Blood Relations and Directions

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Chapter 1: Direction Sense

In this topic a number of instructions are given regarding the movement of a person, we have to find the final location of the person or distance travelled by him or distance between initial or final position. Before doing this topic the following points should be kept in mind.

1. The figure below shows the four main directions i.e. North, South, West and East. Also four cardinal directions (North-East (NE), North-West (NW) South-East (SE) and South-West (SW) are shown to help the candidates to know the direction.
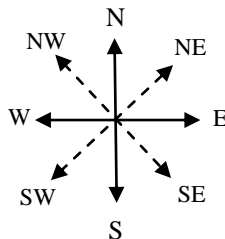
2. One should start solving the question taking the initial position as origin.
3. Keep in mind the change in direction when a person takes right or left

Direction before taking the turn	Direction in which person will be moving after taking turn.	
	Right	Left
North	East	West
South	West	East
East	South	North
West	North	South

4.   One should keep in mind that in finding the distance between initial final position shortest distance is to be taken and use of Pythagoras theorem is there.

We can understand the above said points with the help of following examples.

1.1 Solved Examples

Ex.1. A person starts from his office and goes 100 metres towards north. After turning to his right, he walks 50 metres. Thereafter, he again turns right and walks 100 metres. In which direction and at what distance is he from his office now?

B   50   C

100   100

A   50   D
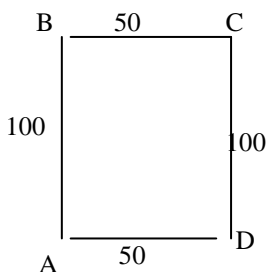
Sol.

In this case, we have to do as directed by the examiner. First of all, he asks us to move 100 metres towards north from the initial position say A. Thereafter, he asks us to move to our right, i.e. the east. Again, he requires us to move to our right, i.e. downwards towards the south. As illustrated in the figure above, a rectangle is formed consisting of two sides 100 metres and 50 metres. Obviously, the person is 50 metres away from his starting point and at the moment, he is in the eastern direction as compared to the starting point.

Ex.2. Anuoshka starts from home and walks 80 metres towards South. She turns to her left and walks 50 metres. She again turns to her right and walks 40 metres. She takes a turn towards her left and walks 60 metres. She takes a final turn towards her left and walks 120 metres. Where and at what distance is Anuoshka from her starting point?

N

W ———————————————— E

80 m   120 m

50 m

S   40 m

60 m
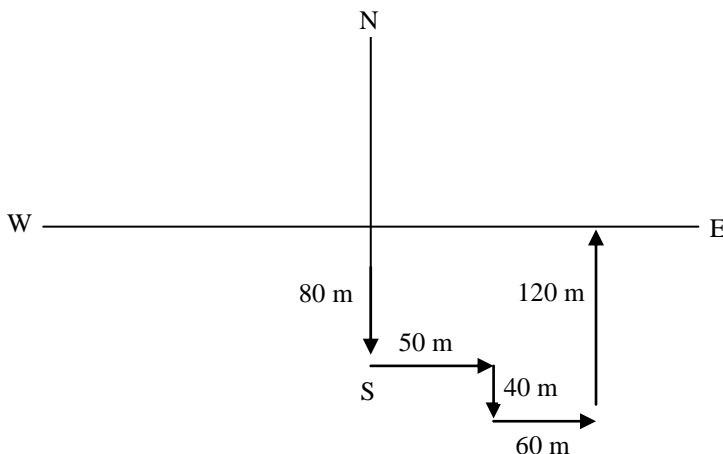
Sol.

As usual, our starting point will be the point where the N-S and E-W lines intersect, as has been illustrated above. We follow her movement as has been asked from us in the question and finally arrive at a point in the east direction. Now the problem before us is

to find her distance from the starting point. We will have to calculate it indirectly because there is no direct way to do so. If you look carefully, the two distances i.e. 50 and 60 metres, if joined together gives us the distance traveled by her on the eastern side, taken from the starting point. If you transpose this line connecting 50 and 60 metres, you will see that this is exactly the distance traveled by her on the eastern side. So the answer in this case is 110 metres east.

