

Math 1332 Final Exam Review

Final exam will consist of 30 questions.

I will include 5 question types from each of the 6 tests from the semester.

No scantron is needed.

Study all the earlier test reviews. The review problems on the attached pages will not cover everything that is on the test.

I will supply a special formula sheet (can be found on my website) and the normal distribution (Z) table chart.

Chapter	Topics to Focus on	Special Notes
2	All topics on Test 1	
11	Basic probability Probability from tables (and/or/given) Probabilities of multiple events (multiply) Expected value	
12	Find mean/median/mode of raw data using 1varstats Find standard deviation of raw data using 1varstats Reading frequency distributions and graphs Calculate Z-scores Boxplots (Quartiles found using 1varstats) Finding probability using the normal distribution. Understand what a percentile means Not on final: finding percentiles/deciles; mean of a frequency distribution; manually calculating standard deviation	Know how to use calculator : STAT CALC 1varstats
8	All topics on Test 4	Vertex formula
13	All topics on Test 5	Know how to use FINANCE app on calculator to find pmt amount
3	All topics on Test 6 – THERE ARE NO CH 3 REVIEW PROBLEMS IN THE DOCUMENT.	

List the elements in the set .

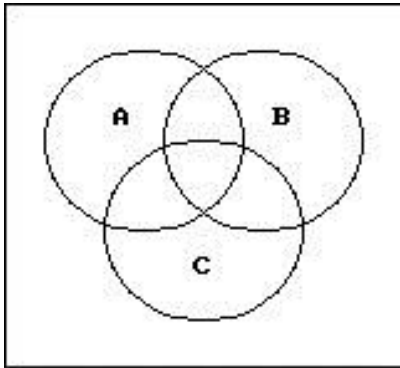
Let $U = \{q, r, s, t, u, v, w, x, y, z\}$

$A = \{q, s, u, w, y\}$

$B = \{q, s, y, z\}$

$C = \{v, w, x, y, z\}$.

- 1.) $(A \cup B)'$ A) $\{r, t, v, x\}$ B) $\{t, v, x\}$ C) $\{r, s, t, u, v, w, x, z\}$ D) $\{s, u, w\}$
- 2.) $C - A$ A) $\{q, s, u, v, x, z\}$ B) $\{w, y\}$ C) $\{q, s, u\}$ D) $\{v, x, z\}$
- 3.) $A \cap (B \cup C)$ A) $\{q, y, z\}$ B) $\{q, r, w, y, z\}$ C) $\{q, s, u, w, y, z\}$ D) $\{q, s, w, y\}$
- 4.) On the Venn Diagram below shade the region that represents $(A' \cup B) \cap C$



5.) Upon examining the contents of 38 backpacks, it was found that 23 contained a black pen, 27 contained a blue pen, and 21 contained a pencil. Also, 15 contained both a black pen and a blue pen, 12 contained both a black pen and a pencil, 18 contained both a blue pen and a pencil, and 10 contained all three items. Draw a Venn diagram, fill in the regions, and determine how many backpacks contained exactly two of the three writing instruments?

6) If $n(A) = 16$, $n(B) = 45$ and $n(A \cup B) = 53$, what is $n(A \cap B)$?

7.) **A grocery store employs cashiers, stock clerks, and deli personnel. The distribution of employees according to marital status is shown here.**

	Cashiers	Stock Clerks	Deli Personnel	Totals
Married	8	12	3	
Not married	5	15	2	
Totals				45

If one of these 45 people is selected at random, find the following probabilities.

- a.) $P(\text{the person is a stock clerk or works in the deli})$
- b.) $P(\text{the person is married given that he/she is a cashier})$
- c.) $P(\text{the person works in the deli given that he/she is not married})$

8.) A random drawing is held to select a single winner of concert tickets. If 200 people put their names in a bowl, and one is selected at random, what is the probability of winning the concert tickets? What are the odds against winning the concert tickets?

9.) 10 cigarette smokers, 8 cigar smokers and 15 nonsmokers qualify for a health survey. If 3 people are selected without replacement, what is the probability that they are all cigar smokers?

10.) A drug to alleviate pain has a 55% success rate. If the drug is given to 3 people, what is the probability they will all have success alleviating their pain?

11.) A survey is conducted among 1000 students to get opinions on whether they are for or against having Dr. Pepper as the only soft drink served on campus.

