Exam Wk 6

Name_____

Questions 1 – 30 are worth *2 pts each* for a complete solution. (TOTAL 60 pts) (Formulas, work, or detailed explanation required.)

Question 31 – 38, worth *5 pts each* for a complete solution, (TOTAL 40 pts) (Formulas, work required.)

You may use EXCEL functions for present and future annuity problems. Be sure that you state the function you are using and what values go into what parameters.

You may NOT use EXCEL for simple and compound interest problems.

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Find the simple interest. Assume a 360–day year. Round results to the nearest cent.

1) $ 4414 at 10% for 5 months 1) _____

A) $ 147.13 B) $ 183.92 C) $ 185.46 D) $ 220.70

2) $ 18,000 at 3.667% for 121 days 2) _____

A) $ 220.00 B) $ 18,221.83 C) $ 221.85 D) $ 660.00

Find the compound amount for the deposit. Round to the nearest cent.

3) $ 1100 at 6% compounded quarterly for 2 years 3) _____

A) $ 1235.96 B) $ 1133.25 C) $ 1239.14 D) $ 1232.00

Find the amount that should be invested now to accumulate the following amount, if the money is compounded as indicated.

4) $ 9000 at 6% compounded semiannually for 10 yr 4) _____

A) $ 5025.55 B) $ 4983.08 C) $ 16,255.00 D) $ 4016.92

Find the effective rate corresponding to the given nominal rate. Round results to the nearest 0.01 percentage points.

5) 9% compounded semiannually 5) _____

A) 9.00% B) 9.31% C) 9.20% D) 9.38%

Find the sum of the first five terms of the geometric sequence.

6) a = 1, r = 4 6) _____

A) 345 B) 351 C) 343 D) 341

Find the future value of the ordinary annuity. Interest is compounded annually, unless otherwise indicated.

7) R = $1,000, i = 0.05, n = 8 7) _____

A) $ 2814.20 B) $ 8142.01 C) $ 9549.11 D) $ 29,549.11

Find the future value of the annuity due.

8) Payments of $500 made at the beginning of each year for 9 years at 11% compounded annually 8) _____

A) $ 5429.72 B) $ 6581.99 C) $ 11,127.44 D) $ 7861.00

Find the periodic payment that will render the sum.

9) S = $ 13,000, interest is 8% compounded annually, payments made at the end of each year for 12 years 9) _____

A) $ 685.04 B) $ 780.99 C) $ 1222.19 D) $ 1056.94

Find the amount of each payment to be made into a sinking fund so that enough will be present to accumulate the following amount. Payments are made at the end of each period. The interest rate given is per period.

10) $ 5600; money earns 10% compounded annually; 7 annual payments 10) _____

A) $ 287.37 B) $ 725.80 C) $ 590.27 D) $ 489.69

Find the present value of the ordinary annuity.

11) Payments of $ 65,000 made semiannually for 12 years at 12% compounded semiannually 11) _____

A) $ 815,126.00 B) $ 576,114.50 C) $ 830,921.00 D) $ 815,773.24

Find the lump sum deposited today that will yield the same total amount as this yearly payment (made at the end of each year for 20 years at the given interest rate, compounded annually.

12) $ 6000 at 4% 12) _____

A) $ 78,803.40 B) $ 84,175.20 C) $ 81,523.80 D) $ 81,541.96

Use an amortization table to solve the problem. Round to the nearest cent.

13) The monthly payments on a $ 73,000 loan at 12% annual interest are $ 768.69. How much of the first monthly payment will go toward the principal? 13) _____

A) $ 38.69 B) $ 676.45 C) $ 92.24 D) $ 730.00

Find the monthly house payment necessary to amortize the following loan.

14) In order to purchase a home, a family borrows $ 167,000 at 8.2% for 15 yr. What is their monthly payment? Round the answer to the nearest cent. 14) _____

A) $ 1615.28 B) $ 1865.85 C) $ 1141.17 D) $ 11,751.63

Solve the problem.

15) Tasha borrowed $ 9000 to purchase a new car at an annual interest rate of 11%. She is to pay it back in equal monthly payments over a 4 year period. What is her monthly payment? 15) _____

A) $ 20.62 B) $ 82.50 C) $ 269.78 D) $ 232.61

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.
Tell whether the statement is true or false.