Much more common is a type involving the application of the Pythagoras theorem. Let's examine such a case.

Ex. 3. Bhanu starts from her office in the morning at 9 a.m. to meet her friend Kanu. She walks 40 metres towards the west, then takes a right turn and walks 30 metres. What is her distance from the starting point and in which direction is she now with respect to her starting point?

N

30 m

W ——————————————————————— E

40 m

S
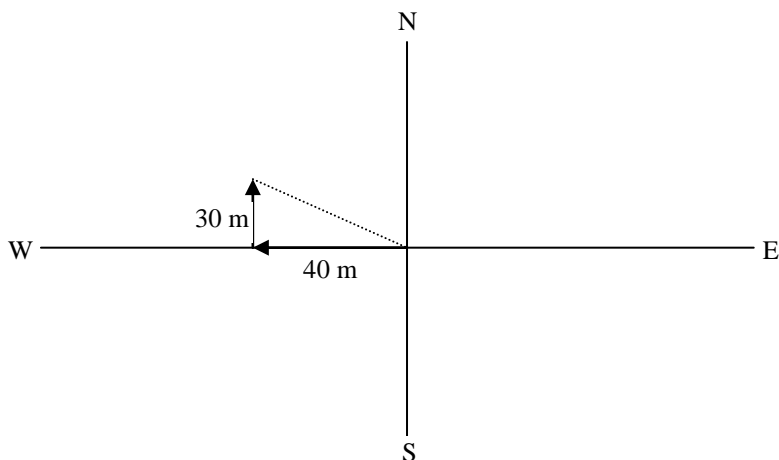
Sol.

Now this is posing a bit difficult question. As you can see for yourself, Bhanu is somewhere in the middle of the western and the northern direction. This is where the Pythagoras theorem comes into play. Look carefully, these two distances, 40 and 30 metres, are forming a right-angled triangle, and by applying the Pythagoras theorem we can get the third side.

Just for review, the Pythagoras theorem states that *the square of the hypotenuse of a right-angled triangle is equal to the sum of the squares of the perpendicular and the base.*

Let us assume that the third (unknown) side is designated X. Applying the theorem,

$$X^2 = (30)^2 + (40)^2$$
$$X^2 = 900 + 1600 = 2500$$

Therefore, X = √2500 = 50 metres. As you can see, she is in the middle of the northern and the western sides. Therefore, , we say she is at present in the north-west direction 50 metres away from her starting point.

Chapter 2: Relations

Now in Relations questions, the following technique is applied. This technique is known as moving backwards or backtracking.

Backtracking means starting with the last information and proceed backwards. For example, if it is given that he is the son of the mother of my grandfather's daughter, then we proceed with the last information: 'grandfather's daughter'. Grandfather's daughter means aunt (sister of father). Now 'mother of my grandfather's daughter' becomes 'mother of my aunt'. Mother of my aunt is my grandmother. Hence, he is the son of the mother of my grandfather's daughter becomes 'son of my grandmother', which is father or uncle.

2.1 Solved Examples

Ex.1. Pointing to a photograph Rajesh said, " she is the mother of my mother's mother's daughter". How is Rajesh related to the woman in the photograph?

Sol. My mother's mother's daughter means either my mother or my mother's sister. Mother of my mother or my mother's sister means my maternal grandmother. Therefore the man (Rajesh)is the maternal grandson of the woman in the photograph.

Ex.2. Pointing to a boy in the photograph, Minakshi said,"His sister is the only daughter of my father". How is the boy related to Minakshi's father ?

Sol. My father's only daughter means Minakshi herself. She is the sister of the boy in the photograph. This means the boy is the brother of Minakshi. Therefore he is the son of Minakshi's father.

Ex.3. Introducing Madhuri, Anil said, "She is the wife of my mother's only son". How is Madhuri related to Anil ?

Sol. My mother's only son means Anil himself. Now Madhuri is the wife of that person, means she is the wife of Anil.

Ex.4. Pointing to Kajol, Ajay said, " Her mother's only daughter is my mother". How is Ajay related to Kajol ?

