Name                               .

Chapter Quiz - Sets and Logical Reasoning

Part 1 Multiple Choice

**Use the following information to answer questions 1 – 3**

*A* = {1, 4, 6, 9}                     *B* = {2, 3, 4, 5}                        *C*= {2,7,8}

1.        What is the set*A* ∪ *B*?

        a)        {1,4,6,9}                        b)        {1,2,3,4,5,6,9}

        c)        {4}                                d)        {7,8}

2.        What is the set *A* ∩*B*?

        a)        {1,4,6,9}                        b)        {1,2,3,4,5,6,9}

        c)        {4}                                d)        {7,8}

3.        Which pair of sets are disjoint?

        a)        *A* and *C*                        b)        *A* and *B*

        c)        *B* and *C*        d)        none of the above

**Use the following information to answer questions 4-6**

*U* = {natural numbers less than 10} **Hint:   Zero is not a natural number**

*A* = {odd numbers less than 10}      *B* = {1,5,7}       *C* = {4,5}

4. The empty set is a subset of which of the following?

        a) *A*                                        b) *B*

c) *C*d) all of the above

5. What is the value of *n(B)*?

        a) {1,5,7}                                b) {2,3,4,6,8,9}

        c) 3                                        d) 6

6.Only one of the following statements are true.  Which one is it?

        a) *U* https://www.google.com/chart?cht=tx&chf=bg,s,FFFFFF00&chco=000000&chl=%5Csubset%7B%7D*B*b) *C* https://www.google.com/chart?cht=tx&chf=bg,s,FFFFFF00&chco=000000&chl=%5Csubset%7B%7D*B* https://www.google.com/chart?cht=tx&chf=bg,s,FFFFFF00&chco=000000&chl=%5Csubset%7B%7D *U*

c)*C* https://www.google.com/chart?cht=tx&chf=bg,s,FFFFFF00&chco=000000&chl=%5Csubset%7B%7D *A* https://www.google.com/chart?cht=tx&chf=bg,s,FFFFFF00&chco=000000&chl=%5Csubset%7B%7D *U*                        d) *B* https://www.google.com/chart?cht=tx&chf=bg,s,FFFFFF00&chco=000000&chl=%5Csubset%7B%7D*A* https://www.google.com/chart?cht=tx&chf=bg,s,FFFFFF00&chco=000000&chl=%5Csubset%7B%7D*U*

7. The set {1,2,3,7} could best be described as

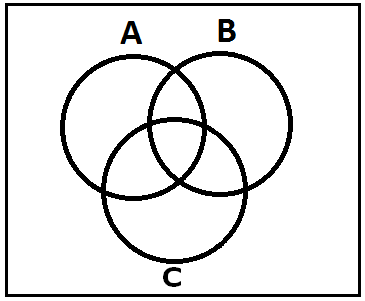
        a) *B* ∩*C* https://www.google.com/chart?cht=tx&chf=bg,s,FFFFFF00&chco=000000&chl=%27                                b)*B* ∪ *C '*

*c) B'* ∩*C*d) *B'* ∪ *C*

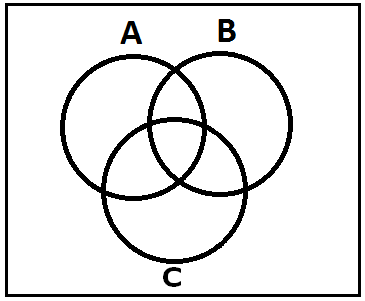
Part 2: Written Response

These next problems ask you to shade a specified area.

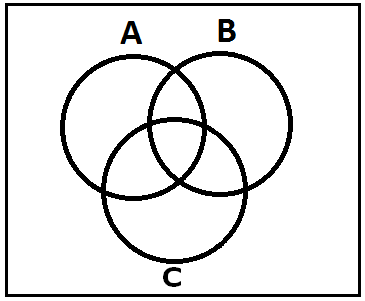
8. Shade the area that represents *A* or *B*



 9. Shade the area that represents not *A* and *B*

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10.Shade the area that represents  (*A’*’ https://www.google.com/chart?cht=tx&chf=bg,s,FFFFFF00&chco=000000&chl=%5Ccap%7B%7D*B* **)** https://www.google.com/chart?cht=tx&chf=bg,s,FFFFFF00&chco=000000&chl=%5Ccap%7B%7D*C*



11. Sarah has decided to open an ice cream shop.  She has takes a tally and finds that she

has....

- 10 flavors that contain chocolate

- 5 flavors that contain nuts

- 2 flavors that contain chocolate and nuts

- 11 flavors that do not contain chocolate or nuts

        Using a Venn diagram, determine the total number of ice cream flavors Sarah has.

12.  Using the students at STM as a universal set, give an example of the following.

        a) A subset

        b) Two sets that are disjoint

        c) An empty set

13.  Dennis gets a job at Sarah’s ice cream shop as the V.P. of market research.  He conducts a survey with a sample of 150 people and finds that....

        - 94 people like vanilla ice cream

        - 114 people like strawberry ice cream

        - 12 people did not like strawberry or vanilla ice cream

How many people liked both strawberry and vanilla ice cream?



14.  Randy and Victoria have decided to open a zoo.  They asked Dennis to conduct a survey seeing what kind of animals people like.  Afterwards they all went to Sarah’s for ice cream.  Here are the results of Dennis’ survey.



        - 46 people like elephants

        - 89 people like monkeys

        - 63 people like bugs

        - 24 people like bugs and elephants

        - 17 people like monkeys and bugs

        - 30 people like monkeys and elephants

        - 13 people like monkeys, elephants and bugs

        - 4 people did not like monkeys, elephants or bugs

How many people did Dennis talk to during this survey?