

Multiple Choice - Show your work for partial credit. (50 pts)

\_\_\_\_\_ 1. Consider the conditional proposition, "If  $p$ , then  $q$ ". What is the inverse of this statement?

- a. "If  $q$ , then  $p$ "  
b. "If not  $p$ , then not  $q$ "  
c. "If not  $q$ , then not  $p$ "  
d. None of the above

\_\_\_\_\_ 2. If 1 fathom = 6 ft, how many  $\text{ft}^2$  are in 1 fathom<sup>2</sup> ?

- a.  $6 \text{ ft}^2$                       b.  $12 \text{ ft}^2$                       c.  $36 \text{ ft}^2$                       d.  $27 \text{ ft}^2$

\_\_\_\_\_ 3. 1 inch is equal to :

- a. 25.4 mm                      b. 2.54 cm                      c. .0254 m                      d. All of the above

\_\_\_\_\_ 4. To convert from celsius to fahrenheit we use the following formula  $F = \frac{9}{5}C + 32$ . What is  $50^\circ F$  in celsius?

- a.  $122^\circ C$                       b.  $10^\circ C$                       c.  $50^\circ C$                       d.  $18^\circ C$

\_\_\_\_\_ 5. Suppose that the population of some town grew from 10,000 people in 1950 to 15,000 people in 2000. What is the absolute change in the number of people over the 50 year period?

- a. 5,000 people                      b. 50% increase                      c. 100 people                      d. 15,000 people

\_\_\_\_\_ 6. For the same scenario as the previous problem, what is the relative change in the number of people?

- a. 33.3% increase      b. 50% increase      c. 33.3% decrease      d. 5,000 people

\_\_\_\_\_ 7.  $A = Pe^{APR \cdot y}$  is the equation for what savings situation?

- a. One time deposit, compounded annually.  
b. Monthly deposits, compounded monthly.  
c. One time deposit, compounded continuously.  
d. None of the above.

\_\_\_\_\_ 8. Suppose that you make a one time deposit of 1,000 dollars into an account that pays 8% simple interest annually. What is your accumulated balance after 10 years?

- a. \$1,080                      b. \$1,000                      c. \$800                      d. \$1,800

\_\_\_\_\_ 9. Distribution A has higher variation than distribution B. If the standard deviation of distribution A is  $SD_A$  and the standard deviation of distribution B is  $SD_B$ , what can you say about these values?

- a. Nothing                      b.  $SD_A = SD_B$                       c.  $SD_A > SD_B$                       d.  $SD_A < SD_B$

\_\_\_\_\_ 10. What is the mean of the integers from -100 to 100?

- a. 200                      b. 0                      c. -1                      d. 1

Short Answer - Show all your work. (50 pts)

1. Consider the following argument:

Premise 1: All cats are mammals.

Premise 2: I have a pet dog (which is a mammal).

Conclusion: My pet is a cat.

a. Is this argument valid?

b. Draw a venn diagram to support your assertion on the validity of this argument.

2 According to the chronicle of higher education, there are approximately 600 public 4 year institutions in the US. Assuming similar enrollment and graduation rates to CU for each college, make an order of magnitude estimate on the number of college graduates in the US in the last 10 years from a public 4 year institution. (Any reasonable estimates will be accepted)

3. Consider the following hypothetical basketball records for Team A and Team B.

	Team A		Team B	
	Wins	Losses	Wins	Losses
Home Games	15	15	4	16
Away Games	16	4	60	20

- a. Give numerical evidence that supports the claim that Team A is a better than Team B.

- b. Give numerical evidence that supports the claim that Team B is a better than Team A.

4. You can afford monthly payments of \$1500. If current mortgage rates are 8% for a fixed 15 year loan, what loan principal can you afford? (Leave as an expression)

5. Suppose over a 7 day period during the winter in Boulder the low temperatures have been 5, 0, 5, 10, 5, 15, and 30 degrees farenheit.

a. What is the mean, median, and mode of this distribution?

b. What is the standard deviation of this distribution?

Extra Credit: What is the limit as  $n$  approaches infinity of  $(1 + \frac{\text{APR}}{n})^{ny}$ ?

$$\lim_{n \rightarrow \infty} (1 + \frac{\text{APR}}{n})^{ny} =$$