	FOR	AGAINST	NO OPINION	
Freshmen	203	40	32	275
Sophomores	137	68	53	258
Juniors	60	185	13	258
Seniors	55	102	52	209
	455	395	150	1000

If a student is selected at random, find the probability of selecting a student who is:

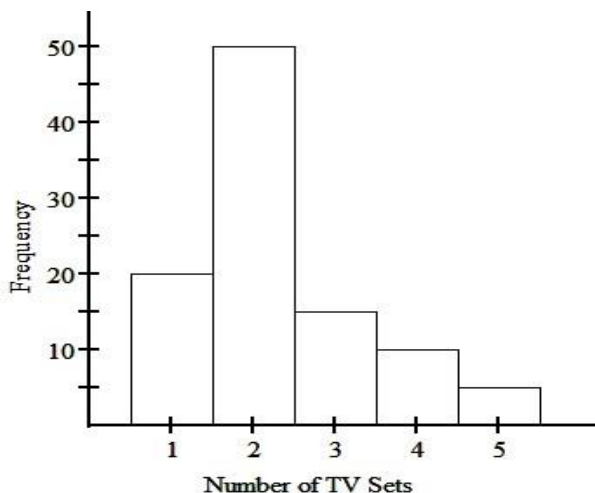
- a) $P(\text{a senior and is in favor})$
- b) $P(\text{freshman or someone in favor})$
- c) $P(\text{Senior given that the person is against})$
- d) $P(\text{someone who is for the idea given that a Sophomore is picked})$

12.) A florist has a large bucket of flowers that contain 10 white flowers, 10 pink, 10 red and 10 purple. Three flowers are randomly selected from the bucket. Find the probability that all 3 flowers are purple.

13.) A tree farm has an experimental area where 4 trees are planted. If the probability of any one of these trees surviving a Texas summer is 60%, what is the probability that all of them survive?

14.) A man is trying to decide whether to invest in a business. The business owners claim that there is a 60% chance of the investment returning \$3500. There is a 40% chance the man will lose \$1000. What is the expected value of this investment's return?

15.) The histogram below represents the number of television sets per household for a sample of U.S. households. How many households in the sample have more than 2 televisions?



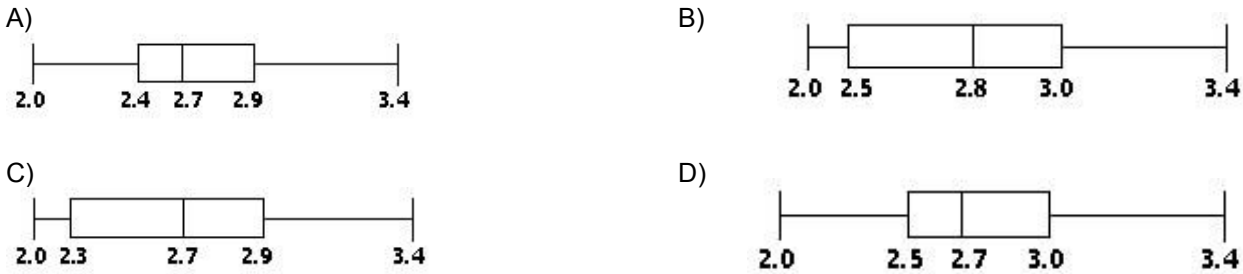
16.) A sample of mid-term test scores is given below:

50 90 73 80 68 90 90 80

- Find the mean, median and mode of this sample of mid-term scores.
- Find the standard deviation of this sample.
- Find the z-score for a mid-term score of 73.
- Find the range of this sample.

17.) The weights (in ounces) of 27 tomatoes are shown below. Construct a boxplot for the data set.

2.0 2.1 2.2 2.2 2.4 2.4 2.5 2.5 2.5
 2.6 2.6 2.7 2.7 2.7 2.7 2.8 2.8 2.8
 2.9 2.9 3.0 3.0 3.0 3.1 3.1 3.2 3.4



18.) In a maternity ward of a hospital, weights of newborns are normally distributed with a mean of 120 oz and a standard deviation of 21 oz.

- If a newborn is selected at random, what is the probability that the infant weighs less than 79 oz?
- What percentage of newborns weigh between 100 and 128 oz?

19.) True or false? If a child's weight is at the 80th percentile for his age, it means that 80% of children his age weigh more than he does.

20.) For the function $f(x) = \sqrt{3x - 5}$, state the domain _____. Find $f(5) =$ _____

21.) For the function $f(x) = 2x^2 + x + 10$, state the domain _____. Find $f(-3) =$ _____

22.) For the function $f(x) = \frac{2}{x - 2}$, state the domain _____. Find $f(-6) =$ _____

23.) A company produces a certain toy and finds that the cost of producing x toys is given by the function $C(x) = 1.50x + 7500$. The revenue from selling x toys is given by the function $R(x) = 6.50x$. Find the number of toys that must be produced to break even.

