

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	4	
5	4	
6	3	
7	3	
8	9	
9	6	
10	16	
11	6	
12	19	
Total	100	

Name \_\_\_\_\_

**Circle Final Answers**

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

- a) The last three days, it has rained. So, I would expect that it'll also rain today.
- b) If you mix complementary colors together, you always get the color brown. Red and green are complementary colors. If I mix them, then I will get the color brown.

2) (3 points each) Determine the next most probable number or statement in the list:

- a) 2, 8, 14, 20, \_\_\_\_\_
- b) 2, -6, 18, -54, \_\_\_\_\_

- c) -3, -1, 8, 24, 47, \_\_\_\_\_

- d)  $1+3+5=3^2$   
 $1+3+5+7=4^2$   
 $1+3+5+7+9=5^2$   
\_\_\_\_\_

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

- a)  $1+3+5+7+\dots+97$
- b)  $1+2+3+4+\dots+101$

- b)  $71+72+73+74+\dots+101$

4) (4 points) Find the values of  $a$ ,  $b$ ,  $c$ , and  $d$ :

$$\begin{array}{r} a \quad 7 \quad 1 \quad 5 \\ - \quad 2 \quad 8 \quad c \quad d \\ \hline 4 \quad b \quad 2 \quad 4 \end{array}$$

$a = \underline{\hspace{2cm}}$

$b = \underline{\hspace{2cm}}$

$c = \underline{\hspace{2cm}}$

$d = \underline{\hspace{2cm}}$

5) (4 points) Today is your first day driving a city bus. When you leave downtown, you have 10 passengers. At the first stop, 5 get on and 7 get off. At the second stop, 10 get on and 3 get off. At the third stop, 2 get on and 12 get off. What is the bus driver's name?

6) (3 points) Write in set-builder notation: {Ohio, Florida, Washington, Maine...}

7) (3 points) Write in roster-notation:  $\{x \mid x \text{ is a color}\}$

**Problems 8 – 10 use the following information:**

Let  $U = \{5, 6, 7, 8, 9, 10, 11, 12\}$  and let  $A = \{x \mid x \text{ is prime}\}$  and  $B = \{x \mid x \text{ has two digits}\}$

8) (3 points each) Use  $\in$  or  $\notin$  below:

a) 12 \_\_\_\_\_  $B$

b) 11 \_\_\_\_\_  $A \cap B$

c) 3 \_\_\_\_\_  $A$

9) (3 points each) Use  $\subseteq$  or  $\not\subseteq$  below:

a)  $\{7, 9\}$  \_\_\_\_\_  $A$

b)  $\{5, 7\}$  \_\_\_\_\_  $B'$

10) (4 points each) Find the following sets...

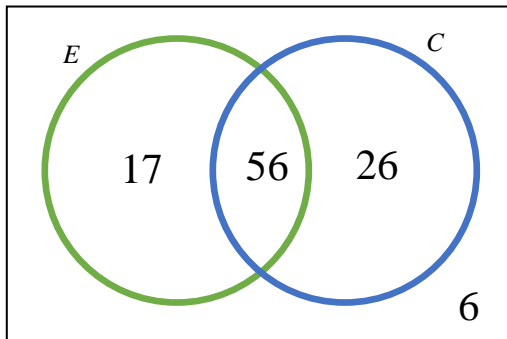
a)  $A \cup B$

b)  $(A \cup B)'$

c)  $A - B$

d) Subsets of  $B$

- 11) (6 points) 100 adults who watch British television were surveyed. The results are given in the Venn diagram below where  $E$  = Adults who watch *Eight out of Ten Cats* and  $C$  = Adults who watch *Countdown*. Interpret, in English, what each number in the Venn diagram means for this example:

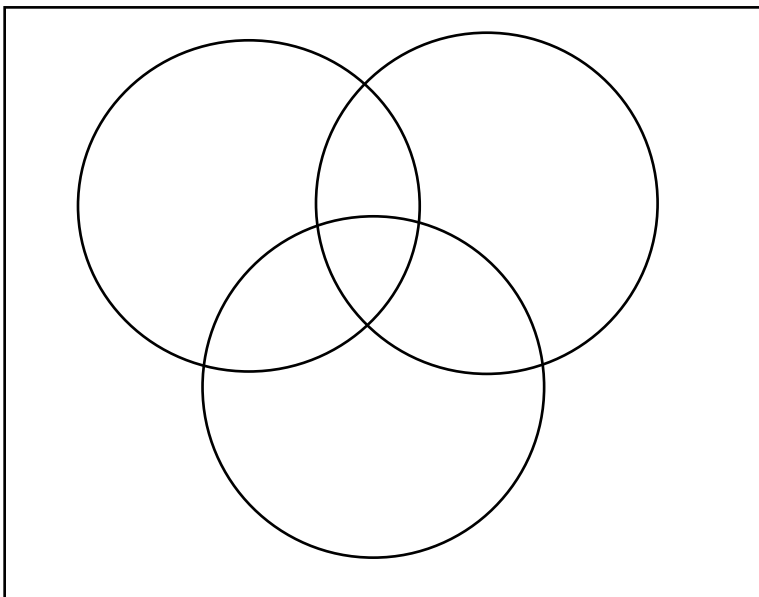


- 12) (7 points part a; 4 points else) A recent survey was conducted where 100 people were asked which of the following TV shows they watched:

33 saw *The Fix*  
 39 saw *Future Man*  
 40 saw *Schitt's Creek*  
 13 saw *The Fix* and *Future Man*  
 18 saw *The Fix* and *Schitt's Creek*  
 16 saw *Future Man* and *Schitt's Creek*  
 10 saw all three

Use the given this information to answer the following questions. **Be sure to write the numbers you are using for the sums:**

- a) Draw and label a Venn diagram:



- b) How many people watch *Schitt's Creek* or *The Fix* but not *Future Man*?

- c) How many people have not watched *The Fix*?

- d) How many people watch at least two of these shows?

# Sum Formulas

## Odds

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

## Evens and Odds

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