MATH 1100 Spring 2024 Mike McCraith
Exam 1

DO NOT TURN THIS PAGE UNTIL YOU ARE INSTRUCTED TO DO SO

- **Write your name below on the space provided.**
- **This test has a total of 5 pages.**
- **Work the problem in the space provided. If you need more space, write on the back of the test.**
- **To insure maximum credit, show your work. In general, full credit will not be given for unsupported answers.**
- **Look only at your test. Don't give me the impression that you are cheating.**
- **Be sure to write neatly. If I cannot read what was written, do not expect the problem to be graded. A pencil must be used on all tests. Otherwise, the test will not be graded.**
- **If you finish early, go over the test again.**

Good luck!

Number	Maximum	Score
1	6	
2	12	
3	12	
4	5	
5	3	
6	6	
7	3	
8	3	
9	4	
10	9	
11	9	
12	16	
13	12	
Total	100	

Name _____

Circle Final Answers

1)) (3 points each) Label the following as either inductive or deductive reasoning and explain why:

a) My aunt always only calls me on Sunday. Today is Friday. My aunt will not call me today.

b) The last four times I went grocery shopping, it was busy. The next time I go, it will also be busy.

2) (3 points each In the following number patterns, write the most likely next number/equation:

a) $-2, 8, -32, 128,$ _____

b) $-7, -2, 3, 8$ _____

c) 12, 20, 30, 42, ____

d)
$$1 = 1^2$$
$$1 + 3 = 2^2$$
$$1 + 3 + 5 = 3^2$$
$$\underline{\qquad\qquad\qquad}$$

3) (4 points each) Find the following sums:

a) $1 + 3 + 5 + \ldots + 501$

b) $1 + 2 + 3 + 4 + \ldots + 630$

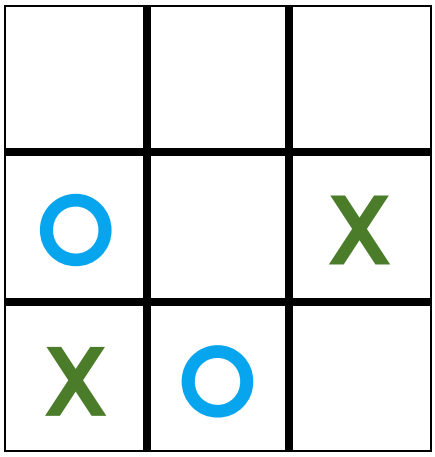
c) $400 + 401 + 402 + \ldots + 630$

4) (5 points) Find the sum $a + b + c + d$ where:

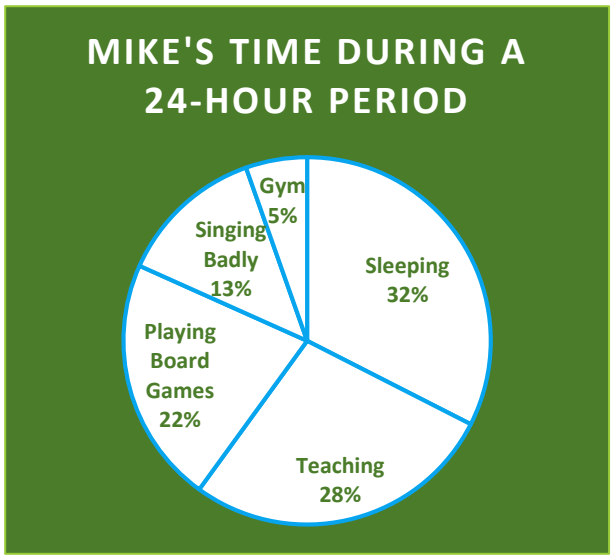
$$\begin{array}{cccc} 8 & c & 6 & 2 \\ -\ d & 2 & 1 & a \\ \hline 5 & 6 & b & 7 \end{array}$$

$a =$ _____
$b =$ _____
$c =$ _____
$d =$ _____
SUM: _____

5) (3 points) Where should the *X*'s move next to guarantee victory?



6) (3 points each) Using the chart below, answer the following questions. Round answers to one decimal place:



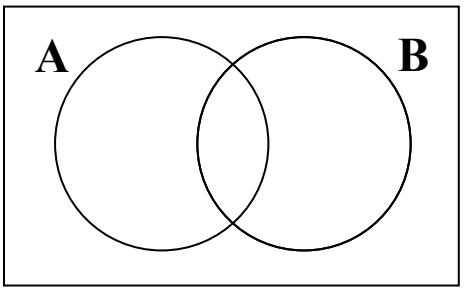
a) How many hours does Mike sleep during the 24-hour period?

