1) Find the amount due on a loan of $8,500 at 12.5% simple interest at the end of 4 years.

2) If you pay $5,500 for a simple interest note that will be worth $6,000 in 21 months, what annual simple interest rate will you earn? (Compute the answer to one decimal place.)

3) Construct the amortization table for a $1,000 debt that is to be repaid in 6 monthly payments at 1.24% interest per month on the unpaid balance.

4) What amount will be in an account after 1.5 years if $4,000 is invested at 6% compounded semiannually?

5) How much should you invest now at 8% compounded semiannually to have $8,500 to buy a car in 2.5 years?

6) An investment company pays 12% compounded quarterly. What is the effective rate? (Compute the answer to two decimal places.)

7) How many months will it take until an account will have $4,500 if $2,500 is invested now at 15% compounded monthly?

8) What is the future value of an ordinary annuity at the end of 3 years if $200 is deposited each quarter into an account earning 6% compounded quarterly?

9) An ordinary annuity has a value of $1,333.85 at the end of 4 years when $150 is deposited every 6 months into an account earning 6% compounded semiannually. How much interest has been earned?

10) You deposit $130 each month into a savings account that pays 8.5% compounded monthly. How much interest will you have earned afM l p" M l p b u nedw ' ẅ "O

s 15% compounded semiannually.
How many half years will it be until you have $10,000 to buy a car? (Round up to the next higher half if not an integer.)

13) A couple decides on the following plan for their child's college education: When the child is 6 months old, and every 6 months thereafter, they will deposit $310 into a savings account paying 9.5% interest compounded semi-annually. After the child's tenth birthday (20 payments), they will stop making payments and let the money earn interest, at the same rate (8 more years) until the child is 18 and ready for college. How much money (to the nearest dollar) will be in the account when the child is ready for college?

14) An individual makes annual year-end deposits of $500 into an ordinary annuity. After 10 years, the annuity is worth $9,700. What annual rate (compounded annually) has this annuity earned? Solve graphically and express the answer as a percentage, correct to two decimal places.

15) What is the present value of an ordinary annuity that pays $400 per quarter for 6 years if money is worth 9% compounded quarterly?

16) You have decided to buy a new stereo system for $2,500 and agreed to pay in 30 equal quarterly paymernts at 1.25% interest per quarter on the unpaid balance. How much are your payments?

17) You have purchased a new house, and have a mortgage for $70,000 at 15%. The loan is amortized over 20 years in equal monthly payments of $921.75. Find the total amount paid in interest when the mortgage is paid off.

18) A bank makes a home mortgage loan of $160,000 at 10% amortized in equal monthly payments over 30 years. What is the total amount paid in interest when the mortgage is paid off? (Round to the nearest dollar.)

19) A $7,000 debt is to be amortized in 15 equal monthly payments of $504.87 at 1.00% interest per month on the unpaid balance. What is the unpaid balance after the second payment?

20) You have agreed to pay off an $8,000 loan in 30 monthly payments of $298.79 per month. The interest rate of the loan is 0.75% per month on the unpaid balance. What is the unpaid balance after 12 monthly payments have been made?

21) A couple wishes to borrow $125,000 in order to buy a house. They can pay a maximum of $1200 per month. If the loan is at 9.5% compounded monthly, how many months will it take to pay off the loan? (Round answer to the next higher month if not an integer.)

22) A couple wishes to borrow $140,000 in order to buy a house. They can pay a maximum of $1500 per month. If the loan is at 9.6% compounded monthly, how many months will it take to pay off the loan? (Round answer to the next higher month if not an integer.)

23) A home was purchased 15 years ago for $75,000. The home was financed by paying a 20% down payment and signing a 25-year mortgage at 9.0% compounded monthly on the unpaid balance. The market value is now $100,000. The owner wishes to sell the house. How much equity (to the nearest dollar) does the owner have in the house after making 180 monthly payments?

24) Solve by elimination using addition: $4x - 2y = -12$
$3x + 5y = 4$

25) Use a graphing utility to solve the system $2x + 3y = 7$
$9x - 4y = 11$

Give the answer to two decimal places.

26) Solve this system by the graphical method. On each graph, label each line with its equation, label the x- and y-intercepts, and label the point of intersection (if there is one). $x - y = -1$
$3x + 4y = 18$

27) A company that manufactures laser printers for computers has monthly fixed costs of $177,000 and variable costs of $650 per unit produced. The company sells the printers for $1,250 per unit. How many printers must be sold each month for the company to break even?

28) Only one of the following augmented matrices of a linear system is in reduced form. Indicate by letter which one is reduced and tell why the others are not reduced.

a) $\begin{bmatrix} 1 & 0 & -7 \\ 0 & 0 & 0 \\ 0 & 1 & -1 \end{bmatrix}$ b) $\begin{bmatrix} 0 & 1 & -4 \\ 1 & 0 & 2 \end{bmatrix}$ c) $\begin{bmatrix} 1 & 0 & -2 & -3 \\ 0 & 0 & 1 & 1 \\ 0 & 0 & 0 & 0 \end{bmatrix}$ d) $\begin{matrix} 1 & 0 & 0 & -5 \\ 0 & 0 & 1 & 2 \end{matrix}$

29) Solve b

38) A trucking firm wants to purchase 10 trucks that will provide exactly 28 tons of additional shipping capacity. A model A truck holds 2 tons, a model B truck holds 3 tons, and

45) Using a graphing calculator as needed, maximize $P = 524x_1 + 479x_2$, subject to

