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) I go grocery shopping on Saturdays. Today is Thursday. Thus, I will not go grocery shopping.

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) $-12, -6, 0, 6, 12,$ _____

b) $8, 4, 2, 1,$ _____

c) $2, 7, 15, 26, 40,$ ____

d)
$$1^2 + 2 = 2^2 - 1$$
$$2^2 + 3 = 3^2 - 2$$
$$3^2 + 4 = 4^2 - 3$$

_____

3) (4 points each) Find the following sums:
a) $1 + 3 + 5 + 7 + ... + 123$

b) $1 + 2 + 3 + 4 + ... + 156$

c) $70 + 71 + 72 + ... + 156$

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

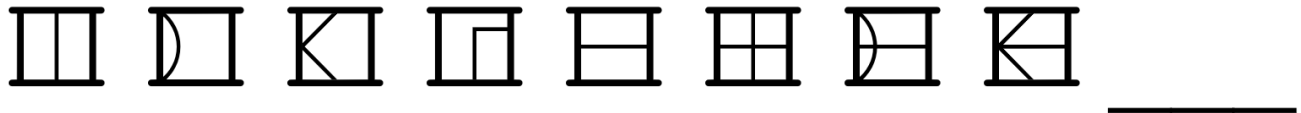$$\begin{array}{r} 7\ \ c\ \ 7\ \ 4 \\ -\ \ d\ \ 5\ \ 2\ \ a \\ \hline 2\ \ 6\ \ b\ \ 6 \end{array}$$

$a =$ _____

$b =$ _____

$c =$ _____

$d =$ _____

SUM: _____

5) (3 points) Draw the next symbol in the sequence:

____

6) Consider the chart below. If there were 2,100,000 phones sold in Quarter 4 of last year, how many more phones were sold by Talk to Me than by Connect2U?

Manufacturer	Market Share in Q4
Talk to Me	36%
Tin Can and String	27%
Connect2U	21%
Pineapple	16%

7) (3 points) Write in set-builder notation: $\{\text{France, Germany, Italy, Spain,...}\}$:

8) (3 points) Write in roster notation: $\{x \mid x \text{ is an animal}\}$

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

3
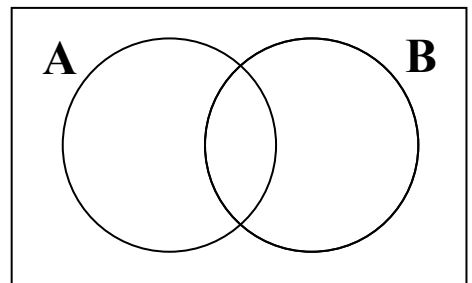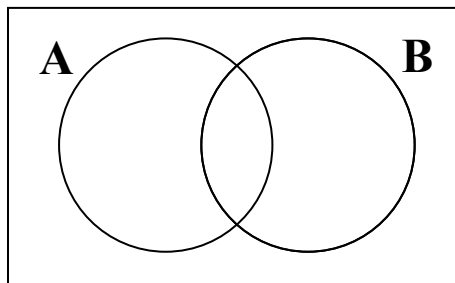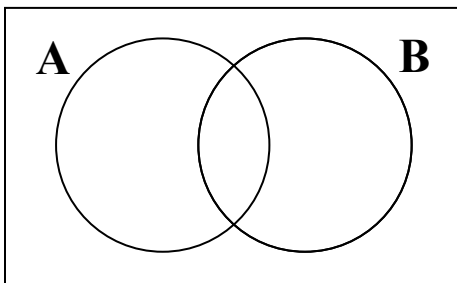
For numbers 10 – 12, use the following:
$$\mathcal{U} = \{a, b, c, d, e, f, g, h, i, j\}, \quad A = \{d, e, f\} \quad B = \{x \mid x \text{ is a vowel}\}$$

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

a) a _____ A

b) e _____ A'

c) u _____ B

11) (3 points each) Use the symbol $\subseteq$ or $\nsubseteq$ below:

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

b) $\{h, i\}$ _____ A'

c) $\varnothing$ _____ 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) 100 people were surveyed on what addition(s) they like on their burgers. The results are below:

46 people like Bacon	40 like Lettuce	30 like Tomato
16 like Bacon and Lettuce	15 like Bacon and Tomato	8 like Lettuce and Tomato
	3 like 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.
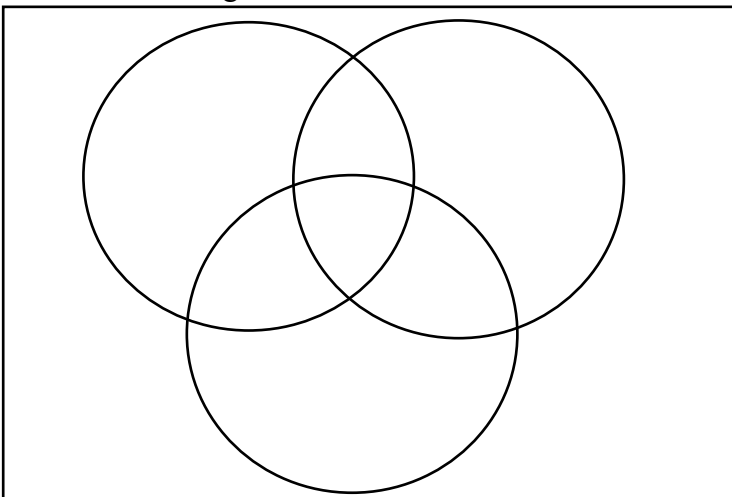
b) (2 points) How many people like either Lettuce or Tomato but not Bacon?

c) (2 points) How many people only like Bacon?

d) (2 points) How many people do not like Lettuce nor Tomato?

Sum Formulas

Odds

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

Evens and Odds

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