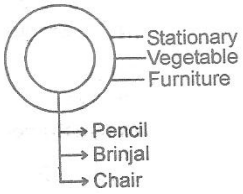
NTSE

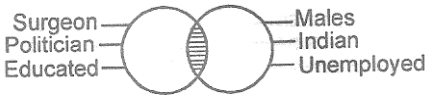
Logical Venn Diagram

LOGICAL VENN DIAGRAM

1. An object is called a subset of another object, if former is a part of latter and such relation is shown by two concentric circles.
(i) Pencil, Stationary
(ii) Brinjal, Vegetable
(iii) Chair, Furniture
It is very clear from the above relationship that one object is a part of other, and hence all such relationship can be represented by figure below –

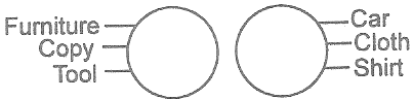


2. An object is said to have an intersection with another object, when two objects share some thing in common.
(i) Surgeon, Males
(ii) Politicians, India
(iii) Educated, Unemployed



All the three relationships given above have something in common as some surgeons can be male and some female, some politicians may be Indian and some may belong to other countries, educated may be employed and unemployed as well. And all the three relationships can be represented by figure above.

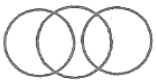
3. Two objects are said to be disjoint when neither one is subset of another nor they share anything in common. In other words, totally unrelated object fall under this type os relationship
(i) Fumiture, Car
(ii) Copy, Cloth
(iii) Tool, Shirt

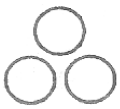


It is clear from the above relationship that both the objects are unrelated to each other, and hence can be represented diagrammatically as shown in figure above. From the above discussion we observe that representation of relationship of two objects is not typical if students follow the above points. But representation of three objects diagrammatically pose slight problem before the students. A variety of such relationship is being discussed in the following examples.

Directions: (1 to 6) Each of these questions given below contains three group of things. You are to choose from the following four numbered diagrams, a diagram that depicts the correct relationship among the three groups of thing in each question.

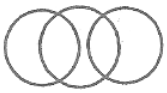
Ex 1. Moon, Earth, Universe

(A)  (B) 

(C)  (D) 

Sol. (A) Moon and Earth are the parts of universe and therefore are subsets of universe.

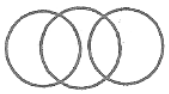
Ex 2. India, Pakistan, Asia

(A)  (B) 

(C)  (D) 

Sol. (A) India and Pakistan are the subsets of Asia.

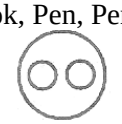
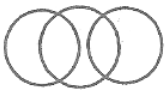
Ex 3. Batsman, Cricket, Stick

(A)  (B) 

(C)  (D) 

Sol. (D) Batsman is a subset of Cricket and Stick is something unrelated to Cricket.

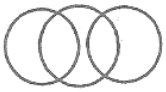
Ex 4. Book, Pen, Pencil

(A)  (B) 

(C)  (D) 

Sol. (C) Book, Pen, Pencil are neither subset of one another nor anything in common.

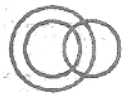
Ex 5. Which of the following diagrams correctly represents the relationship among Tennis fans, Cricket players and Students

(A)  (B) 

(C)  (D) 

Sol. (A) From the relationship given in the question. We observe that each of the objects carries something in common to one another. A Tennis fan can be cricket player as well as student. Hence Diagram (A) represents this relationship

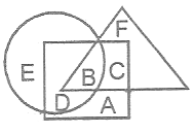
Ex 6. Which of the following diagrams correctly represents the relationship among smokers, bidi smokers, cancer patients.

(A)  (B) 

(C)  (D) 

Sol. (B) Bidi smokers is a subset of smokers and cancer patient may be a smoker, bidi smoker and non-smoker. Hence third object shares a common relationship with first and second object as well.

Directions: (7 to 11) In the following diagram, three classes of population are represented by three figures. The triangle represents the school teachers, the square represents the married persons and the circle represents the persons living in joint families.



Ex 7. Married persons living in joint families but not working as school teachers are represents by

(A) C (B) F
(C) D (D) A

Ex 8. Persons who live in joint families, are unmarried and two do not work as school teachers are represented by

(A) C (B) B
(C) E (D) D

Ex 9. Married teachers living in joint families are represented by

(A) C (B) B
(C) D (D) A

Ex 10. School teachers who are married but do not live in joint families are represented by

(A) C (B) F
(C) A (D) D

Ex 11. School teachers who are neither married nor do live in joint families are represented by

(A) F (B) C
(C) B (D) A

Sol. (7 to 11)

7. (C) Married persons living in joint families are presented by the region common to the square and the circle i.e., D and B. But, according to the given conditions. The persons should not be school teachers. So. B is to be excluded. Hence the required condition is denoted by region D.

8. (C) Persons living in joint families are represented by the circle. According to the given conditions. The persons should be unmarried and not working as school teachers. So, the region should not be a part of either the square of triangle. Thus, the given conditions are satisfied by the region E.