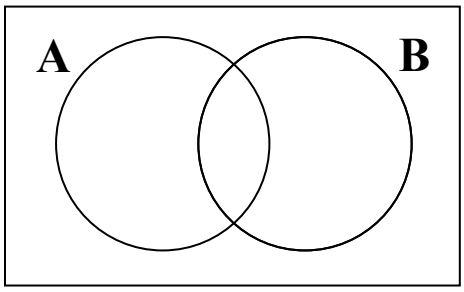
b) How many more hours does Mike play board games than he does going to the gym?

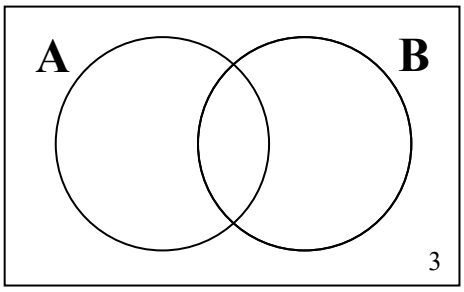
7) (3 points) Write in set-builder notation: {tulip, rose, lily, gerbera, …}

8) (3 points) Write in roster notation: $\{x \mid x \text{ is a pizza topping}\}$

9) (4 points) Shade in the Venn Diagram representation for $A \cup B'$. Be sure to mark which one is the final answer:







For numbers 10 – 12, use the following:

$U = \{1, 2, 3, 4, \ldots, 10\}$ $A = \{2, 4, 6\}$ $B = \{x \mid x \text{ is a multiple of } 3\}$

10) (3 points each) Use the symbol $\in$ or $\notin$ below:

a) 5 _____ A b) 9 _____ A' c) 27 _____ B

11) (3 points each) Use the symbol $\subseteq$ or $\not\subseteq$ below:

a) $\{3, 6\}$ _____ B b) $\emptyset$ _____ B c) $\{2, 6\}$ _____ $A \cap B$

12) (4 points each) List the elements of the following sets:

a) $A \cup B$: b) $A' \cap B'$:

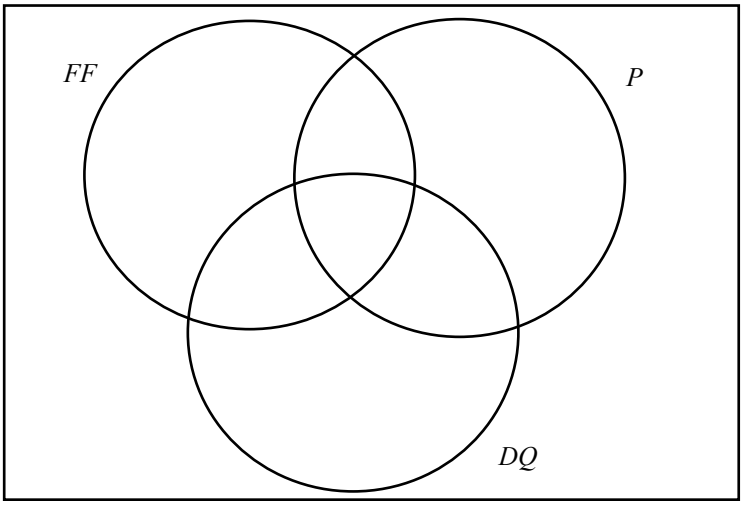
c) $(A \cup B)'$: d) The subsets of set A:

13) 120 customers at a video game store were surveyed on which role-playing series they've played before. The results are below:

44 played *Final Fantasy* 47 played *Persona* 53 played *Dragon Quest*
37 played *Final Fantasy* and *Persona* 28 played *Final Fantasy* and *Dragon Quest*
25 played *Persona* and *Persona* 22 played all three

Given this information, find the following. **BE SURE SHOW THE NUMBERS YOU ARE ADDING TO GET YOUR ANSWER:**

a) (6 points) The corresponding Venn Diagram and label circles.



b) (2 points) How many people played exactly two series?

c) (2 points) How many played *Final Fantasy* and *Persona* but not *Dragon Quest*?

d) (2 points) How many played at most one of these series?

Sum Formulas

Odds

$$1+3+5+7+\ldots+(2n-1)=n^2$$

Evens and Odds

$$1+2+3+4+\ldots+n=\frac{n(n+1)}{2}$$