

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	10	
4	4	
5	4	
6	6	
7	2	
8	2	
9	4	
10	9	
11	9	
12	16	
13	4	
14	12	
Total	100	

Name _____

Circle Final Answers

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

a) I get paid every other Friday. I was paid last Friday. I will not be paid this Friday.

b) The last two Fridays I was paid. Therefore, I will be paid this Friday.

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

a) $-10, -6, -2, 2, 6, 10, \underline{\hspace{2cm}}$

b) $81, 27, 9, 3, \underline{\hspace{2cm}}$

c) $2, 7, 15, 26, 40, \underline{\hspace{2cm}}$

d) $1^2 + 2 = 2^2 - 1$

$$2^2 + 3 = 3^2 - 2$$

$$3^2 + 4 = 4^2 - 3$$

$\underline{\hspace{10cm}}$

3) (3 points parts *a* and *b*; 4 points part *c*) Find the following sums:

a) $1+3+5+7+\dots+1,111$

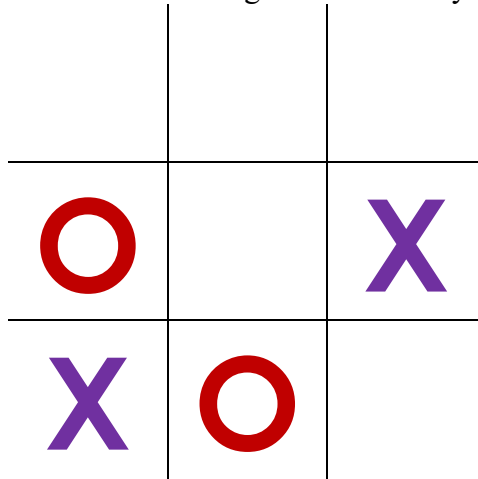
b) $1+2+3+4+\dots+412$

c) $123+124+125+\dots+412$

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

$$\begin{array}{r}
 5 \quad c \quad 8 \quad 3 \\
 - \quad d \quad 5 \quad 2 \quad a \\
 \hline
 2 \quad 6 \quad b \quad 6
 \end{array}$$

5) (4 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:



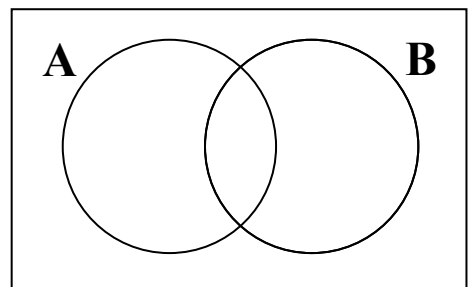
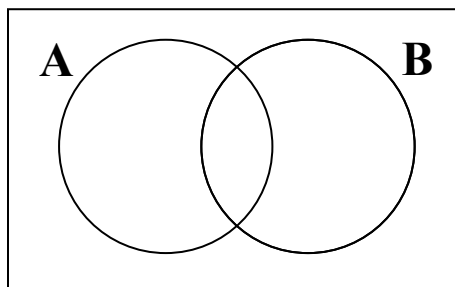
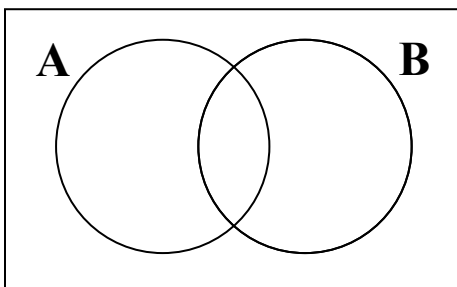
a) How many hours does Mike sleep during the 24-hour period?

b) How many more hours does Mike play with this dogs than he does think about video games during the 24-hour period?

7) (2 points) Write in set-builder notation: {France, Germany, Italy, Spain,...}:

8) (2 points) Write in roster notation: {x | x is an animal}

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:

$$\mathcal{U} = \{a, b, c, d, e, f, g, h, i, j\}, A = \{a, b, c\} \quad B = \{x \mid x \text{ is a vowel}\}$$

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

a) a _____ A

b) d _____ A'

c) u _____ B

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

a) $\{a, e\}$ _____ B

b) $\{d, e\}$ _____ B'

c) \emptyset _____ A

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

a) $A \cap B$:

b) $A' \cup B'$:

c) $(A \cap B)'$:

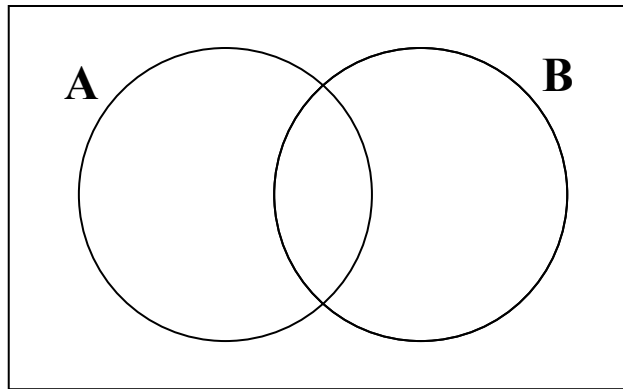
d) The subsets of set A :

13) (4 points) Fill in the Venn Diagram with the appropriate numbers in the correct locations:

$$U = \{1, 2, 3, \dots, 10\}$$

$$A = \{x \mid x \text{ is prime}\}$$

$$B = \{2, 5, 9, 10\}$$

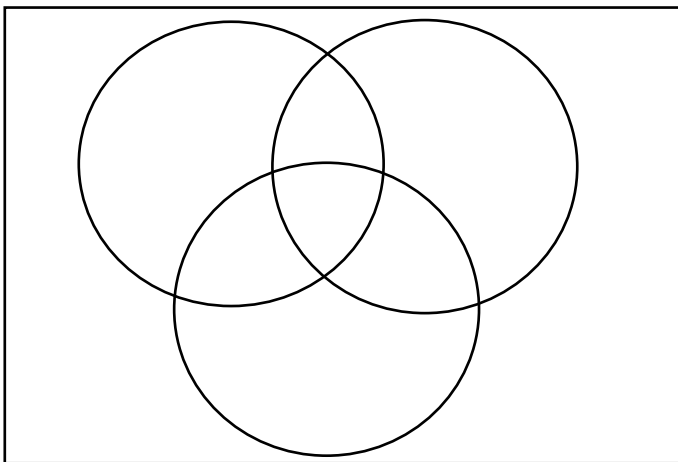


14) 100 people were surveyed on what addition(s) they pretend to like on Valentine's Day. The results are below:

- 46 people like Conversation Hearts
- 40 like Dark Chocolate
- 30 like Stuffed Toys
- 16 like Conversation Hearts and Dark Chocolate
- 15 like Conversation Hearts and Stuffed Toys
- 8 like Dark Chocolate and Stuffed Toys
- 6 like all three

Given this information, find...

- a) (6 points) The corresponding Venn Diagram. Be sure to label **EVERYTHING AND SHOW THE NUMBERS YOU ARE ADDING TO GET YOUR ANSWER:**
- b) (2 points) How many people like either Dark Chocolate or Stuffed Toys but not Conversation Hearts?



- c) (2 points) How many people only like Conversation Hearts?
- d) (2 points) How many people do not like Dark Chocolate nor Stuffed Toys?

Sum Formulas

Odds

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

Evens and Odds

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