Math 1300 Exam Review 1	**Monday, Sept. 21**	**5:30-7:30 p.m.**	**Middlebush Auditorium**
Bring this sheet to the review session.			

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Some practice problems for Exam 1 are available on blackboard.missouri.edu through the Math 1300 Blackboard site.

1. An investor purchases 325 shares of stock at $17.80 per share., holds the stock for 32 weeks and then sells the stock for $20.20 per share. Given the following commission schedule, find the annual rate of interest earned on his investment.

Principal	Commission
Under $3000	$30 + 1.8% of principal
$3000 - $10000	$47 + 1.2% of principal
Over $10000	$110 + 0.6% 0f principal

2. If $700 is deposited in a savings account that pays 3.2% annual interest compounded quarterly, how much will be in the account after 10 years?

3. Debbie would like to save up $250,000 when she retires in 20 years. If she currently has no money in the bank, but plans to invest a fixed amount from her paycheck each month.

(a) If her investments pay 6% interest compounded monthly, how much should she invest each month?

(b) If she makes her monthly investments as planned, but decides to retire early after 15 years, rather than 20, what will her balance be at that time?

4. Suppose I buy a car for $20,000 and finance it for 5 years at 4.8% compounded monthly.

(a) Compute my monthly payment.

(b) Compute the balance after 1 year.

(c) How much interest is paid during the first year?

5. Mike bought a house 10 years ago for $95,000. He made a down payment of $10,000 and financed the rest with a 30-year loan at 7.2% interest compounded monthly. He wants to borrow money using the equity in his home for collateral. A loan company will loan him up to 80% of his equity. The net market value of the home is now $150,000. After the 120^{th} payment, he applies to the loan company for the full amount possible. How much can he borrow (to the nearest dollar)?

6. Solve the following system of linear equations by using Gauss-Jordan elimination. Be sure to specify whether a solution exists, and if it does, whether it is unique: $x+2y+3z=10$, $3y+6z=12$, $3x+4y+5z=22$

7. For what values of k will the following system of linear equations have no solution? Infinitely many solutions?

$2x-4y=10$, $-3x+6y=k$

8. A concert sponsored by the university charged $3 for students, $5 for faculty, and $8 for the general public. The concert raised a total of $2542. Students bought three times as many tickets as faculty. The general public bought twice as many tickets as students. Write a system of linear equations that

determines the number of tickets sold to each group. Clearly indicate what each variable stands for. Express the system of equations as an augmented matrix, but do not solve the system.

9. Let $A=\begin{bmatrix}3 & 2\\ 5 & 1\end{bmatrix}$, $B=\begin{bmatrix}1\\ 4\end{bmatrix}$, and $C=\begin{bmatrix}2 & 1\end{bmatrix}$. Find each of the following, if possible. If it is not possible to multiply the matrices, explain why.

(a) AB (b) BA (c) $A+BC$

Answers

1. 14.8%

2. $962.76

3(a) $541.08

3(b) $157,356.19

4a) $375.59

4b) $16,373.56

4c) $880.64

5. $61376

6 $x = 2 + z$
$y = 4 - 2z$
z = any value

7. No solution: $k \neq -15$
Infinitely many: $k = -15$

8. x = number of students
y = number of faculty
z = number of general public

$3x + 5y + 8z = 2542$
$x = 3y$
$z = 2x$

$$\left[\begin{array}{ccc|c} 3 & 5 & 8 & 2542 \\ 1 & -3 & 0 & 0 \\ -2 & 0 & 1 & 0 \end{array}\right]$$

9(a). $\begin{bmatrix}11\\ 9\end{bmatrix}$

9(b). Not possible; the number of columns in B is not equal to the number of rows in A.

9(c). $\begin{bmatrix}5 & 3\\ 13 & 5\end{bmatrix}$