

4C Lots of Odd Nodes

As you can imagine, when there are a lot of odd nodes, the possible combinations for pairs will grow quickly ()

2 odd nodes will have possible pairing

4 odd nodes will have possible pairings

6 odd nodes will have possible pairings

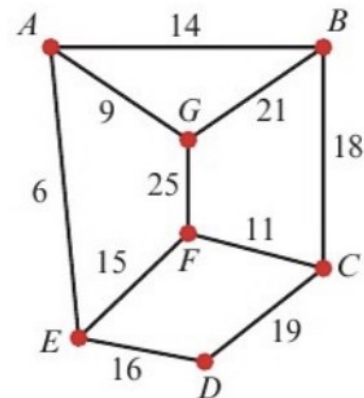
8 odd nodes will have possible pairings

10 odd nodes will have possible pairings

And so on

When a network has more than 4 odd nodes, additional information will be provided to reduce the number of combinations.

1. A night watchman has to patrol a network of paths as shown in the diagram. The number shown on each arc represents the time taken, in minutes, to walk between the labelled points.
 - a) Use the route inspection, starting at A and finishing at C, to find the minimum time taken to traverse each arc at least once.



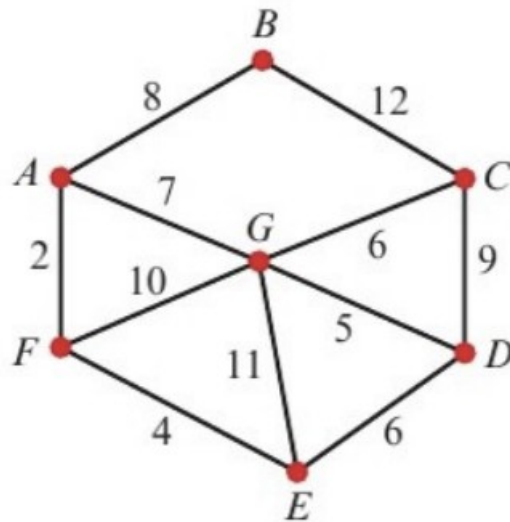
- b) State a possible route

An extra path is added joining B and F directly. After the addition of this path, the minimum time needed to traverse all paths, starting at A and finishing at C, is reduced by twice the length of time needed to traverse this path.

- c) Calculate the time needed to traverse the new path BF.

2. The network represents the roads that must be travelled by a police patrol car. The length of each road in kilometres is shown on each arc.

The patrol starts at A and can finish at either of the two police stations at G or D.



- a) Find the length of the shortest route, such that every road is traversed at least once.
- b) State which police station the patrol car finishes at, and which roads must be traversed twice.