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GENERAL MATHEMATICS – PERFORMANCE TASK 1 (4th Quarter)

1. A sinking fund is established to accumulate 300,000php in 2 years. If the annual interest rate is 4% compounded monthly, find the amount of sinking funds payments. Create a balance sheet of the fund.

$$A = R \left[\frac{\left(1 + \frac{r}{m}\right)^{mt} - 1}{\frac{r}{m}} \right]$$

$$300,000 = R \left[\frac{\left(1 + \frac{0.04}{12}\right)^{12(2)} - 1}{\frac{0.04}{12}} \right]$$

$$300,000 = R 24.94288775$$

$$\frac{300,000}{24.94288775} = R \frac{24.94288775}{24.94288775}$$

Thus, the regular payment is ₱12,027.48

$$R = ₱12,027.47665$$

End of period	Deposit or Payment	Interest Earned	Balance
1	12,027.48	0.00	12,027.48
2	12,027.48	40.09	24,095.05
3	12,027.48	80.32	36,202.85
4	12,027.48	120.68	48,351.01
5	12,027.48	161.17	60,539.66
6	12,027.48	201.80	72,768.94
7	12,027.48	242.56	85,038.98
8	12,027.48	283.46	97,349.92
9	12,027.48	324.50	109,701.90
10	12,027.48	365.67	122,095.05
11	12,027.48	406.98	134,529.51
12	12,027.48	448.43	147,005.42
13	12,027.48	490.02	159,522.92
14	12,027.48	531.74	172,082.14
15	12,027.48	573.61	184,683.23
16	12,027.48	615.61	197,326.32
17	12,027.48	657.75	210,011.55
18	12,027.48	700.04	222,739.07

19	12,027.48	742.46	235,509.01
20	12,027.48	785.03	248,321.52
21	12,027.48	827.74	261,176.74
22	12,027.48	870.59	274,074.81
23	12,027.48	913.58	287,015.87
24	12,027.48	956.72	300,000.07
TOTAL	288,659.52	11340.55	

2. How much should one pay annually to amortize a loan worth Php 1,500,000 at an interest rate of 5% compounded quarterly for 7 and half years? Create an amortization table for the loan.

$$P = R \left[\frac{1 - \left(1 + \frac{r}{m}\right)^{-mt}}{\frac{r}{m}} \right]$$

$$1,500,000 = R \left[\frac{1 - \left(1 + \frac{0.05}{4}\right)^{-4(7.5)}}{\frac{0.05}{4}} \right]$$

$$1,500,000 = R \ 24.88890623$$

$$\frac{1,500,000}{24.88890623} = R \frac{24.88890623}{24.88890623}$$

Thus, the regular payment is ₱60,267.82

$$R = \text{₱}60,267.81515$$

Number of Payments	Regular Payment	Interest earned by the Loan Balance	Reduction to Loan Balance	Loan Balance
				1,500,000.00
1	60,267.81515	18,750.00	41,517.82	1,458,482.18
2	60,267.81515	18,231.03	42,036.79	1,416,445.40
3	60,267.81515	17,705.57	42,562.25	1,373,883.15
4	60,267.81515	17,173.54	43,094.28	1,330,788.87
5	60,267.81515	16,634.86	43,632.95	1,287,155.92
6	60,267.81515	16,089.45	44,178.37	1,242,977.55
7	60,267.81515	15,537.22	44,730.60	1,198,246.96
8	60,267.81515	14,978.09	45,289.73	1,152,957.23
9	60,267.81515	14,411.97	45,855.85	1,107,101.38
10	60,267.81515	13,838.77	46,429.05	1,060,672.33
11	60,267.81515	13,258.40	47,009.41	1,013,662.92
12	60,267.81515	12,670.79	47,597.03	966,065.89

