

**Finance 360: Principles of Financial Management (Joseph Farizo)**  
**Problem Set 4**

Version: 100

Name: \_\_\_\_\_ Key: Version 100

Due: \_\_\_\_\_ 0

Write your answers in the boxes below each question. On separate paper, neatly show your work for each question. No credit will be awarded if you provide an answer but show no work. When completed, use the Adobe Scan app to take a picture and save as a single PDF file with this as the first page. Save the file as V# where the # is your version number from the top right of this page. Example: "V101.pdf" if you have Version 101. Upload to [josephfarizo.com/assignments.html](http://josephfarizo.com/assignments.html). Correct answers are important, only minimal partial credit is awarded.

**Question 1** Determine the IRR of a project costing \$44000 with annual end-of-year cash flows of \$21000, \$25000, and \$15000 over the next 3 years, and state whether the project should be accepted or rejected given a required return of 17.304%. Provide 3 decimal places (i.e., 1.234%).

**IRR = 19.304%. Accept**

**Question 2** You wish to purchase a \$30000 sail boat. A lender quotes an APR of 4.8%. Assuming a down payment of \$6000, what will (a) monthly payments be assuming a 48 month term and end-of-period payments? What is (b) your EAR? Provide 3 decimal places (i.e., 1.234%).

**\$550.53; 4.907%**

**Question 3** Determine the NPV of BOTH mutually exclusive projects, and state which (if any) should be accepted, assuming a discount rate of 8%: Project A costs \$52 and generates end-of-year cash flows of \$19, \$24 and \$13. Project B costs \$66, and generates end-of-year cash flows of \$18, \$24, and \$14. (Values in millions.)

**(a) = -\$3,511.46 (b) = -\$17,643.55; A larger, Accept Neither**

**Question 4** Compute the (a) payback and (b) discounted payback of a project costing \$4100 with annual end-of-year cash flows of \$2000, \$2500, and \$1400 over the next 3 years. For (a), provide 3 decimal places. Use a discount rate of 10% for (b), and only say in which year it is paid back (i.e, 'between years 3 and 4').

**(a) = 1.84 (b) = between years 2 and 3**

**Question 5** You take out a 30-year, 7.4% APR, \$507000 mortgage. After 12 years, you 'refinance' at APR = 6% for 26 more years. (a) What will your new monthly payments be after refinancing? (b) What is total interest you pay over the entire life of both mortgages (38 years) through your very last payment?

(a) = \$2,651.18 (b) = \$825,660.48

**Question 6** Find a three-year project's total cash flow in year 3 given: Year 0 machinery investment = \$3200 depreciated to zero, with salvage of \$1100. Unit sales of 382 in year 3, with sales price of \$30 and unit cost of \$15. Fixed costs of \$990, taxes of \$1036, and an investment of \$100 in working capital in year 0.

\$4904

**Question 7** A lender considers extending a \$56891 loan to a customer charging 4.5% per quarter. What is (a) the rate they must by law advertise this loan? (b) The actual rate this loan charges? (c) If a customer pays \$4000 per quarter on this loan, in how many years will the loan be paid off? Provide 3 decimal places (i.e., 1.234%).

(a) = 18% (b) = 19.2519% (c) = 5.803

**Question 8** You'll make a \$150,000 down payment on a \$510,000 home and borrow the remainder at 4.8% APR, making monthly payments for 30 years. (a) What is the monthly payment? (b) Of your payment in month 4, how much is applied to principal? (c) How much total interest is paid from month 43 to month 72?

a = \$1,888.8; b = \$454.2 c = \$39,783.43

**Question 9** Determine the profitability index for a project costing \$54 that generates end-of-year cash flows of \$20, \$21 and \$13 assuming a discount rate of 10%. Should this project be accepted? Show three decimal places. Numbers are in millions.

0.839, Reject

Rate this problem set from 1 to 5, with 1 being "very easy" and 5 being "very difficult." (circle one)

1      2      3      4      5

About how many minutes did you spend on this problem set? (circle one)

<45      45      60      75      >75