<u>**Unit 1: Analyzing Numerical Data**</u>

1. Given that an average of 18 people can fit inside a square measuring 5 feet by 5 feet, estimate the size of a crowd that is 10 feet deep on both sides of the street standing along a 1-mile section of a parade route. (1 mile = 5,280 ft)

2. Phone numbers in France are in the format: AB-CDDD-XXXX

A can be any number 2-9.   B can be any number 1-9.   C can be any number 3-9

D can be any number 0-9.   X can be any number 0-9.   How many numbers can the French have?

3. You go to Best Buy to get a new TV that has large screen area. Your options are a Sony 40'' with an aspect ratio of 16:9, and a Samsung 50'' with an aspect ratio of 4:3. Round all answers to the nearest inch.

Sony	**Samsung**

a.) Draw a diagram.   a.) Draw a diagram.

b.) Find the width and the length.   b.) Find the width and length.

c.) Find the screen area.   c.) Find the screen area

4. Look at the two grading systems below for a math class at Howard High School and Westover High School.

Howard High School Math	Westover High School Math
Test Average-50%	Test Average-60%
Final Exam Grade-20%	Final Exam Grade-15%
Homework-15%	Homework-15%
Class Participation-15%	Class Participation-10%

a) Find the overall average with the following grades:

Test Grades on 4 tests = 80, 0, 82, 88

Final Exam Grade = 84

Homework = 90

Class Participation = 95

Howard High School

Westover High School

b) Suppose you want to find out how good you have to do on the final exam to make a 90 at each school. Your averages are:

Test Grades on 4 tests = 85

Homework = 90

Class Participation = 95

Howard High School

Westover High School

5. Barry Bonds broke Ruth's record in 2001. Calculate Bonds' slugging average in 2001 based on his stats. Round your final answer to the nearest hundredths place.

Singles: 49, Doubles: 32, Triples: 2, Homeruns: 73, At-Bats: 476

$$SLG = \frac{(1 \cdot S) + (2 \cdot D) + (3 \cdot T) + (4 \cdot HR)}{AB}$$

6. In Johnny Unitas' NFL career, he has completed 2,830 passes in 5,186 attempts for a total of 40,239 yards. He has thrown 290 touchdowns and 253 interceptions. Find Unitas' career quarterback rating using the formula below. Round all answers to the nearest tenths place.

$$QR = \frac{25 \ + \ 10(\%COMP) \ + \ 40(\%TD) \ - \ 50(\%INT) \ + \ 50(YD)}{12}$$

Percent of total completions (%COMP) = _____

Percent of total touchdowns (%TD) = _____

Percent of interceptions per attempt (%INT) = _____

Average yards gained per attempt (YD) = _____

Quarterback rating: _____

7. Find the check digit that would make the UPC valid.
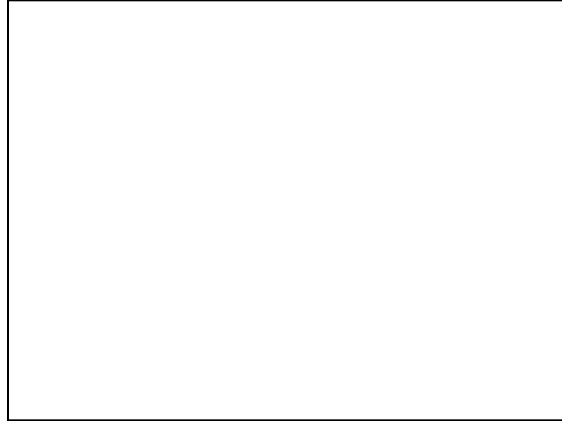
3-61324-39012- **d**

8. Find the check digit that will make the credit card valid.

6900 2472 0428 222**d**

Unit 2: Probability

9. Construct a Venn diagram using the following information:

26 college freshman were interviewed
16 take English
17 take Math
10 take both English and Math
3 take neither

For Prom, Roy's Restaurant is offering a very special menu. For $29.95, you get to choose an appetizer, an entrée, and a dessert. The managers have determined the percentage that teenagers will order each item. These percentages are listed next to the item.

** Roy's Restaurant ** $29.95 **		
Appetizer:	**Entrée:**	**Dessert:**
Shrimp Cocktail – 65%	Cheese Crusted Salmon – 5%	Ginger Cheesecake – 30%
Squash Salad – 10%	Tiger Shrimp – 20%	Hot Chocolate Soufflé – 70%
Mushroom Soup – 25%	Parmesan Chicken – 40%	
	Short Ribs – 35%	

10. What is the probability of choosing shrimp cocktail and ginger cheesecake, with any entrée choice?

11. What is the probability of choosing squash salad or mushroom soup, tiger shrimp, and any dessert?

12. The state championships for high school baseball are coming up. Officials estimate that 300 people will attend if it does not rain and 150 will if it does rain. The weather forecast indicates that there is a 30% chance it will rain on the day of the final game, and a 70% chance that it will not rain. Find the expected number of people who will come to the final game.