9. (B) Married teachers are represented by the region common to the square and triangle i.e., B and C. But, according to the given conditions, the persons should be living in joint families. So, the required region should be a part of the circle. Since B lies inside the circle, so the given conditions are satisfied by the persons denoted by the region B.

10. (A) As in the above question, married teachers are represented by B and C. But, here, the given conditions lay down that the persons should not by living in joint families. So, the required region should lie outside the circle. Since C lies outside the circle, so the given conditions are satisfied by the persons denoted by the region C.

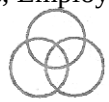
11. (A) School teachers are represented by the triangle. But according to the given conditions, persons are neither married nor do they live in joint families. So, the region should not be a

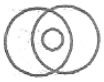
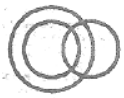
part of either the square or the circle. Such a region is F.

EXERCISE

Directions: (1 to 7) Each question below has three items having certain relationship among them. The same relationship is expressed by sets of circles. Each circle representing one item irrespective of its size. Match the items with right set of circles.

1. Computer skilled, Graduates, Employed.

(A)  (B) 

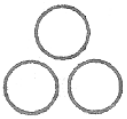
(C)  (D) 

2. Vegetable, Apple, Spinach

(A)  (B) 

(C)  (D) 

3. Clever, Punctual, Poor

(A)  (B) 

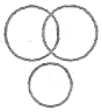
(C)  (D) 

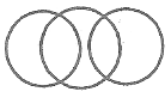
4. Copper, Cobalt, Silver

(A)  (B) 

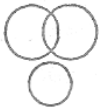
(C)  (D) 

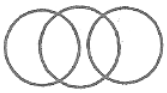
5. Doctor, Lawyer, Male

(A)  (B) 

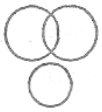
(C)  (D) 

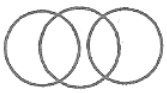
6. Man, Husband, Son

(A)  (B) 

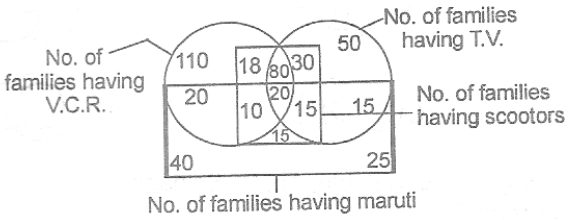
(C)  (D) 

7. Female, Medicine, Physician

(A)  (B) 

(C)  (D) 

Directions: (8 to 12) Study the figure below and answer the following questions.



8. Find out the number of families which have all the four things mentioned in the diagram.
(A) 40 (B) 30
(C) 35 (D) 20

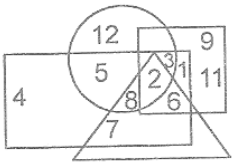
9. Find out the number of families which have scooters.
(A) 145 (B) 100
(C) 188 (D) 240

10. Find out the number of families which have V.C.R. and T.V. both
(A) 84 (B) 24
(C) 104 (D) 100

11. Find out the number of families which have only one thing. that is either V.C.R. or T.V. or Scooter or Maruti.
(A) 160 (B) 184
(C) 225 (D) 154

12. Find out the number of families which have T.V. and scooter both but have neither V.C.R. nor Maruti
(A) 15 (B) 30
(C) 4 (D) 50

Directions: (13 to 16) Read the following information carefully and answer the questions based on them:
The circle represents poor boys, the square educated boys, the triangle represents the boys who are employed somewhere and the rectangle represents those who help in the family business. Each section of the diagram is numbered.



13. Which number represents those poor boys who help in family business but are not educated or employed elsewhere?
(A) 2 (B) 3
(C) 4 (D) 5

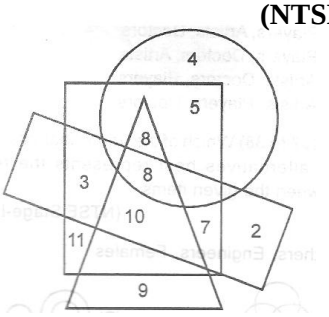
14. Which number represents the group of educated poor boys who are employed somewhere but do not help in family business?
(A) 3 (B) 11
(C) 2 (D) None of these

15. Which section does number 12 represent?
(A) Uneducated poor who do not help in family business
(B) Educated poor boys employed in service
(C) Uneducated boys who help in family business
(D) Educated poor boys who help in family business.

16. Which number represents that section of poor boys who are neither educated nor are in any employment or have any family business?
(A) 5 (B) 1
(C) 11 (D) 12

Directions: (17 to 21) Following questions are based on the Venn diagram given below in which the triangle stands for lady, the rectangle stands for doctors, the circle stands for teachers and the, square stands for engineers. Find out the correct answer of each question from the alternatives given under it.

