Set Theory Review: Chapter 1

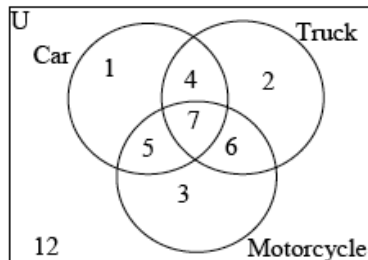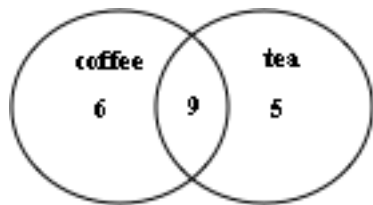| **Practice Questions**	**Notes**
1. When an Internet search returns with a statement such as *"no results match your search criteria"*, this is equivalent to: A) a subset B) disjoint sets C) an empty set D) universal sets	C

2. If *A* represents the set of factors for 28 and *B* represents the set of factors for 63, $A \cap B$ is:
  A) $A \cap B = \{7\}$
  B) $A \cap B = \{1,7\}$
  C) $A \cap B = \{2,3,4,9,14,21,28,63\}$
  D) $A \cap B = \{1,2,3,4,7,9,14,21,28,63\}$
	B

3. How many of the students' parents own a truck and a motorcycle? _____ The students in a math class were surveyed to determine the types of vehicles owned by the parents of the students. The results are shown. 	13

4. The Venn diagram below shows the results of a questionnaire regarding what type of hot drink people had today:

Using the information provided in the diagram:

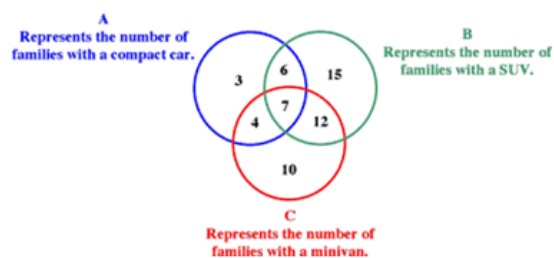What does the number 5 represent?

A) Number of people who had only tea today.

B) Number of people who had only coffee today

C) Number of people who had neither coffee nor tea today.

D) Number of people who had both coffee and tea today.

How many people had tea? _____

i)   A
ii)   14

5. *Use the following information to answer the question.*

The Venn diagram shown below shows the number of people owning various types of cars:

If 60 families were surveyed to construct this Venn diagram, what percent, to the nearest percent, of families responded that they own a minivan or an SUV? _____
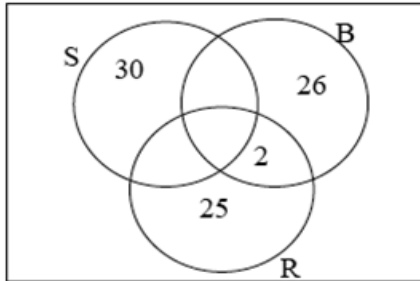
90

6. *Use the following information to answer the question.*

B

A teacher gave her students to following scenario:

A group of people was asked what sports they have played. 30 had played soccer, 26 had played baseball, 25 had played rugby, 6 had played soccer and baseball, 9 had played soccer and rugby, 7 had played baseball and rugby, and 5 had played all three sports.

The teacher then asked her students to create a Venn diagram to represent the situation. Erica began to fill in the diagram as follows:

Based on her work in the Venn diagram above, Erica:

A) is on the right track in her solution.

B) made an error by assuming 30 played soccer only.

C) misread the question and should have put a 7 in place of the 2.

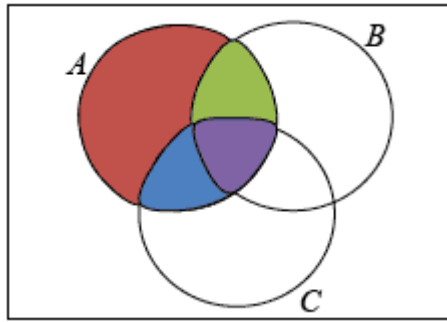D) cannot complete the questions because the information given is contradictory.

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7. If $U = \{0,1,2,3,4,5,6,7,8,9\}$ $A = \{0,1,2,3\}$ and $B = \{1,2,3,4\}$, then which of the following statements is **false**?

A

A) $A \subseteq B$

B) $A \cap B = \{1,2,3\}$

C) $A \cup B = \{0,1,2,3,4\}$

D) $A' = \{4,5,6,7,8,9\}$

8. *Use the following information to answer the question.*
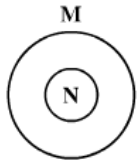
A Venn diagram is shown.