13	60,267.81515	12,075.82	48,191.99	917,873.90
14	60,267.81515	11,473.42	48,794.39	869,079.51
15	60,267.81515	10,863.49	49,404.32	819,675.19
16	60,267.81515	10,245.94	50,021.88	769,653.31
17	60,267.81515	9,620.67	50,647.15	719,006.16
18	60,267.81515	8,987.58	51,280.24	667,725.93
19	60,267.81515	8,346.57	51,921.24	615,804.68
20	60,267.81515	7,697.56	52,570.26	563,234.43
21	60,267.81515	7,040.43	53,227.38	510,007.04
22	60,267.81515	6,375.09	53,892.73	456,114.32
23	60,267.81515	5,701.43	54,566.39	401,547.93
24	60,267.81515	5,019.35	55,248.47	346,299.46
25	60,267.81515	4,328.74	55,939.07	290,360.39
26	60,267.81515	3,629.50	56,638.31	233,722.08
27	60,267.81515	2,921.53	57,346.29	176,375.79
28	60,267.81515	2,204.70	58,063.12	118,312.67
29	60,267.81515	1,478.91	58,788.91	59,523.77
30	60,267.81515	744.05	59,523.77	0.0

3. Get a newspaper with a business section or an online source which shows stock prices in the Philippines. Pick one stock from each sector. (25 points)

a. Suppose you have 25 shares of each stock that you picked, find the value of all your stocks.

Financial Sector: BDO
 Stock Price: 139.50php
 Stock Value: $25(139.50) = \text{₱}3,487.50$
 Thus, the stock value is **₱3,487.50**

Properties Sector: Ayala Land, Inc.
 Stock Price: 23.15php
 Stock Value: $25(23.15) = \text{₱}578.75$
 Thus, the stock value is **₱578.75**

Industrial Sector: ACEN Corporation
 Stock Price: 5.00php
 Stock Value: $25(5.00) = \text{₱}125.00$
 Thus, the stock value is **₱125.00**

Services Sector: ABS-CBN Corporation
 Stock Price: 6.35php
 Stock Value: $25(6.35) = \text{₱}158.75$
 Thus, the stock value is **₱158.75**

Holding Firm Sector: AbaCore Capital Holdings, Inc.
 Stock Price: 2.68php
 Stock Value: $25(2.68) = \text{₱}67.00$
 Thus, the stock value is **₱67.00**

Mining and Oil Sector: Apex Mining Co., Inc.
 Stock Price: 2.47php
 Stock Value: $25(2.47) = \text{₱}61.75$
 Thus, the stock value is **₱61.75**

Therefore, the total stock value is **₱4,478.75**

- b. You decided to hold your stocks for the next 10 years expecting a 7.25% dividend rate paid quarterly. How much are your expected dividends per stock to be paid every quarter?

Financial Sector: BDO
 Stock Price: 139.50php
 Stock Value: $25(139.50) = \text{₱}3,487.50$

$$\frac{0.0725(3,487.50)}{4} = \text{₱}67.94$$

Thus, the expected dividend to be paid every quarter is ₱67.94

Industrial Sector: ACEN Corporation
 Stock Price: 5.00php
 Stock Value: $25(5.00) = \text{₱}125.00$

$$\frac{0.0725(125.00)}{4} = \text{₱}2.27$$

Thus, the expected dividend to be paid every quarter is ₱2.27

Holding Firm Sector: AbaCore Capital Holdings, Inc.
 Stock Price: 2.68php
 Stock Value: $25(2.68) = \text{₱}67.00$

$$\frac{0.0725(67.00)}{4} = \text{₱}1.21$$

Thus, the expected dividend to be paid every quarter is ₱1.21

Properties Sector: Ayala Land, Inc.
 Stock Price: 23.15php
 Stock Value: $25(23.15) = \text{₱}578.75$

$$\frac{0.0725(578.75)}{4} = \text{₱}10.49$$

Thus, the expected dividend to be paid every quarter is ₱10.49

Services Sector: ABS-CBN Corporation
 Stock Price: 6.35php
 Stock Value: $25(6.35) = \text{₱}158.75$

$$\frac{0.0725(158.75)}{4} = \text{₱}2.88$$

Thus, the expected dividend to be paid every quarter is ₱2.88

Mining and Oil Sector: Apex Mining Co., Inc.
 Stock Price: 2.47php
 Stock Value: $25(2.47) = \text{₱}61.75$

$$\frac{0.0725(61.75)}{4} = \text{₱}1.12$$

Thus, the expected dividend to be paid every quarter is ₱1.12