# Celebrity Sponsorships

A seating plan for happy sponsors

# Celebrity Sponsors

**Greta**

Billie
Freddie
Khaby
Millie

Your celebrity name during this activity

You must not seat with these people

# Celebrity Sponsors

sadida

Greta

Your celebrity name during this activity

Billie

Freddie

Khaby

Millie

You must not sit with these people

AMUP

EKIN

# There is a lot of information in the cards

**Alysa**
Jimin
Olajide

**Billie**
Freddie
Greta
Jimin
Millie
Neymar

**Cristiano**
Dwayne
Lebron
Rosalía

**Dwayne**
Cristiano
Rosalía
Taylor

**Erling**
Harry
Jimin

**Freddie**
Billie
Greta
Khaby
Lebron
Millie
Zendaya

**Greta**
Billie
Freddie
Khaby
Millie

**Harry**
Erling
Khaby
Quinta

**Jimin**
Alysa
Billie
Erling
Quinta

**Khaby**
Freddie
Greta
Harry
Pedro
Quinta

**Lebron**
Cristiano
Freddie
Pedro

**Millie**
Billie
Freddie
Greta
Neymar
Sabrina
Zendaya

**Neymar**
Billie
Millie
Olajide
Sabrina

**Olajide**
Alysa
Neymar

**Pedro**
Khaby
Lebron
Taylor

**Quinta**
Harry
Jimin
Khaby

**Rosalía**
Cristiano
Dwayne

**Sabrina**
Millie
Neymar
Zendaya

**Taylor**
Dwayne
Pedro

**Zendaya**
Freddie
Millie
Sabrina

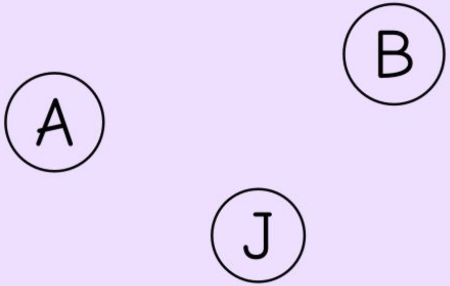
# Let’s reorganize the information with a graph


This is a **node** with the initial of one celebrity

# Let’s reorganize the information with a graph

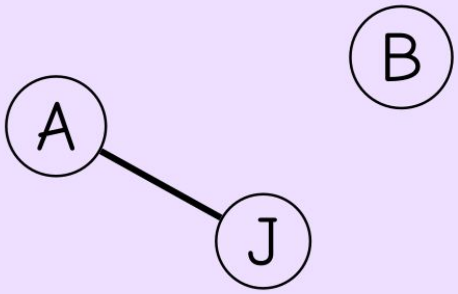

Another **node**

# Let's reorganize the information with a graph




Another **node** but ...

# Let’s reorganize the information with a graph




A and J are connected by an **edge** because they must not sit together

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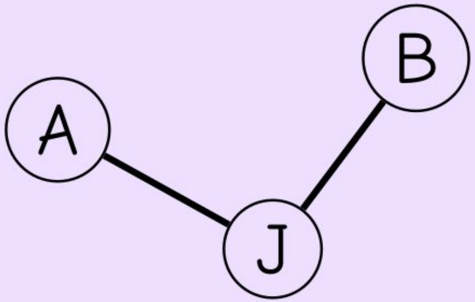

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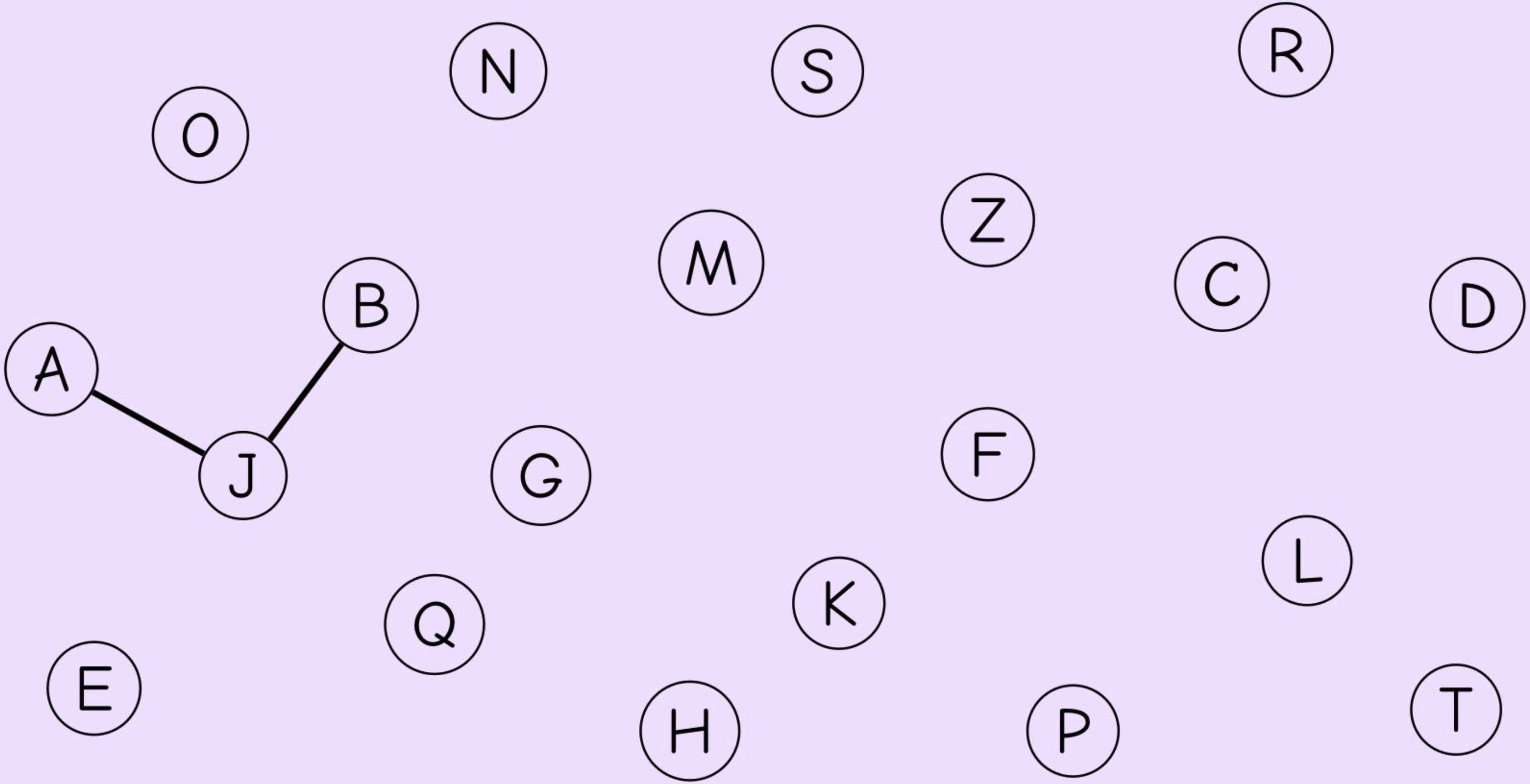

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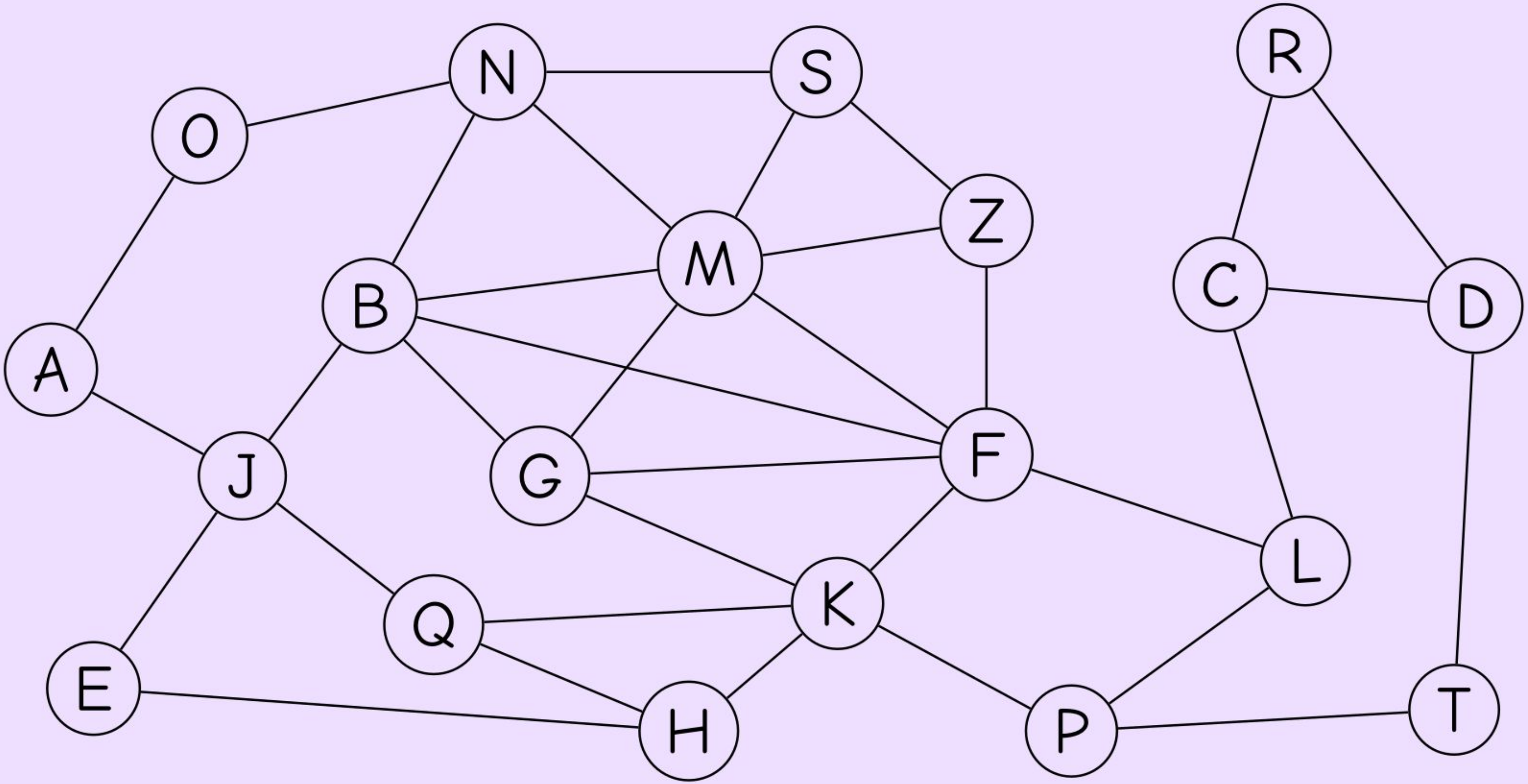