Sol. Here in this statement Ajay's mother is the only daughter of his maternal grandmother. His maternal grandmother is the mother of Kajol (because Ajay points to Kajol and says her mother. Means Kajol is Ajay's mother.

Note : Unless otherwise mentioned all relations are to be taken from the paternal (father's) point of view i.e. if grandfather has been mentioned it would be taken as father's father and not as mother's father unless maternal grandfather is mentioned.

This technique of backtracking is applied in such questions where a single statement is given. But sometimes there are questions in which the information is provided in the form of points. Then it is advisable to arrange the information in the form of a family tree.

The following rules can be kept in mind, to solve the questions relating to relation in an easy way.

a) Vertical or diagonal lines should be used to represent parent-child relationships i.e. if the generations are different then these should be represented vertically.

b) If the relationship is of the same generation then it should be represented horizontally.

c) A single arrow should be used to mark a relationship of brother or sister i.e.

d) A double horizontal line (like ⇔) should be used to represent marriages.

e) Put a + sign before someone who is a male and a – sign before someone who is a female.

f) Whenever something is not known put a ? mark or some such symbol before it.

Here is an illustration to elaborate :

$$X(-) \longrightarrow Y(+) \longrightarrow \Leftrightarrow Z(-)$$

T (?)   ? (+)

P(+) ⇔ Q (-)

J(-)   ?(+)
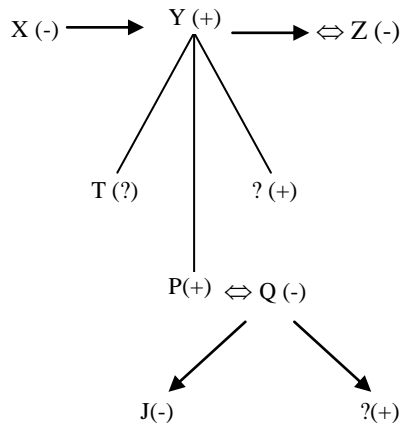
The above example tells us that:

(i)   Y and Z are a couple; Y is the husband while Z is the wife.

(ii)   Y has a sister X.

(iii)   The couple, Y and Z, has three children: T, P and another son, whose name is not known. P is also son while the gender of T is not known.

(iv)   T and the other unknown son are unmarried while P is married to Q.

(v)   The couple, P & Q, has a daughter J and a son whose name is not known.

Given the process, how to solve such questions quickly

1. Read the information given quickly, it will give you the idea of the problem.

2. Use the actual information given to make a family tree. It is better to start from the relation

of a single degree i.e. no third person is involved in that. The relation should be a direct one, instead of taking uncle and nephew, it is better to take father and son or brother and sister.

3. When you start making tree, then try and attach the further information given, to the already made tree only.

4. Then combine all the information and answer the questions accordingly.

Ex.5. P is brother of Q, R is sister of Q. How P is related to R?

Sol.

P (+) ⟶ Q (?) ⟶ (R) (-)

It can be clearly seen, that P is brother of R

Ex.6: X and Y are brothers. C and D are sisters. X's son is D's brother. How is Y related to C ?

Sol. It has been clearly indicated that Y is the brother of X, X's son is D's brother. This implies that D is the daughter of X. Since C and D are sisters, C is also the daughter of X. So Y is the uncle of C.

Ex.7. M and N are a married couple with M as the husband. O and P are brothers. O is the brother of M. How is P related to N ?

Sol. M and N are husband and wife. Since O and P are brothers, and O is the brother of M, P is also the brother of M. Thus, P is the brother-in-law of N.

Ex.8. A is brother of B, C is the father of A, D is a brother of E, E is a daughter of B. Who is the uncle of D ?

Sol.

C (+)

A (+)   B (?)

(-) E ———→ D (+)
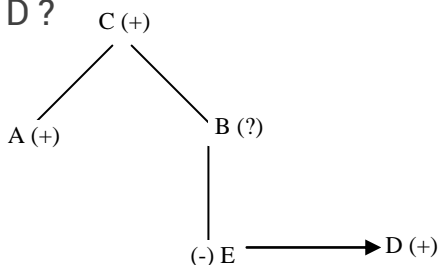
It can be seen from the diagram that the uncle of D is A.