16) $7 \notin \{14, 21, 28, 35, 42\}$ 16) _____

17) $\{58, 59, 58, 59\} = \{58, 59\}$ 17) _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.
Insert "$\subseteq$" or "$\not\subseteq$" in the blank to make the statement true.

18) $\emptyset$ __ $\{2, 4, 6\}$ 18) _____

A) $\subseteq$ B) $\not\subseteq$

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

Let A = {1, 3, 5, 7}; B = {5, 6, 7, 8}; C = {5, 8}; $D = \{2, 5, 8\}$; **and** $U = \{1, 2, 3, 4, 5, 6, 7, 8\}$. **Determine whether the given statement is true or false.**

19) $B \subseteq D$ 19) _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Find the number of subsets of the set.

20) {0, 14, 15, 16} 20) _____

A) 15 B) 4 C) 8 D) 16

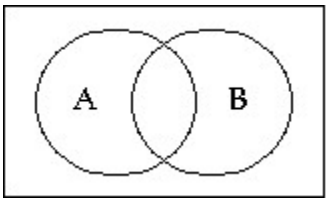
Let U = {q, r, s, t, u, v, w, x, y, z}; A = {q, s, u, w, y}; $B = \{q, s, y, z\}$; **and** $C = \{v, w, x, y, z\}$. **List the members of the indicated set, using set braces.**

21) $A \cap B'$ 21) _____

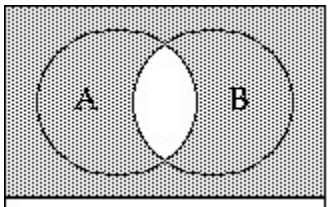
A) {r, s, t, u, v, w, x, z}
B) {q, s, t, u, v, w, x, y}
C) {t, v, x}
D) {u, w}

Shade the Venn diagram to represent the set.

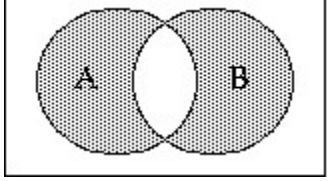
22) $A' \cap B'$ 22) _____



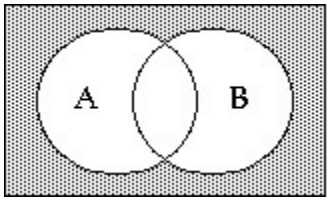
A)



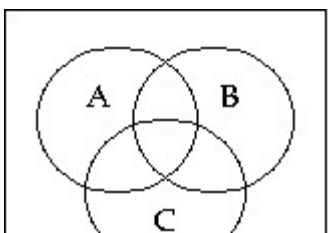
B)



C)



23) $(A \cup B \cup C')'$



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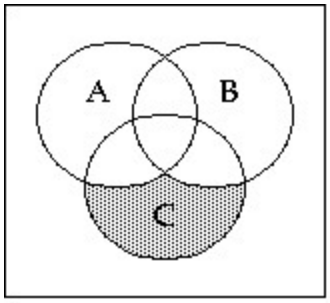
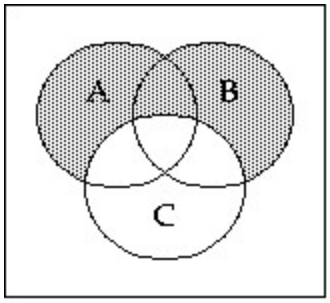
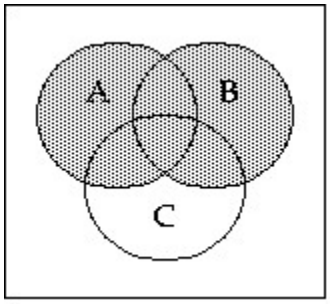
A)



B)



C)



Use the union rule to answer the question.

24) If $n(B) = 36$, $n(A \cap B) = 7$, and $n(A \cup B) = 63$; what is $n(A)$? 24) _____

A) 27 B) 36 C) 34 D) 32

Use a Venn Diagram and the given information to determine the number of elements in the indicated region.