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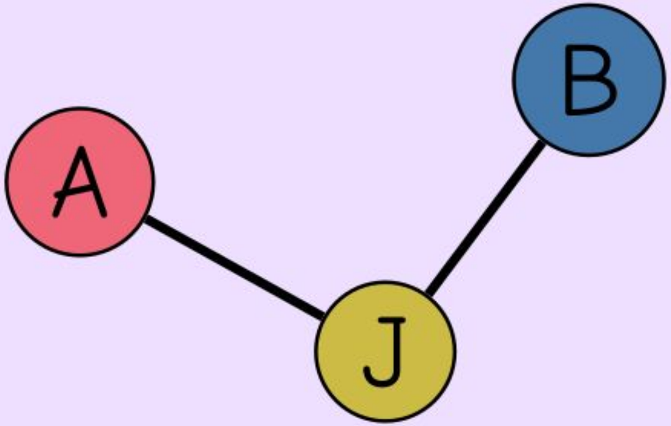
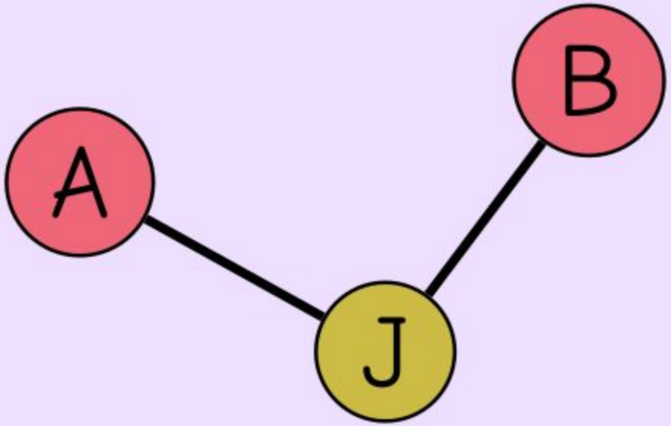
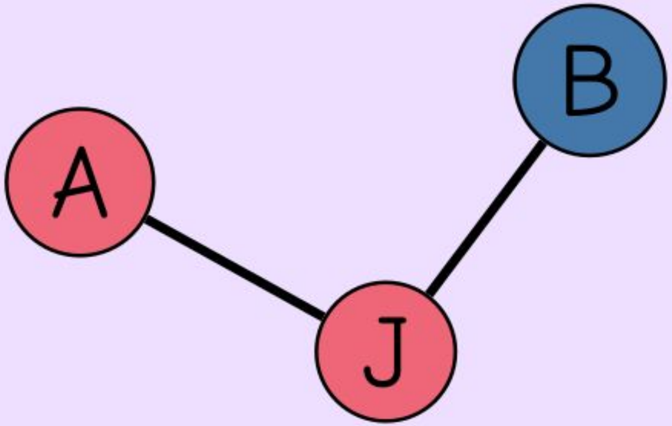



We use **colours** to pick tables

# What about the tables ?




We make sure that two connected nodes don't have the same colour

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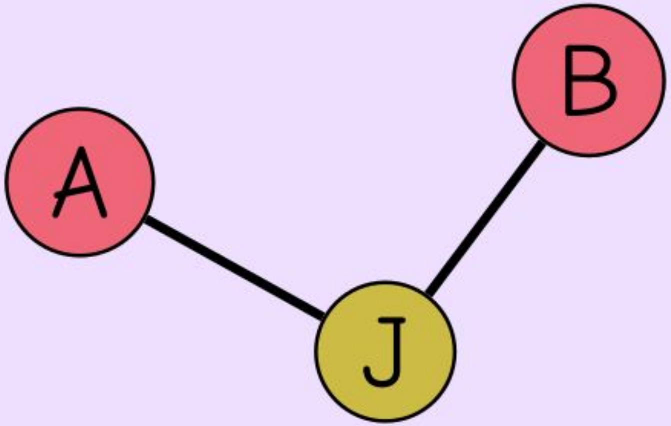


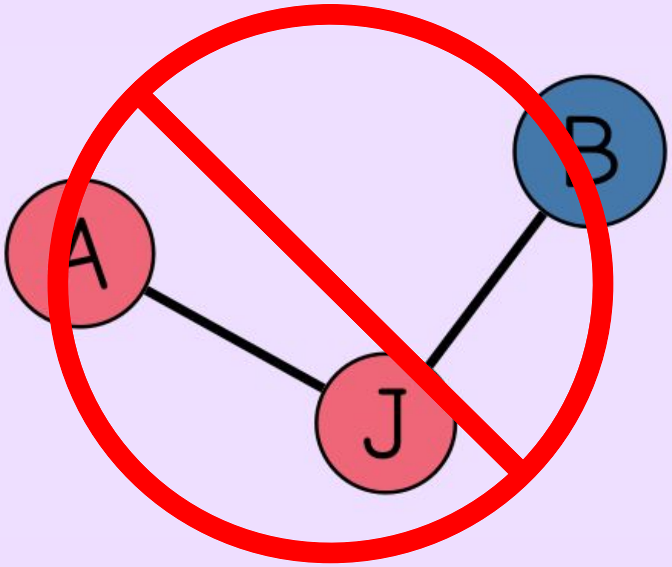


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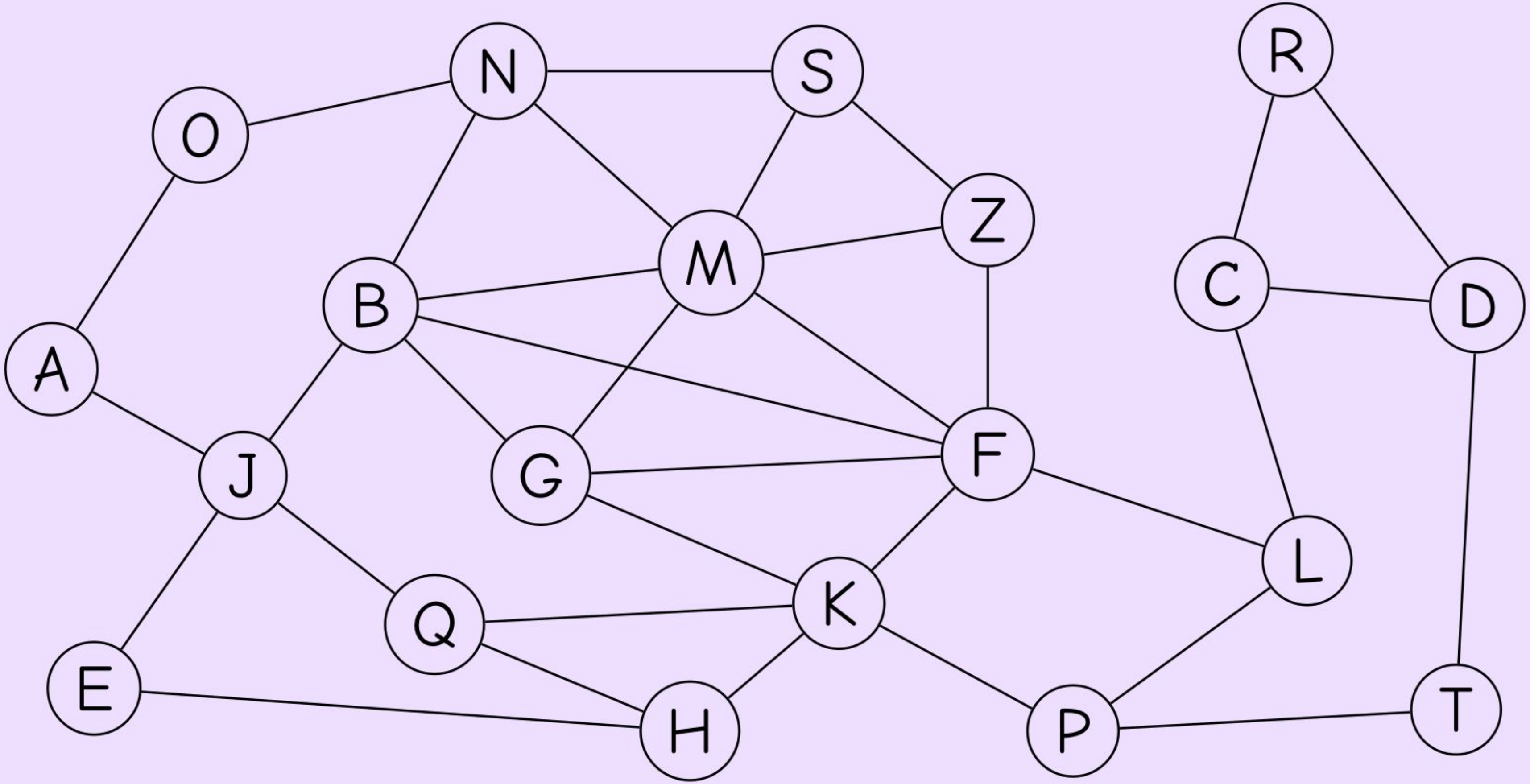
# Can you seat all the celebrities on four tables?