24.) The cost in millions of dollars for a company to manufacture x thousand automobiles is given by the function $C(x) = 3x^2 - 12x + 28$. Find the number of automobiles that must be produced to minimize the cost.

25.) $P(x) = -x^2 + 90x - 300$ is a profit function where x is the number of items sold, and $P(x)$ is the profit from that sale. Find the maximum profit and the number of items that must be sold to reach that profit.

26.) The number of termites in a house is growing according to the function $P(t) = 1600e^t$, where t is the number of months since the termites first entered the house.

- a.) Find the number of termites that are in the house after 4 months. Round your answer to the nearest whole number.
 b.) After how many months will the termite population reach 503,000 ? Round to 1 decimal place.

27.) Change the exponential expression to an equivalent expression involving a logarithm. $5^{-3} = \frac{1}{125}$

28.) Write in exponential form. $\log_4 16 = 2$

29.) A newlywed couple bought a washer and dryer for \$1050. They paid \$105 down and then paid 12 monthly payments of \$83.96.

- a.) Find the finance charge on this loan.
 b.) Determine the APR of the loan to the nearest one-half of a percent.

30.) Leo and Julie decide to buy new living room furniture worth \$10,000. They make a down payment of \$1000. They plan on paying off the loan in 24 monthly payments. Find the amount of the monthly payment at 11% add-on interest.

31.) Suppose a couple obtains the following mortgage loan for a home.

Amount of loan: \$397,000
 Interest rate: 12%
 Term of loan: 30 years

Find the principal and interest payment for this mortgage. (Finance app on calculator)

32.) Lindsey is amortizing a student loan of \$14,350 over 10 years by making monthly payments. The interest rate is 3%. The loan payment amount is \$138.56. The first line of her amortization schedule is shown below. Complete the next 2 lines of the schedule which represents her 2nd and 3rd payments.

Payment	Payment Amount	Amount to Interest	Amount to Principal	Unpaid Principal Balance
0	--	--	--	\$14,350.00
1	\$138.56	\$35.88	\$102.68	\$14247.32
2				
3				

33.) Bill makes a \$216.58 per month payment for 2 years to pay off a \$4600 loan.

- a.) What was the total amount that Bill repaid for this loan ? _____
 b.) What was the amount of interest Bill paid on the loan? _____

34.) You invest \$925 at 6.5 % interest compounded daily for 7 years. What amount do you have at the end of the 7 years?

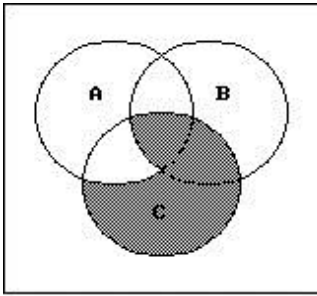
Answers:

1.) (A)

2.) (D)

3.) (D)

4.)



5.) 15

6.) 8

7.) a) 32/45 b) 8/13 c) 2/22

8) prob = 1/200 odds against = 199 to 1 9.) .0103

10.) .166

11.) a) 55/1000 b) 527/1000 c) 102/395 d) 137/258

12.) 0.012

13.) 0.1296

14.) \$1700

15.) 30 households

16.) a) mean = 77.6 Median = 80 mode = 90 b) 13.9 c) -0.33 d) 40

17.) (D)

18.) a) .0254 b) .4779

19.) False

20.) Domain: $x \geq 5/3$ $f(5) = \sqrt{10}$

21.) Domain: $(-\infty, \infty)$ $f(-3) = 25$

22.) Domain: $x \neq 2$ $f(-6) = -1/4$

23.) 1500 toys

24.) $x = 2$, so 2000 automobiles

25.) nbr of items = 45 max profit = \$1725 26.) a) 87,357 termites b) 5.8 months

27.) $\log_5 \frac{1}{125} = -3$

28.) $4^2 = 16$

29.) a) finance charge = \$62.52

b) $h = 6.62$ APR = 12%

30.) \$457.50

31.) \$4083.59

32.)

Payment	Payment Amount	Amount to Interest	Amount to Principal	Unpaid Principal Balance
0	--	--	--	\$14,350.00
1	\$138.56	\$35.88	\$102.68	\$14247.32
2	\$138.56	\$35.62	\$102.94	\$14144.38
3	\$138.56	\$35.36	\$103.20	\$14041.18

33.) a) \$5197.92

b) \$597.92

34.) \$1457.90