

Math 1010, Exam #4, Fall 2013

Name

KEY

Instructions: Show all work. If you use your calculator for problems, write out what the screen entries look like and their outputs. Formulas or tables provided for these sections are at the back of the test. When rounding dollar figures, round to the nearest penny unless otherwise indicated in the problem.

1. Use the formula to calculate the monthly payment on a mortgage of \$280,000 for 30 years at 6.5%. (6 points)

$$M = 280,000 \left[\frac{.065/12}{1 - (1 + \frac{.065}{12})^{-360}} \right] = \$1769.79$$

$30 \times 12 = 360$

2. What is the total amount of interest that will be paid in the previous problem? (4 points)

$$\begin{array}{r} \$1769.79 \times 360 = 637,124.40 \\ - 280,000 \\ \hline \$357,124.40 \end{array}$$

3. How much interest could the person in problem #1 save if he took out a 15-year loan under the same terms compared to the 30-year loan? (5 points)

$$M = 280,000 \left[\frac{.065/12}{1 - (1 + \frac{.065}{12})^{-180}} \right] = \$2439.10$$

$15 \times 12 = 180$

$$\begin{array}{r} \$2439.10 \times 180 = 439,038 \\ - 280,000 \\ \hline \$159,038 \end{array}$$

$$\begin{array}{r} 357,124.40 \quad \text{30-year} \\ - 159,038 \quad \text{15-year} \\ \hline \$198,086.40 \\ \Rightarrow \text{amount saved} \end{array}$$

4. If Roger wishes to purchase a home for \$450,000, and the lender requires he make a down payment of 20%, how much is that down payment, and how much money will he still need to borrow? (5 points)

$$\text{downpayment} = \$90,000$$

$$\text{amount to borrow} = \$360,000$$

5. Construct an amortization schedule for the first three payments of Roger's loan using the table below under the assumption that he can borrow the remaining money at 5.5% interest for 30 years. (15 points)

Month	Monthly payment	Interest	Principal	End-of-Month Principal
1	2044.04	1650	394.04	359,605.96
2	2044.04	1648.19	395.85	359,210.11
3	2044.04	1646.38	397.66	358,812.45

$$M = 360,000 \left[\frac{.055/12}{1 - (1 + \frac{.055}{12})^{-360}} \right] = \$2044.04$$

$$360,000 * \frac{.055}{12} = 1650$$

$$359,605.96 * \frac{.055}{12} = 1648.19$$

$$359,210.11 * \frac{.055}{12} = 1646.38$$

6. Find Tabitha's debt-to-income ratio if her monthly payment is \$2,145 and her monthly income is \$8800. (4 points)

$$\frac{2145}{8800} = .24375$$

$$\approx 24.4\%$$

The problems 7-9 use the data in the table below.

Date of purchase	Units Purchased	Cost per unit
Beginning inventory	26	\$10
February 11	30	\$12
April 30	25	\$8
July 7	35	\$18

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7. Find the cost of goods available for sale. (6 points)

$$26 \times 10 + 30 \times 12 + 25 \times 8 + 35 \times 18$$

$$260 + 360 + 200 + 630 = \$1450$$

8. Find the cost of goods sold and the cost of ending inventory using the weighted average method given the ending inventory below. (8 points)

$$\frac{1450}{116} = 12.5$$

$$46 \times 12.5 = 575 \text{ ending inventory}$$

$$1450 - 575 = 875 \text{ goods sold}$$

Units in inventory	Cost
10	\$10
5	\$12
11	\$8
20	\$18
46	

9. Recalculate the cost of goods sold and the cost of ending inventory using the FIFO method, given the fact that ending inventory is 46 units. (8 points)

$$\begin{array}{r} 35 * 18 + 11 * 8 \\ 630 + 88 = 718 \end{array} \quad \text{ending inventory}$$

$$1450 - 718 = 732 \quad \text{goods sold.}$$

10. A retail gift store had an average inventory at retail of \$341,925 and net sales of \$922,493. Find the rate of turnover at retail to the nearest 2 decimal places. (5 points)

$$\frac{922,493}{341,925} = 2.6979\dots$$
$$\approx 2.70$$

11. If the same store had average inventory at cost of \$170,340, find the rate of turnover at cost if their cost of goods sold was \$516,596. (4 points)

$$\frac{516,596}{170,340} = 3.03$$

12. Describe the steps to calculate cost of goods sold using the LIFO method. (5 points)

Count # of units in inventory
 assign cost assuming they were the oldest units
 purchased.

Calculate sum.

Subtract from total goods available for sale

13. Fill in the depreciation schedule below to show the annual straight-line depreciation for furniture that cost \$5,500 and has a scrap value of \$800. The useful life of the furniture is 5 years. (15 points)

Total Cost: \$5,500	Year	Depreciation	Accumulated Depreciation	End-of-year Book Value
	1	\$ 940	\$ 940	\$ 4560
	2	940	1880	3620
	3	940	2820	2680
	4	940	3760	1740
	5	940	4700	800

$$\frac{5500 - 800}{5} = \frac{4700}{5} = 940$$

Depreciable value = \$4700

14. Use the sum-of-digits method to find the denominator of the depreciation rates for an asset with an expected life of 24 years. (4 points)

$$\frac{24(25)}{2} = 300$$

15. A flower delivery van was purchased for \$27,000. The vehicle is expected to be driven 200,000 miles before being sold for \$600. What is the unit depreciation on the vehicle using depreciation per mile? (5 points)

$$\text{Depreciable value} = 26,400$$

$$\frac{26,400}{200,000} = \$0.132 \text{ per mile driven}$$

16. Use the MACRS (table at back) to find the depreciation for the fourth year for office furniture that costs \$19,496. A recovery period of seven years is used. (5 points)

$$\text{Year 4 rate for 7-year period} = 12.49\%$$

$$19,496 * 12.49\% = 19,496 * .1249 = \$2435.05$$

17. Give one circumstance in which a schedule 179 deduction is not permitted on a company's asset. (6 points)

Cannot be made after the year of purchase

Can't be deducted if not used for the business immediately

Cannot create a net loss

Cannot be for an estate or trust

$$M = P \left[\frac{R}{1 - (1 + R)^{-N}} \right]$$

MACRS Table

Year	3-Year	5-Year	7-Year	10-Year	15-Year	20-Year
1	33.33%	20%	14.29%	10%	5%	3.75%
2	44.45	32	24.49	18	9.5	7.219
3	14.81	19.2	17.49	14.4	8.55	6.677
4	7.41	11.52	12.49	11.52	7.7	6.177
5		11.52	8.93	9.22	6.93	5.713
6		5.76	8.92	7.37	6.23	5.285
7			8.93	6.55	5.9	4.888
8			4.46	6.55	5.9	4.522
9				6.56	5.91	4.462
10				6.55	5.9	4.461
11				3.28	5.91	4.462
12					5.9	4.461
13					5.91	4.462
14					5.9	4.461
15					5.91	4.462
16					2.95	4.461
17						4.462
18						4.461
19						4.462
20						4.461
21						2.231