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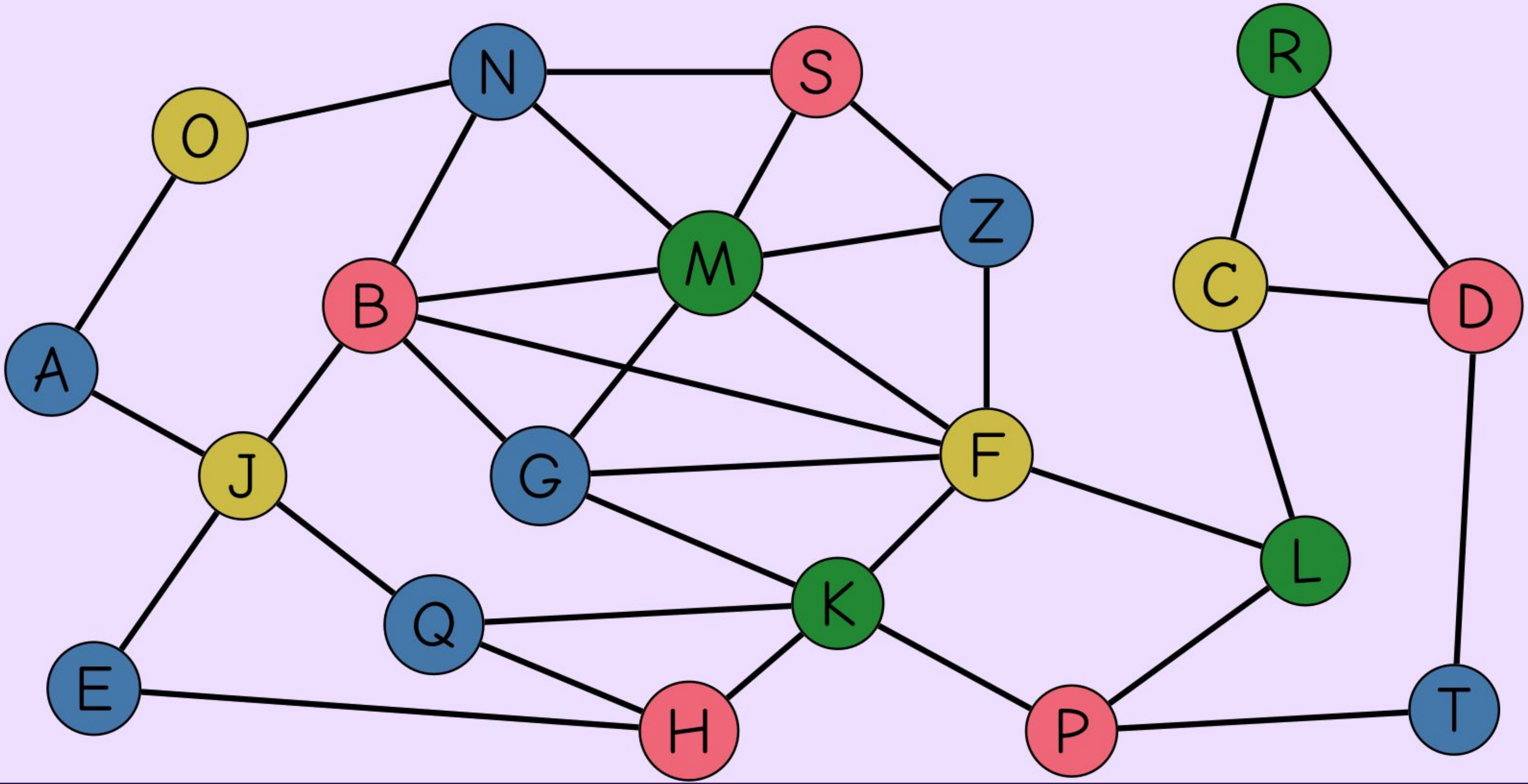
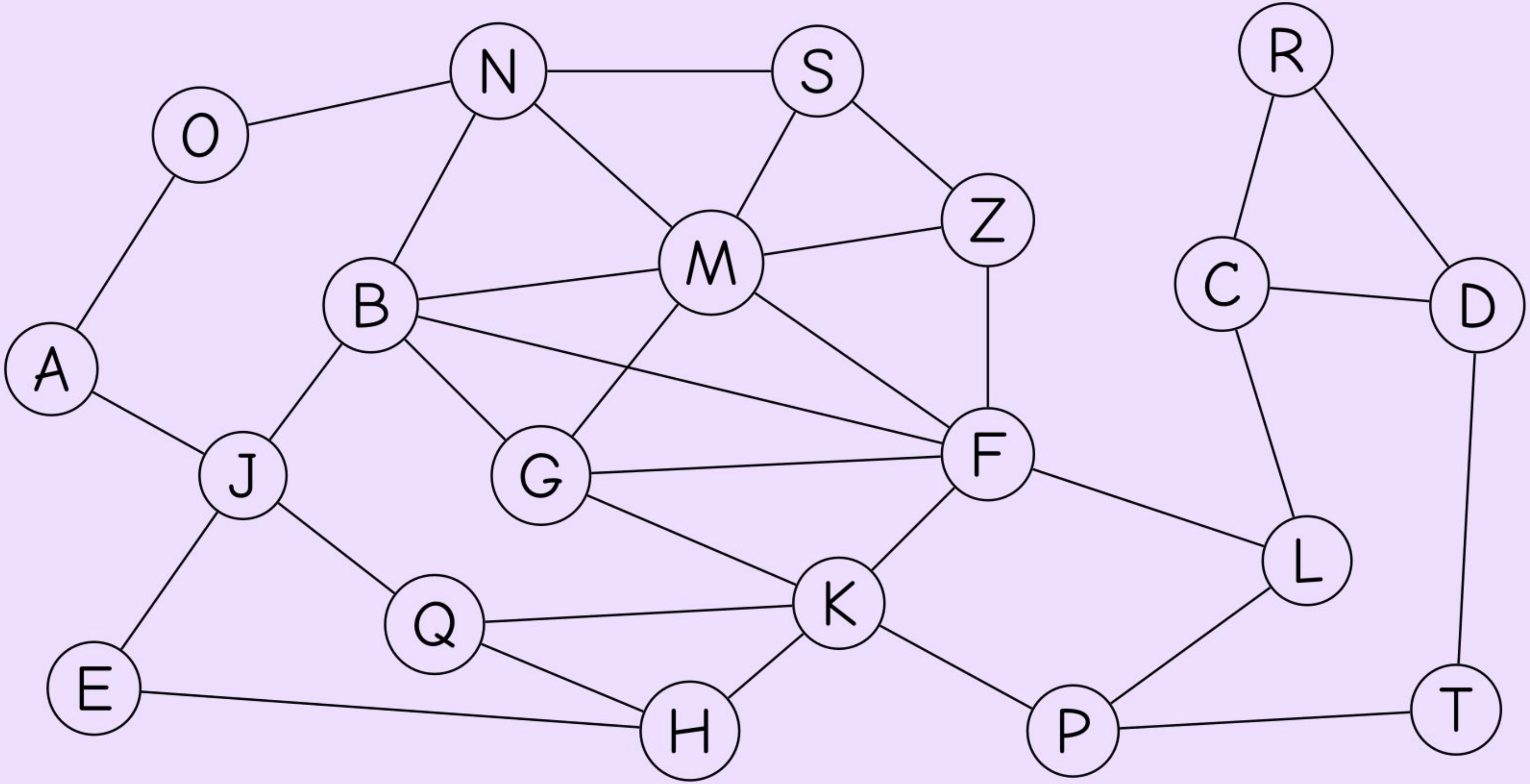