(NTSE Stage-I/Raj./2007)



17. How many persons are engineers as well as do teaching job?
(A) 5 (B) 8
(C) 13 (D) 7

18. The numbers of lady doctors who are neither engineer nor teachers are -
(A) 0 (B) 7
(C) 10 (D) 11

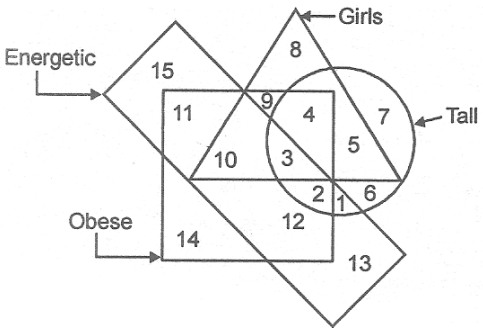
19. The number of engineers who are neither doctors nor lady teachers are-
(A) 4 (B) 11
(C) 9 (D) 2

20. The numbers of lady doctors who are engineers but teach children of the village are -
(A) 7 (B) 8
(C) 10 (D) 15

21. The numbers of gents teachers who are neither doctors nor engineers are -
(A) 12 (B) 9
(C) 5 (D) 4

Direction: (22 to 26) The following questions are based on the diagram given below. In the diagram, circle represents tall children, the square, obese children, rectangle, the energetic children and the triangle, girl children. Study the diagram and answer the question that follow.

(NTSE Stage-II, 2007)



22. Which area represents girls who are tall and obese but not energetic?
(A) 2 (B) 3
(C) 4 (D) 5

23. Which of the following areas represents the tall, obese and energetic girls?
(A) Only 3 (B) 3 and 4
(C) 2 and 3 (D) 2, 3 and 4

24. Which of the following area represents children who are tall, obese and energetic but are not girls?
(A) 3 (B) 2
(C) 4 (D) 9

25. Which areas represent energetic children who are not obese?

(A) 1, 13 and 15 (B) 13 and 15

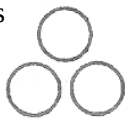
(C) 1, 11 and 15 (D) 6, 13 and 15

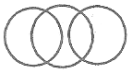
26. Which of the following areas represent obese and energetic children, who are neither girls nor tall?
(A) 2 and 12 (B) 3 and 10

(C) 2 and 3 (D) 11 and 12

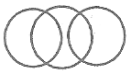
Directions: (27 to 31) Which of the Venn diagrams given in the alternatives best represents the relation between the given items?
(NTSE Stage-II, 2007)

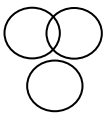
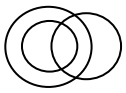
27. Doctors, Engineers, Lawyers

(A)  (B) 

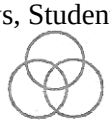
(C)  (D) 

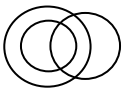
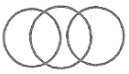
28. Books, newspaper, Words

(A)  (B) 

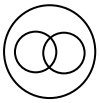
(C)  (D) 

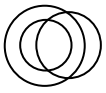
29. Boys, Students, Players

(A)  (B) 

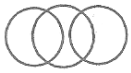
(C)  (D) 

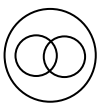
30. Animals, Cows, Grass-eating animals

(A)  (B) 

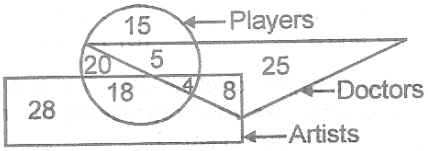
(C)  (D) 

31. Mammals, Tigers, Cows

(A)  (B) 

(C)  (D) 

Directions: (32 to 36) The following question are based on the figure given below. In this figure the rectangle represents artists, the circle represents players and the triangle represents doctors. The numbers in different section refer to the number of persons in that area. A few questions are then asked a based upon this information.
(NTSE Stage-II, 2008)



32. How many players are neither artists nor doctors?
(A) 35 (B) 28
(C) 24 (D) 18

33. How many doctors are players but not artists?
(A) 4 (B) 5
(C) 20 (D) 25

34. What percentage of doctors has at least one more interest – either arts or sports in life?
(A) 55% (B) 50%
(C) 45% (D) 40%

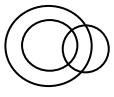
35. How many players are artists but not doctors
(A) 28 (B) 25
(C) 18 (D) 5

36. In terms of number, arrange artists, players and doctors in decreasing order (Those with maximum number first, with minimum number last)
(A) Players, Artists, Doctors
(B) Players, Doctors, Artists
(C) Artists, Doctors, Players
(D) Artists, players, Doctors

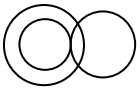
Directions: (37 to 38) Which of the Venn diagrams given in the alternatives best represents the relation between the given items?
(NTSE Stage-II, 2008)

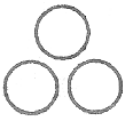
37. Mothers, Engineers, Females

(A)  (B) 

(C)  (D) 

38. Crows, Birds, Snakes

(A)  (B) 

(C)  (D) 

ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	B	C	A	B	D	C	B	D	C	D	C	B	D	D	A
Que.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	D	A	A	B	B	D	C	A	B	B	D	B	B	A	C
Que.	31	32	33	34	35	36	37	38							
Ans.	D	A	B	D	C	A	D	C							