Unit 3: Statistical Studies

The table below displays the names of 22 Presidents and the age that they were inaugurated.

Age At Inauguration

| President	Age	President	Age	President	Age	President	Age
Theodore Roosevelt	42	Chester A Arthur	51	Herbert Hoover	54	Harry S Truman	60
Grover Cleveland	47	Franklin D Roosevelt	51	Benjamin Harrison	55	Dwight D Eisenhower	62
Barack Obama	47	John Tyler	51	Warren G Harding	55	James Buchanan	65
Franklin Pierce	48	Jimmy Carter	52	Lyndon B Johnson	55	William H Harrison	68
James K Polk	49	George W Bush	54	Woodrow Wilson	56	Ronald Reagan	69
James A Garfield	49	William McKinley	54				

13. Construct and label a box-and-whisker-plot.

14. Construct a stem-and-leaf plot.

15. What is the mode?

16. What is the mean?

17. The histogram represents the test scores of students in a math class. Write at least 3 facts about the test scores.
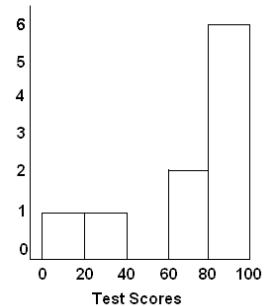
The psychology department at a local college is studying the effects of sleep deprivation on student test performance of the 1099 students at the college. Every 7th student enrolled at the college according to an ordered list of student ID numbers was chosen for the study. There were a total of 157 students participating in the study. All the students took an exam at 8am after a good night's sleep to get a baseline score for each student. The students then stayed up all night before an 8 am exam (a variation of the same exam) one week later. Their grades on the exam were recorded and compared to the score they received after good night's sleep to see if there was any effect. The effect was recorded as the change in the number of points (+ or -) on the second exam. With 73% of the students, the score was at least 10 points lower.

18. The number 73% represents what type of information?
   a) population
   b) sample
   c) parameter
   d) statistic

19. What method of data collection was used in the study?
   a) experiment
   b) simulation
   c) census
   d) sampling

20. What type of sample was used in the study?
   a) random
   b) stratified
   c) cluster
   d) systematic

21. Twist Ice Cream conducted a survey to gauge the effectiveness of their new flavor. The researchers estimated from the survey that between 48% and 56% of the target population remember the ads. What was the margin of error for this research?

22. Researchers report that the average teen (age 16 - 18) sends 2015 $\pm$ 209 text messages per month. What does this mean?

23. Sammy wants to buy a new pair of shoes. While at the shoe store, he tries on a new style of cowboy boot. He knows that he wears a size 10.5 but finds that this new style of boot is too small in a 10.5. He wonders if this particular style of boot typically runs smaller than a 10.5. Which of the following would be an appropriate set of hypotheses to answer Sammy's question about this style of boot?

    a) H_o: The true mean size of the new style of boot size is 10.5

             H_a: The true mean size of the new style of boot size is not 10.5

    b) H_o: The true mean size of the new style of boot size is 10.5 or higher

             H_a: The true mean size of the new style of boot size is less than 10.5

    c) H_o: The true mean size of the new style of boot size is less than 10.5

             H_a: The true mean size of the new style of boot size is 10.5 or higher

    d) H_o: The true mean size of the new style of boot size is not 10.5

             H_a: The true mean size of the new style of boot size is 10.

Unit 6: Decision Making in Finance

24. Chase is offered a permanent position that pays $40,000 a year. The same week, Chase if offered a job that pays $20.50 an hour (40 hours a week). Based on their gross monthly income, which would you recommend to Chase and why?

25. Kafi has a job that pays $44,000 per year, what would be the estimated monthly net income using the withholding figures? (15% federal income tax, 6.2% SSN, 1.45% Medicare)

26. Find the **SIMPLE INTEREST EARNED** for the following:

Principal: $4,000
Annual Rate: 2.8%
Time: 3 years

27. Antonio received $250 for his birthday this year. He wants to put the money in an account to accrue interest for 5 years. First National Bank will give him 2% compounded monthly. How much money will he have at the end of 5 years?

$$Compound\ Interest\ Formula: A = P\left(1+\frac{r}{n}\right)^{nt}$$

28. If you invest $25,000 at 7% compounded continuously, how much will you have in 10 years?

$$A = Pe^{rt}$$

29. Ten years ago, Josh put money into an account paying 5.5% compounded continuously. If the account has $12,000 now, how much money did he deposit?

30. Daniel's Print Shop purchased a new printer for $35,000. Each year it depreciates at a rate of 5%. What will its approximate value be at the end of the 4th year?