# What if we remove one table? Only 3 colours allowed.



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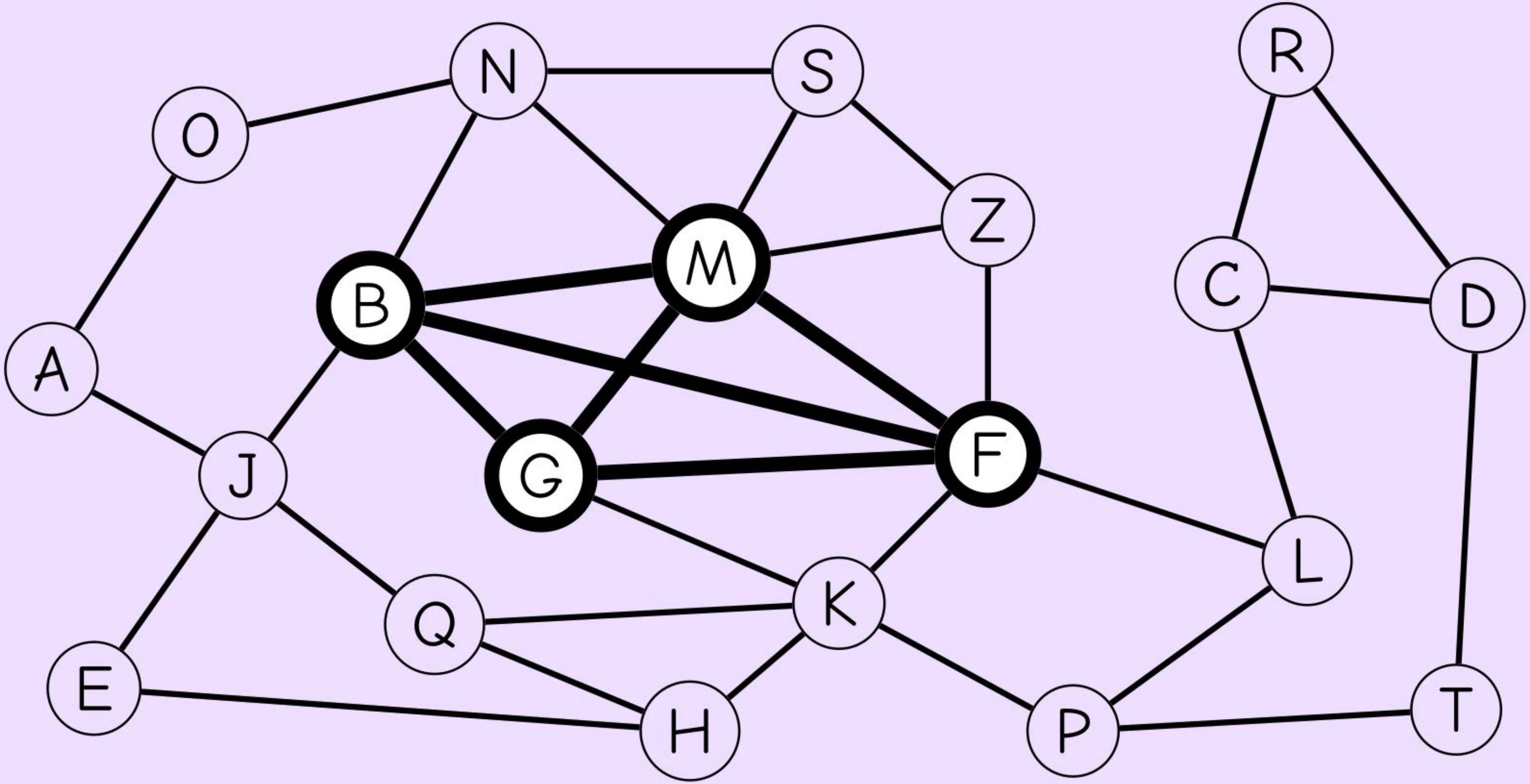
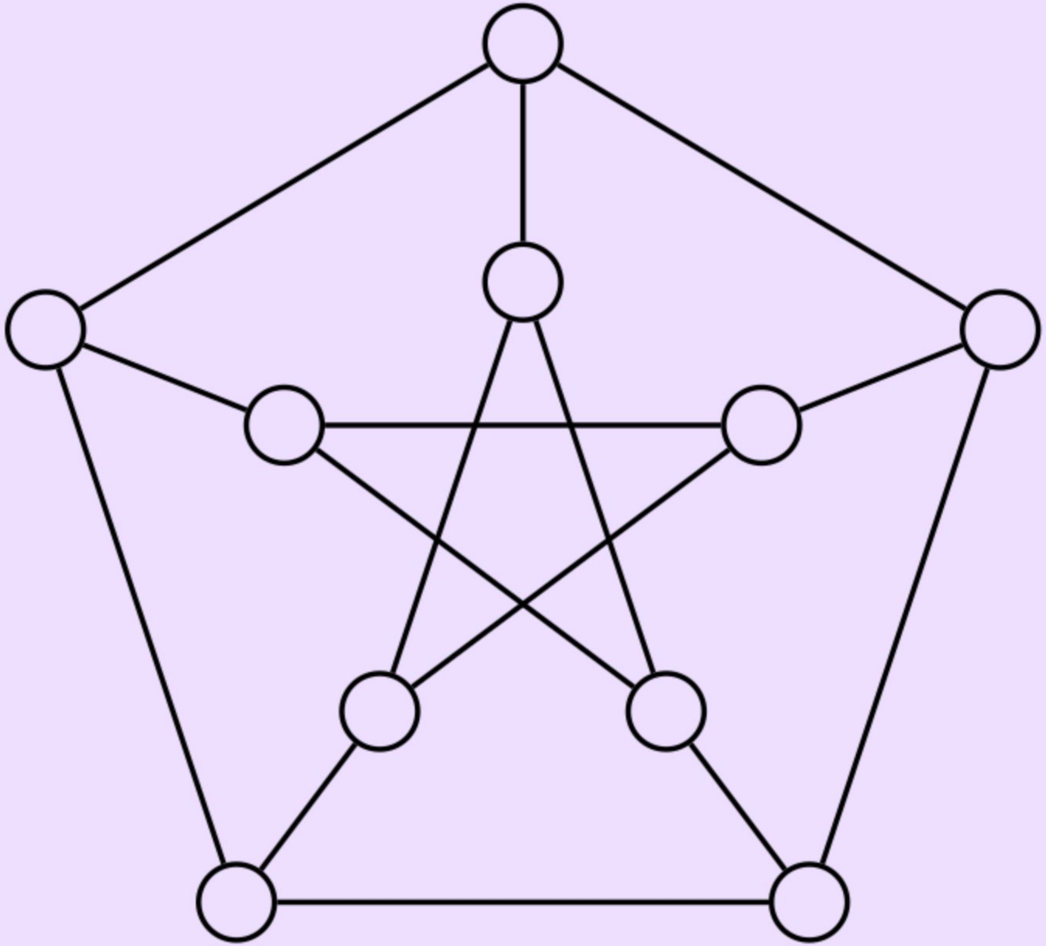
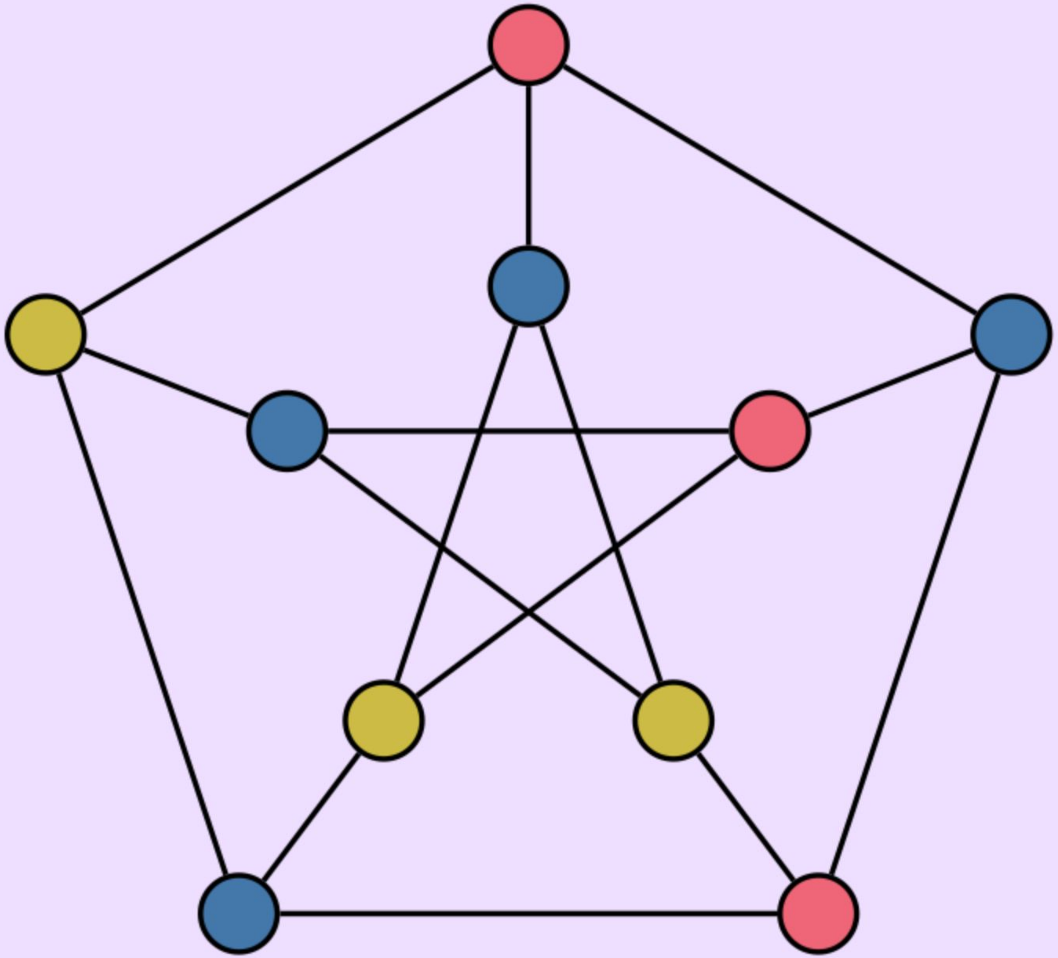
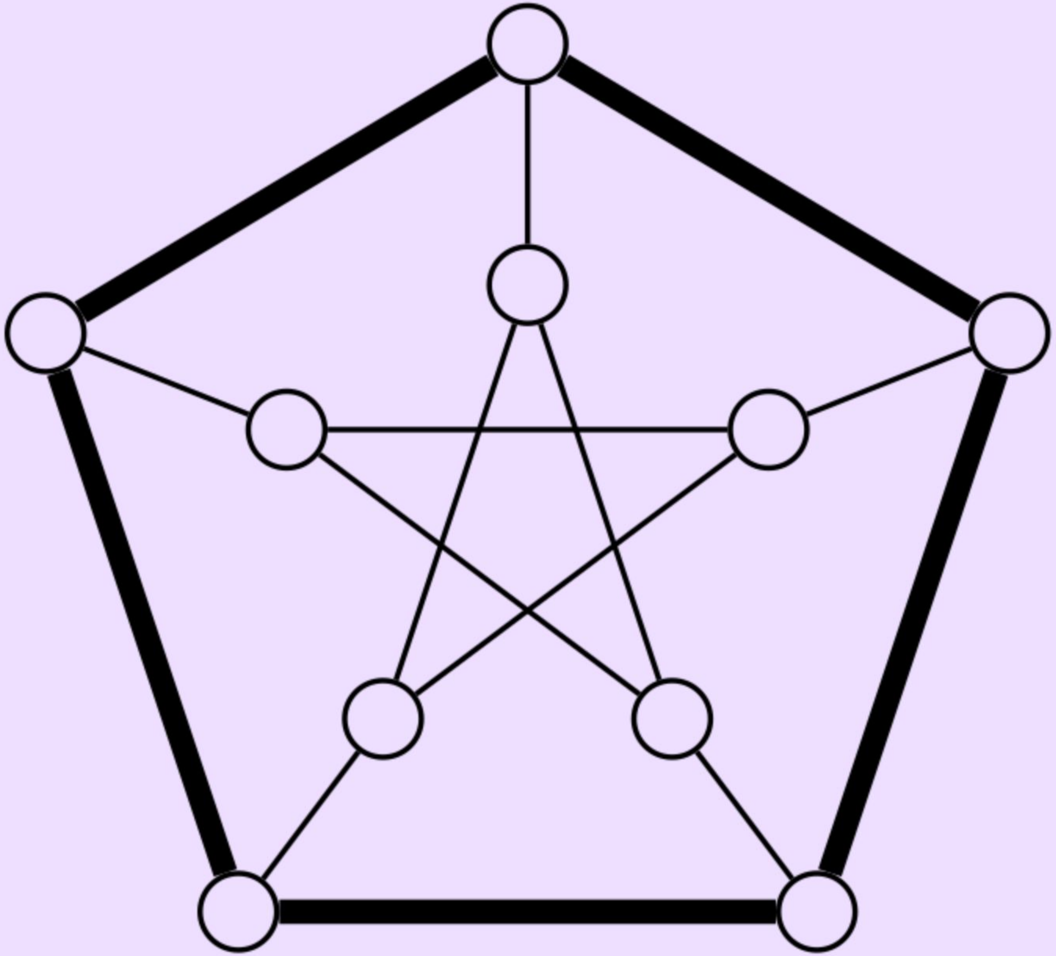
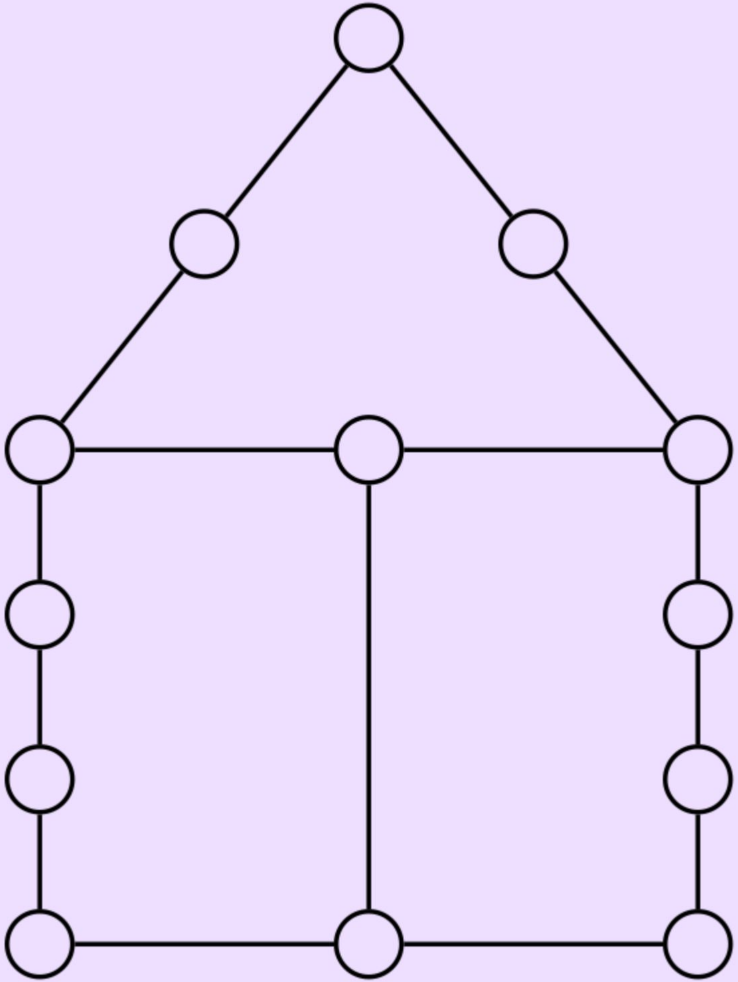


