

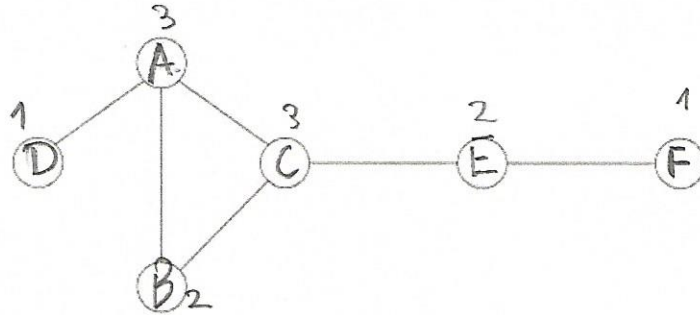


Who's Who

We can represent a group of friends by drawing a graph. Each node represents a person. An edge joins two nodes if and only if those two people are friends.

Here is a graph showing a group of friends.

Can you work out who's who using the clues below?

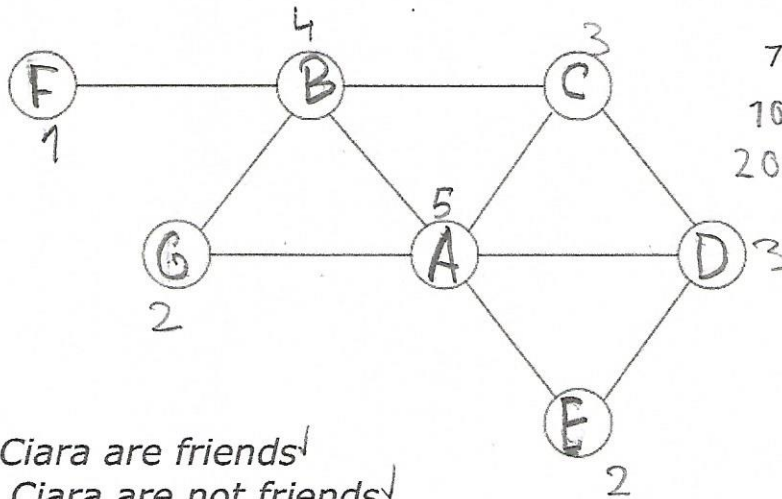


1. Alan has 3 friends, Barney, Charlie, and Daniel.
2. Barney and Ed are both friends with Charlie.
3. Ed is Frank's only friend.

6 people
12 relationships
6 lines

Here is a second network of friends.

Again, use the clues below to figure out who's who.



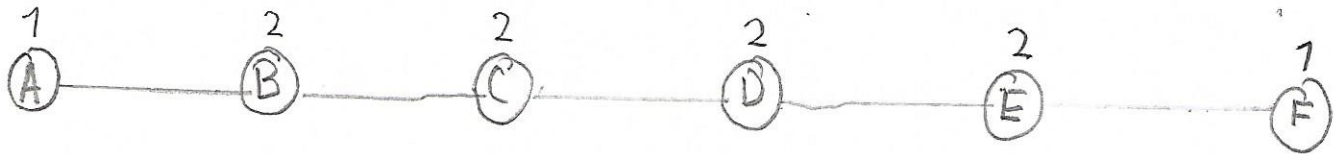
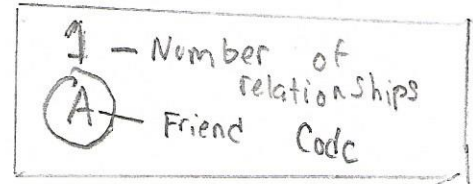
7 people
10 lines
20 relationships

1. Bella and Ciara are friends ✓
2. Emily and Ciara are not friends ✓
3. Bella is Fiona's only friend ✓
4. Anna has more friends than anyone else ✓
5. Daphne has three friends ✓
6. Gill and Daphne are not friends ✓
7. Emily has two friends

Theory | Lines = $\frac{\text{Relationships}}{2}$ Neel

According to the two problems in "Who's Who" I found that the number of lines is half that of the total relationships. But I wasn't convinced because these were only two "normal" examples. So I thought I would try two extreme examples.

Example 1: "The Long Line"

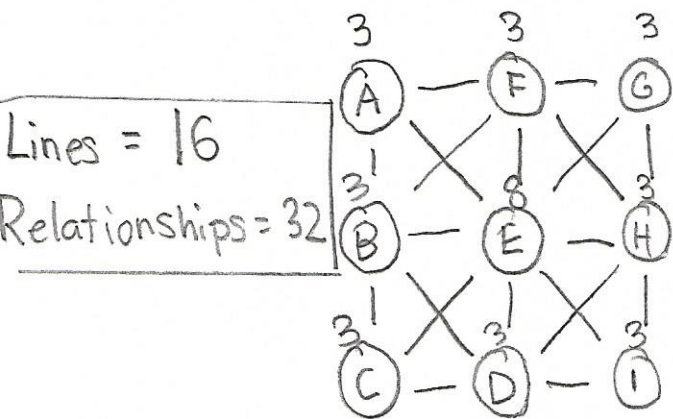


Lines = 5
Relationships = 10

$\frac{10}{2} = 5$

So relationships are twice as much as lines

Example 2: "The Jammed Square"



Lines = 16
Relationships = 32

$\frac{32}{2} = 16$

Again Relationships are twice as much as lines

So in conclusion, each line connects two people or two relationships. (A to B and B to A)