$265x_1 + 320x_2 \le 3{,}390$

$350x_1 + 345x_2 \le 3{,}795$

$400x_1 + 316x_2 \le 4{,}140$

$x_1, x_2 \ge 0$

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58) A survey

70) Graph the data in the following table using a broken line graph:

Number of Inches of Snowfall Per Last 6 Winters in Our Area

93-94	94-95	95-96	96-97	97-98	98-99
29.9	4.0	24.2	5.3	22.8	8.2

71) Using a graphing calculator, find the mean and standard deviation for the following data set:
1.5, 3.5, 2.2, 7.9, 4.3, 2.0, 11.8, 13.7, 15.7, 6.4

72) The starting salaries (in thousands of dollars) of 20 graduates chosen at random from the graduating class of an urban university are recorded in the table:

Starting Salaries

32	37	30	23	29	25	40	26	41	34
33	30	27	31	42	24	35	38	36	35

a) Construct a frequency and relative frequency table using a class interval width of 4 and starting at 20.5.
b) Construct a histogram.

73) Given the data set: 200, 700, 300, 300, 900, 300, 400, 200, 500, 600, find the following:
a) the mean
b) the mode
c) the median
d) the range

74) Given the following grouped data, find the mean:

Intervals	Frequencies
0.5-2.5	1
2.5-4.5	3
4.5-6.5	8
6.5-8.5	5
8.5-10.5	3

75) Find the standard deviation of set this set of four math test grades:
78, 92, 85, 70

76) Find the standard deviation of this data set whose mean is 15.8:

Intervals	Frequency
9.5-12.5	3
12.5-15.5	6
15.5-18.5	7
18.5-21.5	4

77) Find the median of this grouped data set:

Intervals	Frequency
9.5-12.5	2
12.5-15.5	3
15.5-18.5	6
18.5-21.5	4

78) Given the binomial distribution function $P(x) = C_{6,x}(.7)^x(.3)^{6-x}$, find:
   a) the mean
   b) the standard deviation

79) A certain lawyer wins 80% of all her cases.
   a) What then is the probability that she will win exactly 2 of her next 5 cases?
   b) What is the probability that she will win at least 2 of her next 5 cases?

80) A normal distribution has mean 200 and standard deviation 50. Find the area under the normal curve from the mean to 224.

81) The duration of routine operations in a certain hospital has approximately a normal distribution with a mean of 72 minutes and a standard deviation of 9 minutes. What percentage of operations last less than 68 minutes?

90) Based on analysis of seismological data from a certain region, a geologist decides that the probability an exploratory well will be successful in discovering a drillable quantity of oil is 1/3. If 159 exploratory wells are drilled, what is the probability that fewer than 58 will be successful?

Answer Key
Testname: M118 FINAL REVIEW.TST

1) Answer: $12,750.00
2) Answer: 5.2%
3) Answer:

Payment	Interest	Principal	Balance
$173.97	$12.40	$161.57	$838.43
$173.97	$10.40	$163.58	$674.85
$173.97	$8.37	$165.61	$509.24
$173.97	$6.31	$167.66	$341.58
$173.97	$4.24	$169.74	$171.84
$173.97	$2.13	$171.84	0

4) Answer: $4,370.91
5) Answer: $6,986.38
6) Answer: 12.55%
7) Answer: 48 months
8) Answer: $2,608.24
9) Answer: $133.85
10) Answer: $5,306.79
11) Answer: $518.42
12) Answer: 34 half years
13) Answer: $20,978.00
14) Answer: 14.07%
15) Answer: $7,355.61
16) Answer: $100.45
17) Answer: $151,220.00
18) Answer: $345,481.00
19) Answer: $6,125.91
20) Answer: $5,013.45
21) Answer: 221 months
22) Answer: 173 months

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$175

58) Answer: 0.12

59) Answer: 0.98

60) Answer: 0.71

61) Answer: 5 / 8

62) Answer: 35 / 65

63) Answer: 0.350

64) Answer: 1 / 3

65) Answer: yes

66) Answer: 42 / 90

67) Answer: 0.015

68) Answer: 0.53

69) Answer: 0.26

70) Answer:

71) Answer: mean = 6.9, standard deviation $\approx$ 4.92

72) Answer:

Interval	Frequency	Relative Frequency
20.5-24.5	2	.10
24.5-28.5	3	.15
28.5-32.5	5	.25
32.5-36.5	5	.25
36.5-40.5	3	.15
40.5-44.5	2	.10

73) Answer: a) mean = 440 b) mode = 300 c) median = 350 d) range = 700

74) Answer: mean = 6.1

75) Answer: s = 9.4, s = 8.2

76) Answer: 2.98

77) Answer: 16.75

78) Answer: mean = 4.2, standard deviation = 1.1

79) Answer: a) 0.0512 b) 0.99328

80) Answer: 0.1844

81) Answer: 0.33

82) Answer: 60%

83) Answer: $C_{14,12}(.5)^{14} \approx .0056$

84) Answer: a) $P(x) = C_{6,x}(.42)^{x}(.58)^{6-x}$ b) P(3 or more successes) = .497

85) Answer: mean = .16, standard deviation = .40

86) Answer: 0.850

87) Answer: a) P(> 8900) = .0287 b) P(=8000) = 0 c) P(<8000) = .8413

88) Answer: 0.1711

89) Answer: 9.1%

90) Answer: P(less than 58 successes) = .776