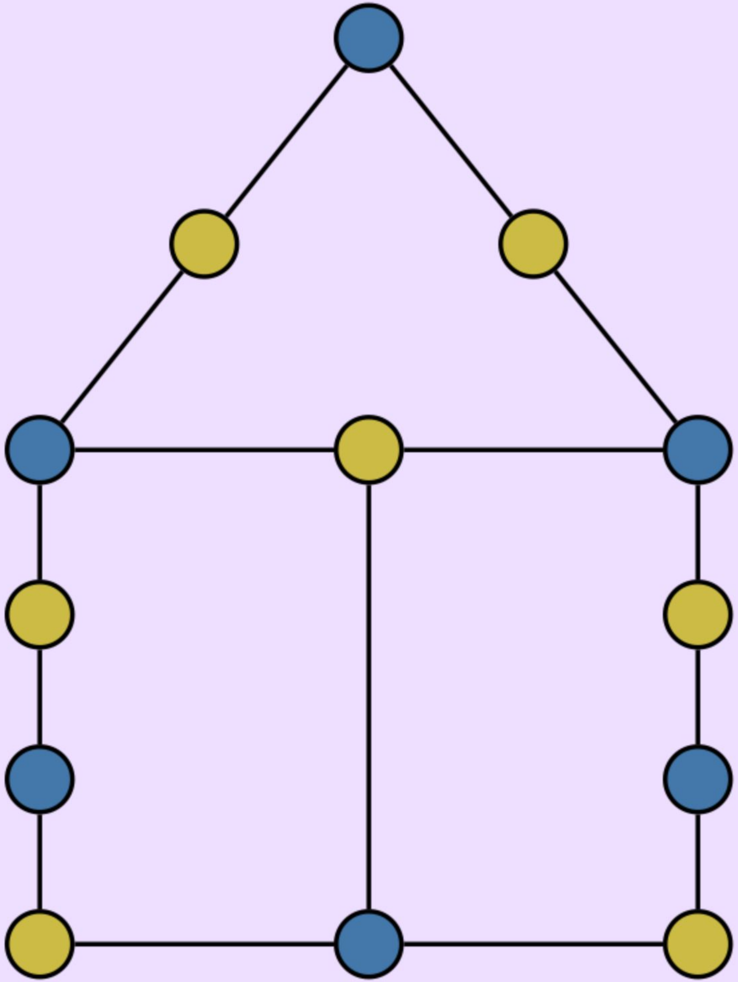
# Let’s colour more graphs (with the least colours)

