**CSC175 Practice Assignment 1 Spring 2019 Name \_\_\_\_\_Donald Tvedt\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   
Directions:** Download this file and save as lastnamePracticeAssignment1SP19. Type all solutions on this document. Use equation editor when necessary. Upload Word document to Blackboard by **Saturday at 11:59 AM.  
Please color, highlight, and/or bold your work to differentiate it from the original questions. Thank you.**  
Directions for equation editor: Choose INSERT tab, Click Equation (far right), and explore all of your options! ☺

1) Let the universal set be   
a) List the elements of . **A = {0,2,4,6,8,10,12,14,16,18}**  
b) List the elements of . **B = {0,3,6,9,12,15,18}**  
c) List the elements of **. = {1,3,5,7,9,11,13,15,17}**  
d) List the elements of . **= {0,6,12,18}**  
e) Write in set-builder notation.  **=**   
f) List the elements of . **= {0,2,3,4,6,8,9,10,12,14,15,16,18}**  **= {1,5,7,11,13,17}**  
g) List the elements of . **= {1,3,5,7,9,11,13,15,17}**  **={1,2,4,5,7,8,10,11,13,14,16,17}**  = **{1,5,7,11,13,17}**  
h) List the elements of . **= {2,4,8,10,14,16}**  
i) List the elements of . = **{2,3,4,8,9,10,14,15,16}**  
j) True or False: . Why? **False, because 3,9,15 are not elements of A**  
k) True or False: . Why? **True, because 9, and 15 are elements of B there it is a subset**  
l) True or False: . Why? **False, 🡨 a guess. Here is my reasoning A has elements so empty doesn’t belong to A. After looking at power sets maybe this is True? Bleh spending too much time on this.**  
m) True or False: . Why? **True, the intersection of A and B would only include elements that belong to both so A intersect B is a subset of B**  
n) Find . Why? **Cardinality of B is the amount of elements of B = 7**  
o) List the elements of **D = {0,24,6}**

2) At Sunshine Academy, there are 103 seniors. In an activities survey, they were asked what activities they participated in during their high school experience. Here are the results: 40 in athletics, 34 in music, 22 in theatre, 11 in music and theatre, 14 in music and athletics, 10 in theatre and athletics, and 3 were in all three activities. Create a Venn Diagram (create your own or edit the attachment in Blackboard using Paint) and answer the following questions.

**Preparing data for VENN diagram**

**U = 103, A = 40, M = 34, T = 22**

**A+M+T = 3 VENN**

**A+T = 10 – 3 = 7 VENN**

**A+M = 14 – 3 = 11 VENN**

**M+T = 11 – 3 = 8 VENN**

**A = 40 – 3 – 7 – 11 = 19 VENN**

**M = 34 – 3 – 11 – 8 = 12 VENN**

**T = 22 – 3 – 7 – 8 = 4 VENN**a) How many seniors participated only in theatre? **22 – 3 – 7 – 8 = 4 seniors**  
b) How many seniors participated in athletics but not music? **19 + 7 = 26 seniors**  
c) How many seniors participated in theatre and music but not athletics?  **12 + 8 + 4 = 24 seniors**  
d) How many seniors participated in none of the activities? **103 – 19 – 11 – 7 – 3 – 12 – 8 – 4 = 39 seniors**

3) Let and .  
a) List **= {as, at, an, is, it, in}**b) Find = **cardinality = 6**  
c) Is ? Why or why not? **No, VXC only contains 2 letter combinations.**  
d) Find the power set of . (i.e. ) = **{**, **{a}, {i}, {a, i}}**  
e) Find = **cardinality of C X C = {ss, st, sn, ts, tt, tn, ns, nt, nn} = 9**

4) Make the following conversions. Show work for credit.  
a) Convert the hexadecimal number 1A7D to an integer. **16^3=4096 16^2=256 16^1=16 16^0=1**

**1x4096 + 10x256 + 7x16+ 13x1 = 6781 decimal**  
b) Convert the binary number 10110110 to an integer. **2^7=128 2^6=64 2^5=32 2^4=16 2^3=8 2^2=4 2^1=2 2^0=1**

**1x128 + 0 + 1x32 + 1x16 + 0 +1x4 + 1x2 + 0 = 182**  
c) Convert 587 to hexadecimal.

**List = Dec = hex**

**587 = 16 x 36 + 11 list = 11 = B**

**36 = 16 x 2 + 4 list = 4 = 4B**

**2 = 16 x 0 + 2 list = 2 = 24B 🡨 answer**

d) Use the algorithm (Ex 1.4.1) on page 24 of the textbook to find the binary representation of 587. (Show each step of the algorithm)

K = 2 x q + r 🡪 add r to the list

**587 = 2 x 293 + 1 List = 1**

**293 = 2 x 146 + 1 list = 11**

**146 = 2 x 73 + 0 list = 011**

**73 = 2 x 36 + 1 list = 1011**

**36 = 2 x 18 + 0 list = 01011**

**18 = 2 x 9 + 0 list = 001011**

**9 = 2 x 4 + 1 list = 1001011**

**4 = 2 x 2 + 0 list = 01001011**

**2 = 2 x 1 + 0 list = 001001011**

**1 = 2 x 0 + 1 list = 1001001011 🡨 answer**

5) Calculate each expression (show work) Hint: Review the examples in the PowerPoint before you attempt these **There is no powerpoint slide for me to look at, there is no recording of the class for me to look at. Ughh.**  
a) **= (0+2) + (1+2) + (2+2) + (3+2) = 14**  
b) for

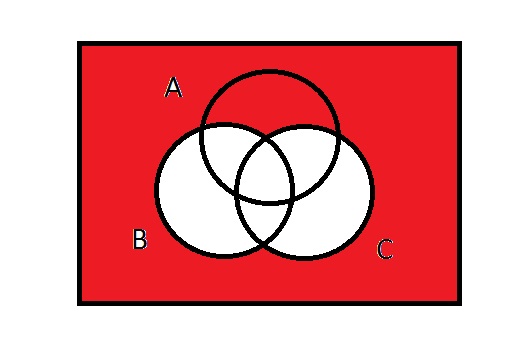
**n = 0 = (3^0 - 2) = -1**

**n = 1 = (3^0 - 2) + (3^1 - 2) = 0**

**n = 2 = (3^0 - 2) + (3^1 - 2) + (3^2 - 2) = 7**

c)  **= {1 – 1 < x <= 1} U {2 – 1 < x <= 2} U {3-1 < x <= 3} U {4-1 < x <= 4} = { |0 < x <= 4}**d) **= {1 – 1 < x <= 1} n {2 – 1 < x <= 2} n{3-1 < x <= 3} n {4-1 < x <= 4} = These don’t intersect = Empty set**   
e) **= (3x2 -1) x (3x3 -1) x (3x4 -1) = 6 x 8 x 11 = 528**

6) Edit the attachment in Blackboard using Paint to shade each region given in set notation:

a) b)   
  
  
7) Given the figure to the right, express the area in set notation.

**= 🡨 little c is compliment**