$$60\,s_{\overline{12}|9\%} = 60\,\frac{(1.09)^{12}-1}{0.09}$$

$$= \boxed{1208.44}$$

3. 5. Deposits of 10 are placed into a fund at the end of each year for 12 years with the first deposit occurring at $t = 6$. The effective annual interest rate is 5%. Calculate the present value of the series of payments.

A) 69.45 B) 59.03 C) 62.50 D) 65.97 E) 72.92



$$(10a_{\overline{12}|5\%})v^5 = 10\,\frac{1-(1.05)^{-12}}{0.05}(1.05)^{-5}$$

$$= \boxed{69.45}$$

4. Deposits of 90 are placed into a fund at the end of each year for 10 years. The present value of the series of payments is 669.05. Find the effective annual interest rate.

A) 5.79% B) 5.5% C) 6.08% D) 6.37% E) 6.66%

$90\, a_{\overline{10}|i} = 669.05$

$\downarrow$ (BA II)

$\boxed{i = 5.79\%}$

5. Deposits of P are placed into a fund at the end of each year for 20 years. At an effective annual interest rate is 4%, the accumulated value of the series of payments at the end of the 20th year is 2192.56. Find P.

A) 73.63 B) 65.13 C) 67.97 D) 70.80 E) 76.46

$P\, s_{\overline{20}|4\%} = 2192.56$

$P \dfrac{(1.04)^{20} - 1}{0.04} = 2192.56$

$P(29.7781) = 2192.56$

$P = \boxed{73.63}$