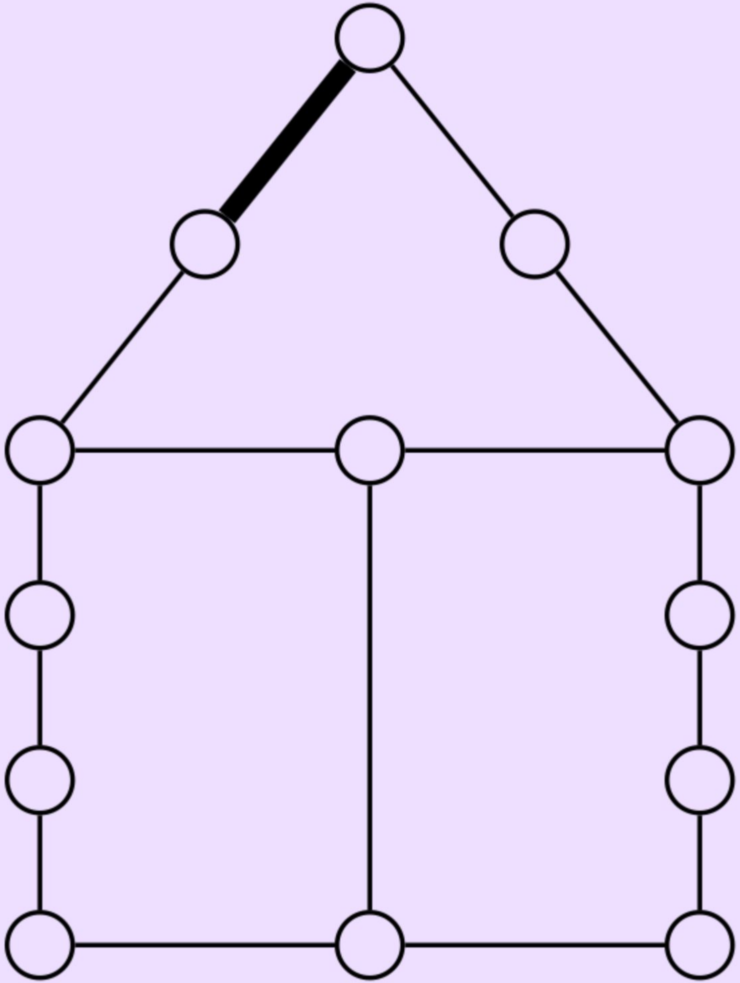


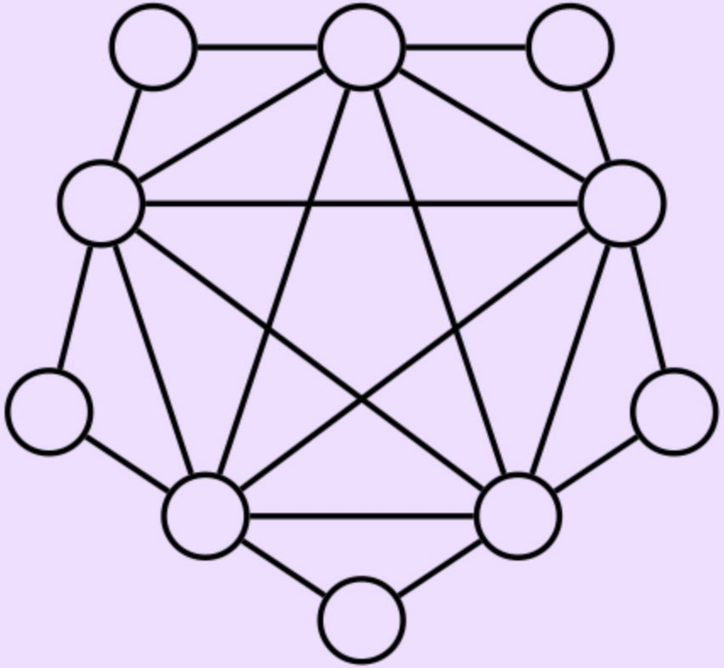


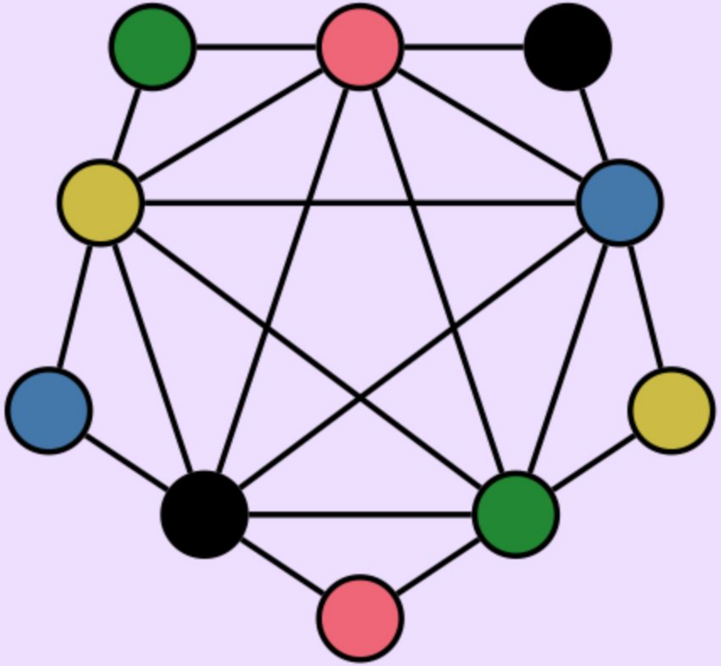


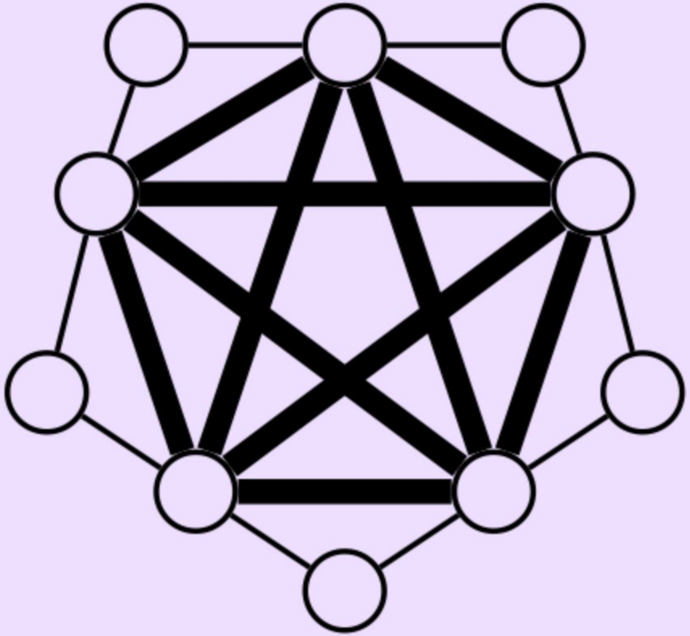


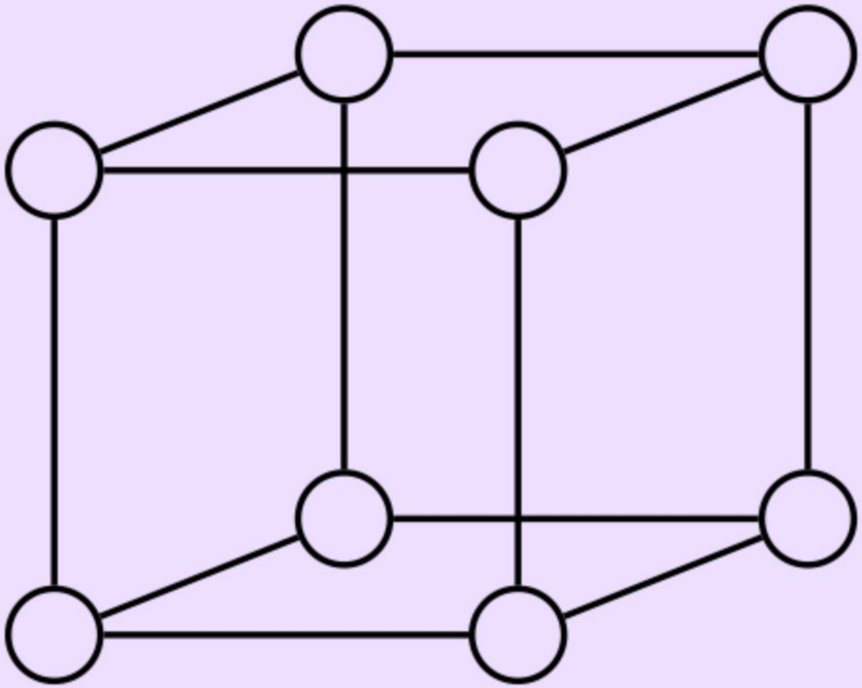


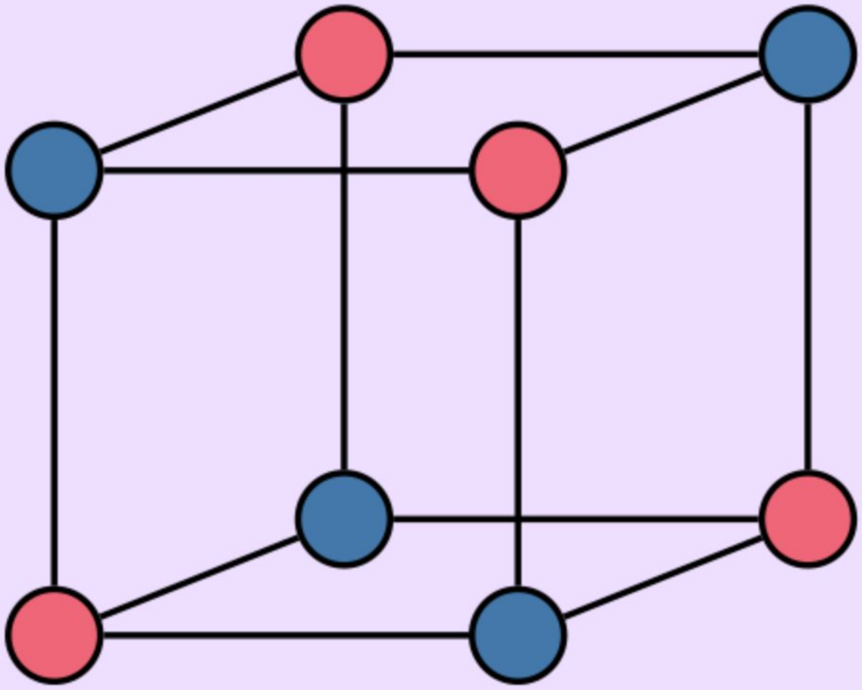


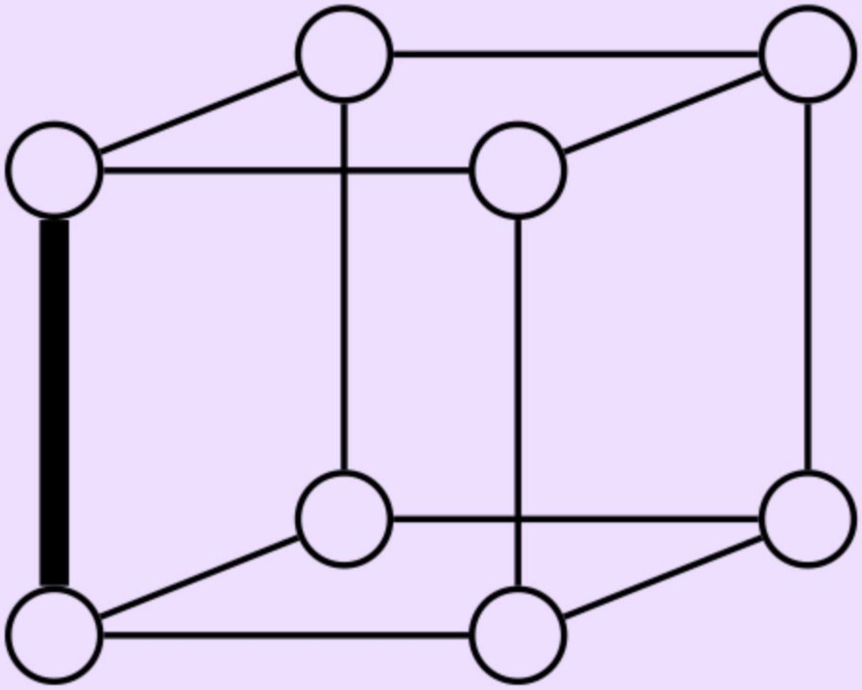


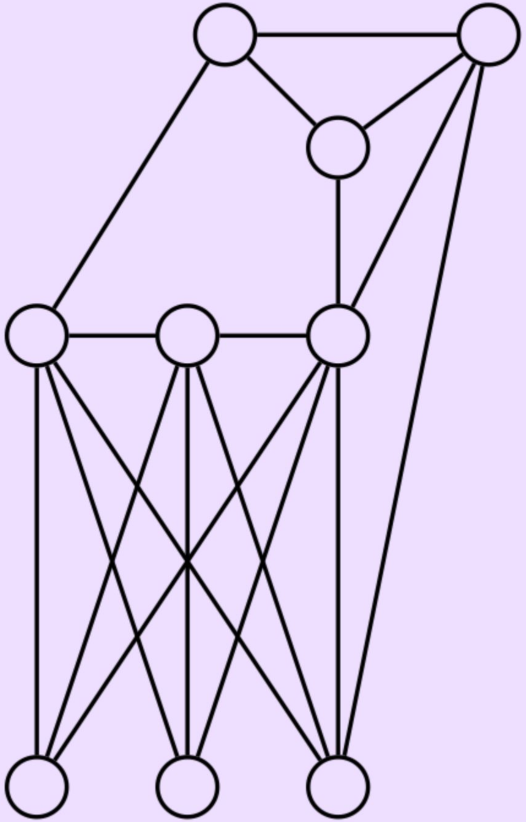