The **blue** shaded section of the diagram represents:

A) A or B and not C.

B) A or C and not B.
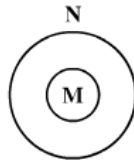
C) A and B and not C.

D) A and C and not B.

D

9. Which of the following illustrates $M \cap N = \emptyset$?
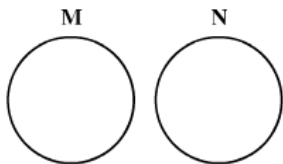
A.
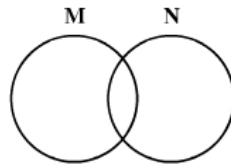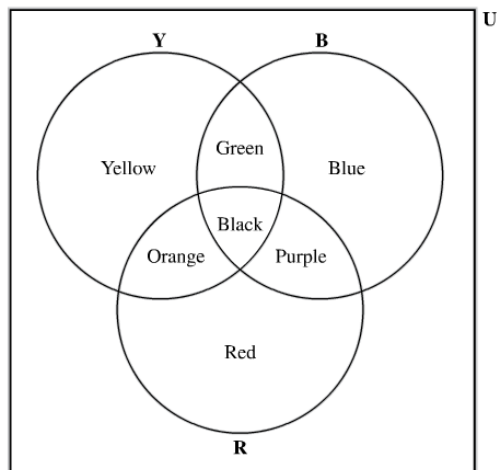

B.

C.

D.

C

10. *Use the following information to answer the question.*

C

The universal set of the primary and secondary colours in art contains the colours yellow, blue, red, orange, green, purple, and black, as shown below.

If R is the set of colours that contain red, then all of the colours in the complement of R, R',
are

   A.   yellow and blue

   B.   orange and purple

   C.   yellow, green, and blue

   D.   orange, black, and purple

11. There are 35 students in John's homeroom class. There are 5 students who take English and Biology, and 7 students who take neither of these subjects. There are 3 more students taking English only than there are students taking Biology only.

The number of students in John's homeroom who take Biology only is

A. 10

B. 13

C. 15

D. 20

A

12. Students in a particular high school were surveyed to determine the courses in which they were currently enrolled. The table below represents the data that were collected.

Courses Enrolled	Number of Students
Math only	28
Art only	33
Math and Art	17
Neither course	20

i. The number of students in the universal set is
A. 61
B. 64
C. 78
D. 98

ii. The number of students taking Art is ___.

iii. The number of students **not** taking Math is ___.

iv. The number of students taking Math or Art is
A. 17
B. 61
C. 78
D. 98

i. D
ii. 50
iii. 53
iv. C

13. Which of the following rows includes two groups that are disjoint sets?

Row	Group 1	Group 2
A.	People who drink coffee	People who do not drink tea
B.	People who have a home phone line	People who have a cellular phone line
C.	People who are left-handed	People who own a computer
D.	People who live in Calgary	People who do not live in Alberta

D

14. A group of 100 students were surveyed about movies that they have seen.
- 2 people saw all three movies
- 12 people saw "Metal Man" and "The Princely Groom"
- 53 people saw "Metal Man"
- 10 people saw "Metal Man" and "Quick and Angry"
- 18 people saw "The Princely Groom" only
- 23 people saw "The Princely Groom" and "Quick and Angry"
- 6 people did not see any of these movies

i. The number of students who saw "The Princely Groom" is
A. 18
B. 20
C. 51
D. 53

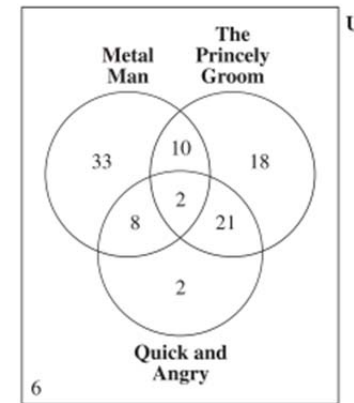ii. The number of students who saw "Metal Man" and "Princely Groom" but **not** "Quick and Angry" is ___.

iii. The number of students who saw "Metal Man" only is
A. 20
B. 33
C. 51
D. 53

iv. The number of students who saw "Metal Man" or "Quick and Angry" is
A. 10
B. 43
C. 76
D. 98

Answer column:
i. C
ii. 10
iii. B
iv. C

15. Vehicles with a sunroof are represented by S and vehicles with a hands-free phone system are represented by P.

Which of the following vehicle descriptions illustrates $(S \cap P)'$?
A. A sunroof or a hands-free phone system
B. A sunroof and not a hands-free-phone system
C. Not a sunroof or not a hands-free phone system
D. Not a sunroof and not a hands-free phone system

Answer: C