25) $n(U) = 246$, $n(A) = 84$, $n(B) = 104$, $n(A \cap B) = 37$, $n(A \cap C) = 40$, $n(A \cap B \cap C) = 19$, $n(A' \cap B \cap C') = 48$, and $n(A' \cap B' \cap C') = 63$. Find $n(C)$. 25) _____

A) 91 B) 48 C) 32 D) 53

Find the cardinal number of the indicated set by referring to the given table.

The table 26) _____

	NonHispanic White (A)	Hispanic (B)	African-American (C)	Asian American (E)	American Indian (F)	
Democrat (D)	237	112	86	140	16	591
Republican (R)	241	64	32	175	5	517
Other (O)	25	23	12	15	17	92
Totals	503	199	130	330	38	1200

Above shows the results of a poll taken in a US city in which people are asked which candidate they intend to vote for in the upcoming presidential election.

Find the number of people in the set O intersecting A′

A) 630 B) 25 C) 1175 D) 67

Solve the problem.

27) A small company borrows $ 66,000 at 6% compounded monthly. The loan is due in 6 years. How much interest will the company pay? 27) _____

A) $ 94,514.92 B) $ 28,044.70 C) $ 28,347.19 D) $ 28,514.92

28) How long will it take for prices in the economy to double at a 13% annual inflation rate? Round answer to the nearest year. 28) _____

A) 7 years B) 2 years C) 4 years D) 6 years

29) Barbara knows that she will need to buy a new car in 3 years. The car will cost $15,000 by then. How much should she invest now at 12%, compounded quarterly, so that she will have enough to buy a new car? 29) _____

A) $ 11,957.91 B) $ 9532.77 C) $ 12,594.29 D) $ 10,520.70

Solve the problem. Round to the nearest cent.

30) Sandra deposits $3,000 at the end of each semiannual period for 25 years at 5% interest compounded semiannually. Find the amount she will have on deposit. 30) _____

A) $ 279,393.22 B) $ 150,340.36 C) $ 292,453.05 D) $ 289,453.05

Solve the problem.

31) Which of the following investments is larger after 29 years and why? 31) _____

A) $ 1250 is deposited annually and earns 8.75% interest compounded annually.

B) $ 100 is deposited monthly and earns 8.75% interest compounded monthly.

Solve the problem. Round to the nearest cent.

32) Larry wants to start an IRA that will have $ 460,000 in it when he retires in 15 years. How much should he invest semiannually in his IRA to do this if the interest is 15% compounded semiannually? 32) _____

Provide an appropriate response.

33) A friend asks for a loan of $ 69 and tells you that he will repay you by giving you $76 in exactly one week. What is the rate of simple interest being offered by your friend? (Use 1 year = 52 weeks, and round to the nearest tenth.) 33) _____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

34) You just moved into your new home for which you have a 30–year mortgage of $80,000 at 7%. Your new neighbor Jack tells you that if you double the amount of your payment each month you will cut the length of time you pay in half. Is he correct? Prove it. 34) _____

The lists below show five agricultural crops in Alabama, Arkansas, and Louisiana.

Alabama	Arkansas	Louisiana
soybeans (s)	**soybeans (s)**	**soybeans (s)**
peanuts (p)	**rice (r)**	**sugarcane (n)**
corn (c)	**cotton (t)**	**rice (r)**
hay (h)	**hay (h)**	**corn (c)**
wheat (w)	**wheat (w)**	**cotton (t)**

Let U be the smallest possible universal set that includes all of the crops listed; and let A, K, and L be the sets of five crops in Alabama, Arkansas, and Louisiana, respectively. Find the indicated set.

35) $K' \cap L$ 35) _____

Solve the problem.

36) Jose is applying to college. He receives information on 9 different colleges. He will apply to all of those he likes. He may like none of them, all of them, or any combination of them. How many possibilities are there for the set of colleges that he applies to? 36) _____

Use a Venn diagram to answer the question.

37) At East Zone University (EZU) there are 399 students taking College Algebra or Calculus. 238 are taking College Algebra, 184 are taking Calculus, and 23 are taking both College Algebra and Calculus. How many are taking Algebra but not Calculus? 37) _____

38) A survey of 160 families showed that 38) _____
59 had a dog;
46 had a cat;
19 had a dog and a cat;
63 had neither a cat nor a dog, and in addition did not have a parakeet;
3 had a cat, a dog, and a parakeet.
How many had a parakeet only?