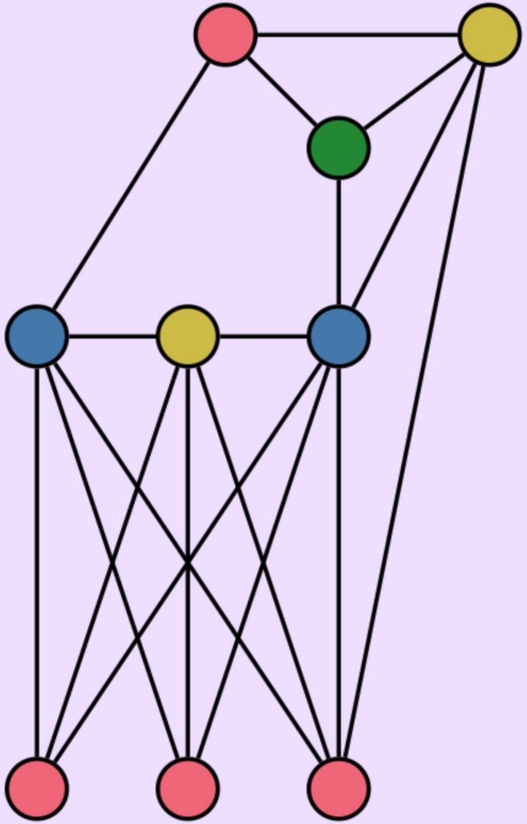


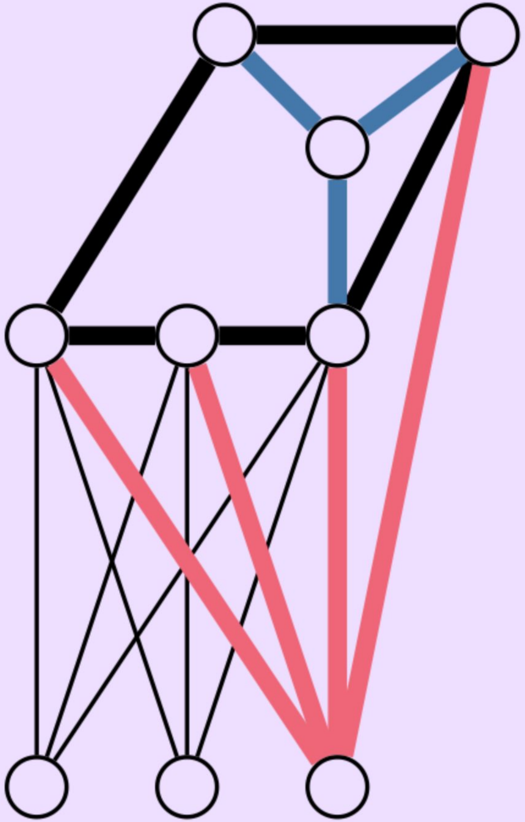


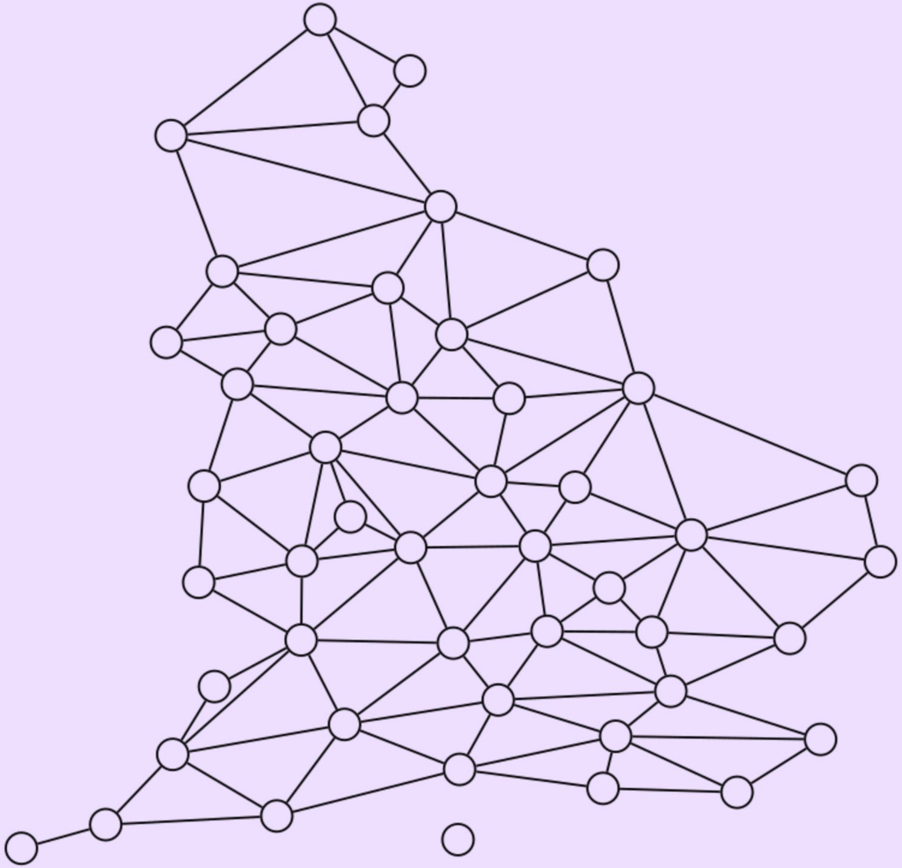


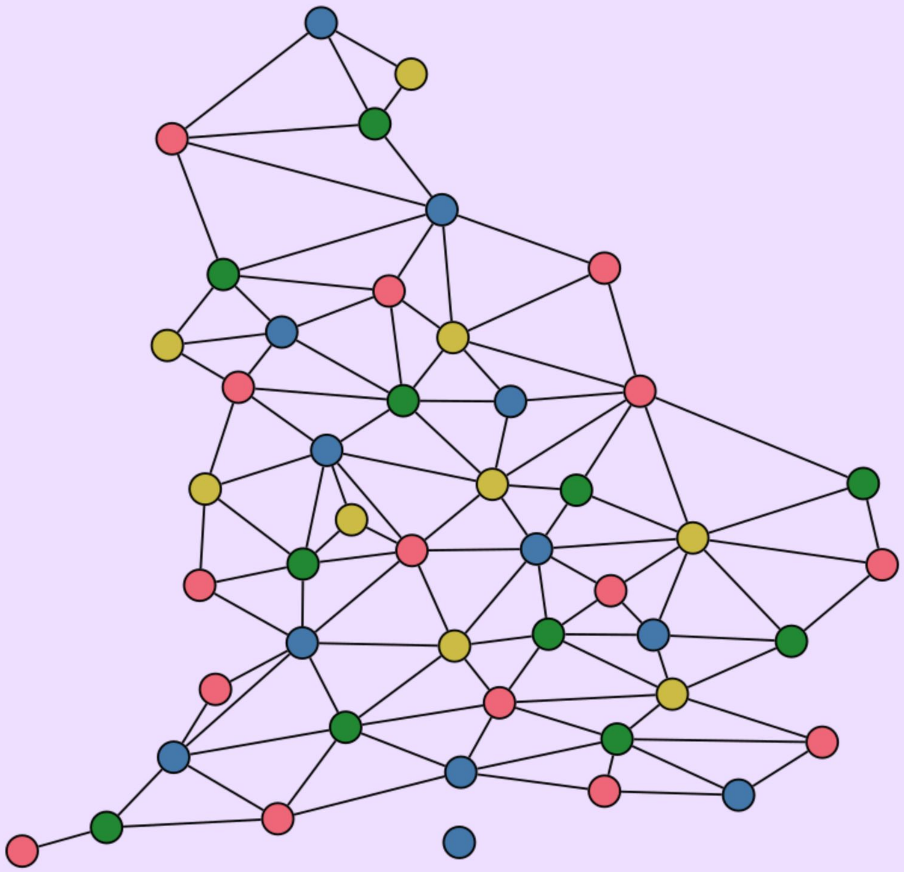


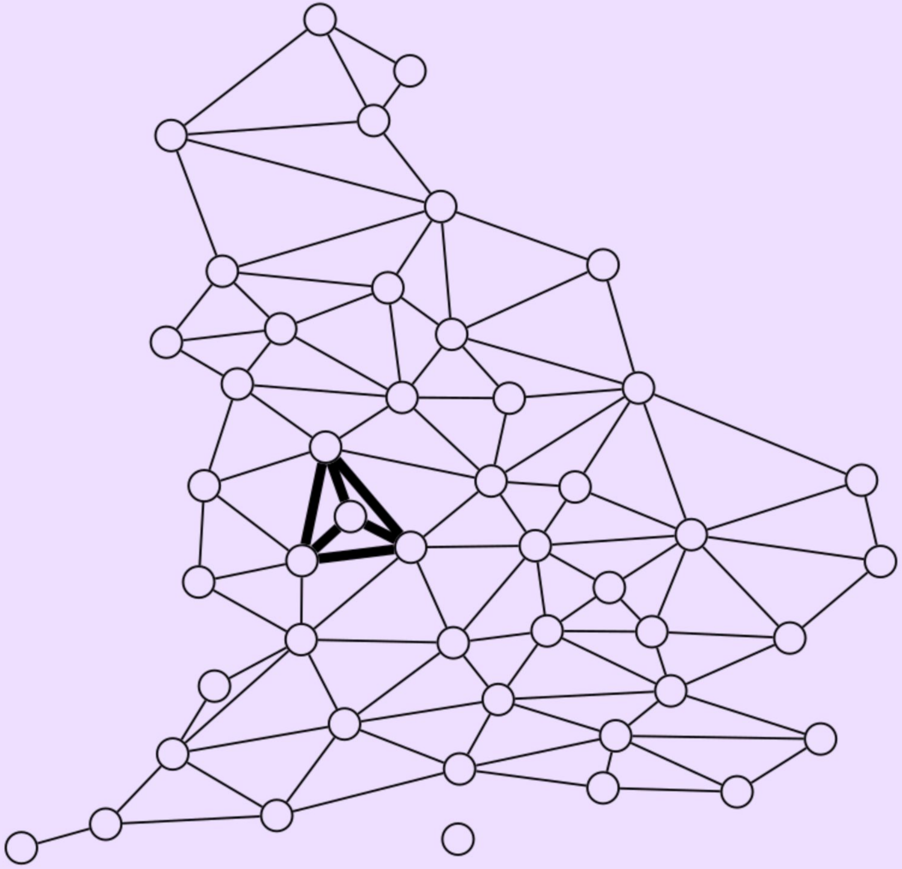


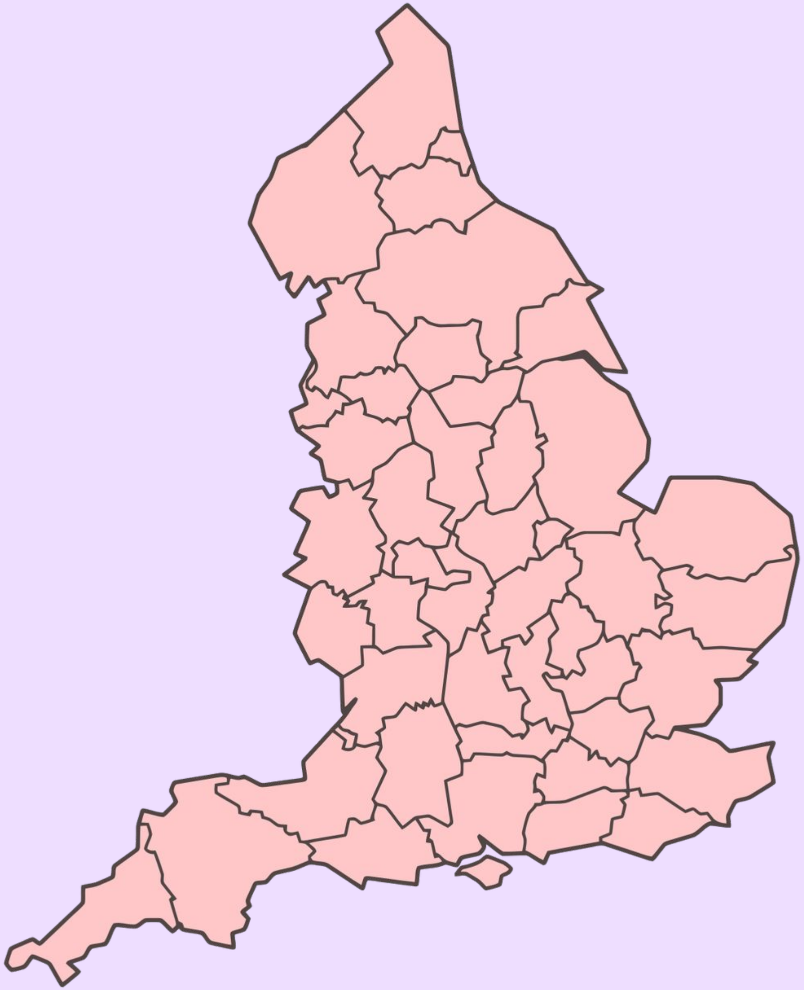
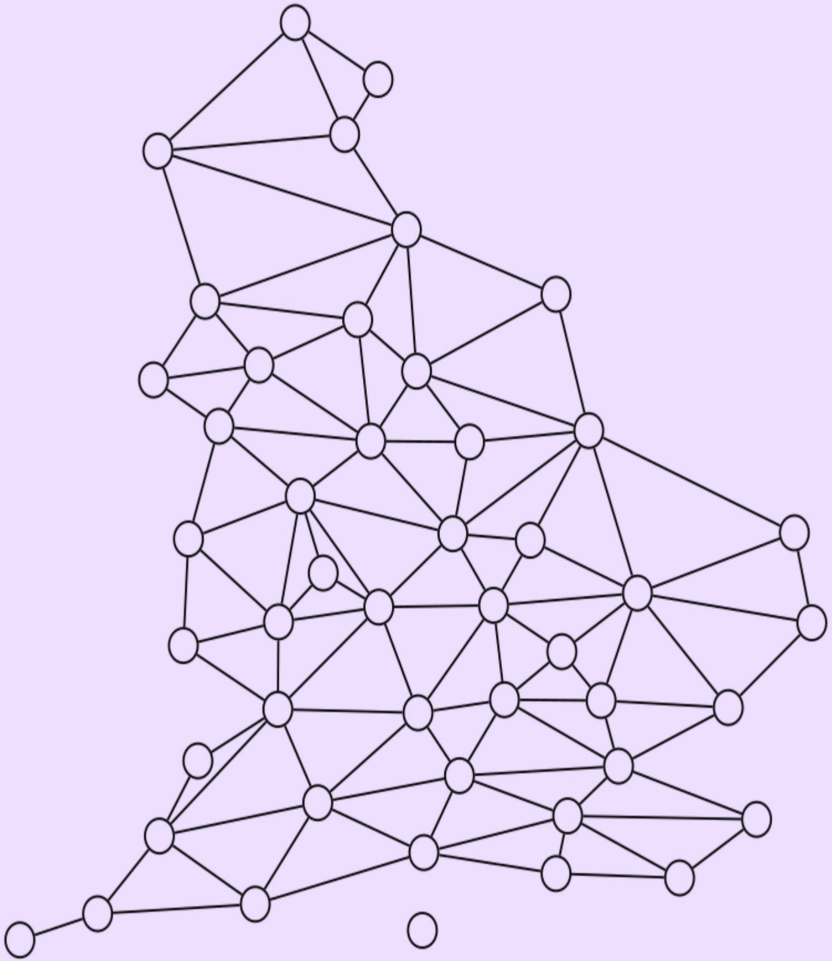










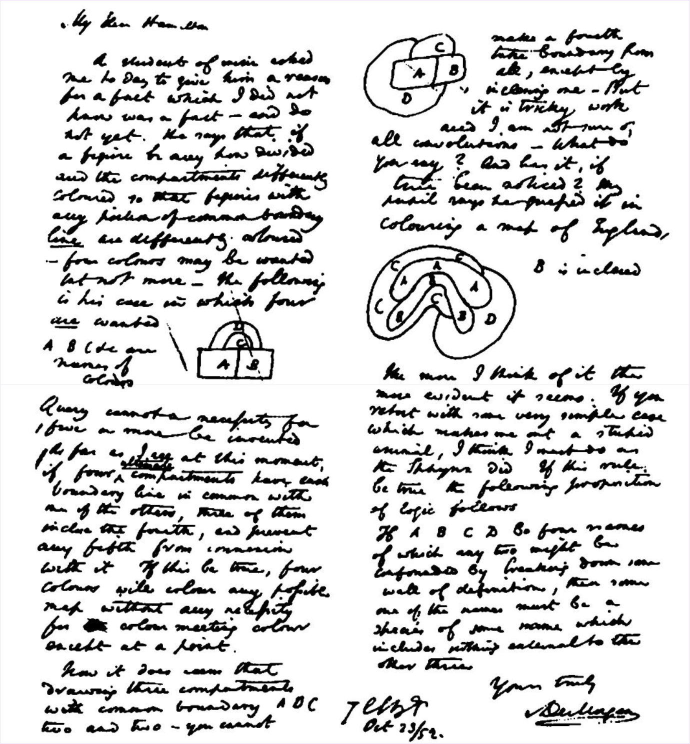
# Four Colour Theorem

**Theorem:** Any map can be coloured using four colours.

- You can always turn a map into a graph:
  - Each region becomes a vertex.
  - Put an edge between two vertices when the corresponding regions share a border.
- The graph you obtain is **planar** (no edge crossing).
- The four colour theorem states that any planar graph requires at most 4 colours.

# History of the Four Colour Theorem

- **Conjectured** in 1852.



My dear Hamilton

A student of mine asked me to day to give him a reason for a fact which I did not know was a fact — and do not yet. He says that if a figure be any how divided and the compartments differently coloured so that figures with any portion of common boundary line are differently coloured — four colours may be wanted but not more — the following is his case in which four are wanted

A B C D are names of colours

Query cannot a necessity for five or more be invented

As far as I see at this moment, if four ultimate compartments have each boundary line in common with one of the others, three of them inclose the fourth, and prevent any fifth from connexion with it. If this be true, four colours will colour any possible map without any necessity for colour meeting colour except at a point.

Now it does seem that drawing three compartments with common boundary A B C two and two — you cannot make a fourth take boundary from all, except by inclosing one — But it is tricky work and I am not sure of all convolutions — What do you say? And has it, if true been noticed? My pupil says he guessed it in colouring a map of England.

B is inclosed

The more I think of it the more evident it seems. If you retort with some very simple case which makes me out a stupid animal, I think I must do as the Sphynx did. If this rule be true the following proposition of logic follows

If A B C D be four names of which any two might be confounded by breaking down some wall of definition, then some one of the names must be a species of some name which includes nothing external to the other three.

Yours truly
A De Morgan

7 C T
Oct 23/52.

# History of the Four Colour Theorem

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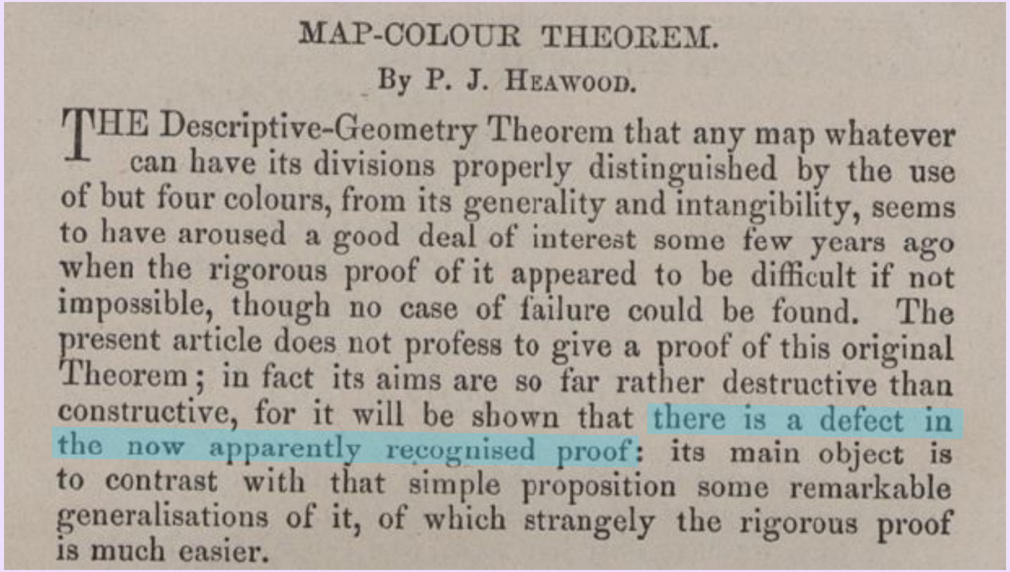
- Five colour theorem was proven in 1890. (Six colour theorem is easy.)



MAP-COLOUR THEOREM.

By P. J. Heawood.

THE Descriptive-Geometry Theorem that any map whatever can have its divisions properly distinguished by the use of but four colours, from its generality and intangibility, seems to have aroused a good deal of interest some few years ago when the rigorous proof of it appeared to be difficult if not impossible, though no case of failure could be found. The present article does not profess to give a proof of this original Theorem; in fact its aims are so far rather destructive than constructive, for it will be shown that there is a defect in the now apparently recognised proof: its main object is to contrast with that simple proposition some remarkable generalisations of it, of which strangely the rigorous proof is much easier.

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## The Solution of the Four-Color-Map Problem

*Four colors suffice to color any planar map so that no two adjacent countries are the same color. This famous conjecture has been proved true by a new kind of proof, one that relies on high-speed computers*

by Kenneth Appel and Wolfgang Haken

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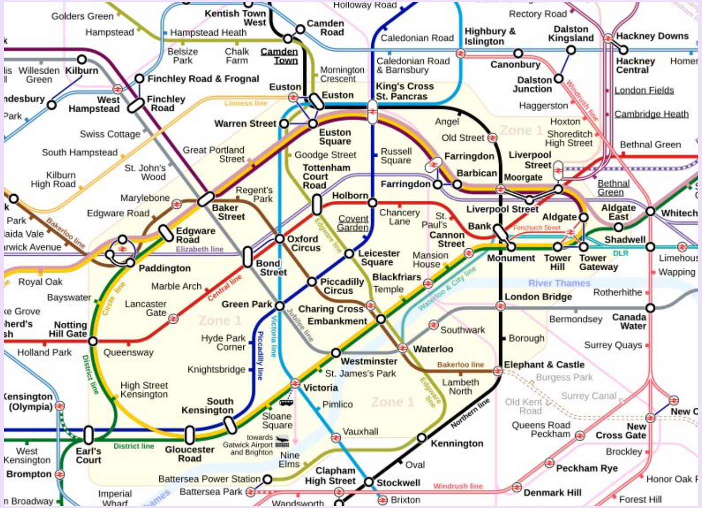
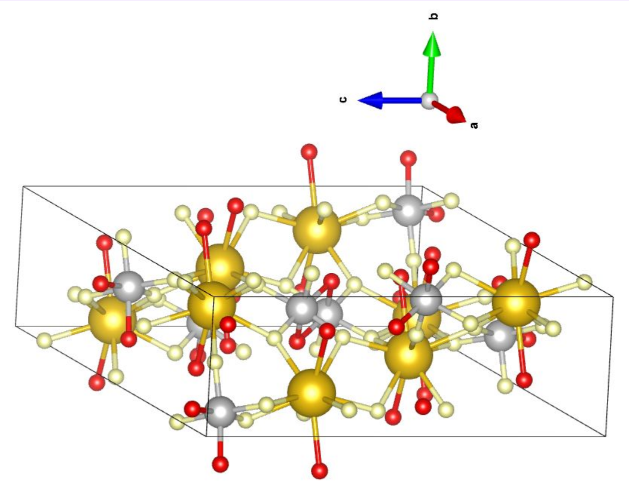
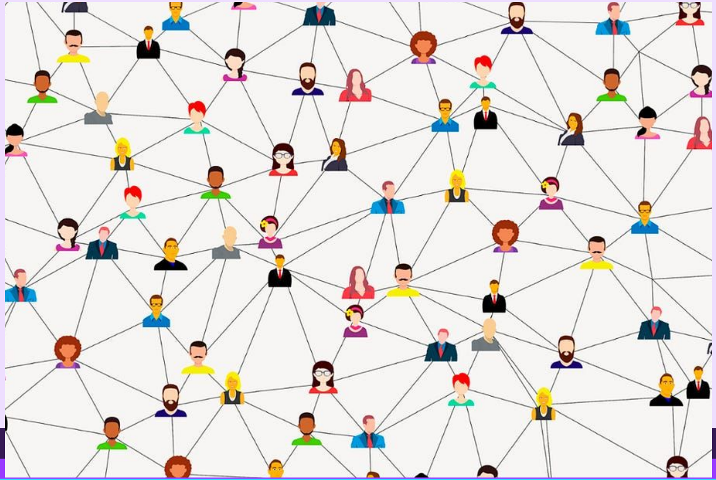
Mathematics helps in computer science.
Computer science helps in mathematics.

# Other applications of graphs



# Thank you!