Analysing Networks

Example: Name 2 people
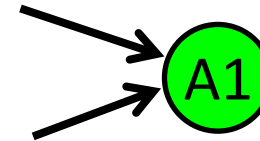
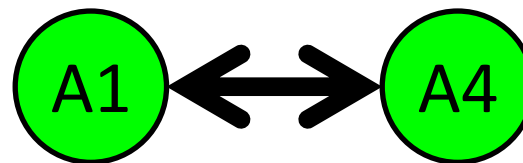| Person	Contact1	Contact2
Alicia	Julia	Ken
Andrew	Julia	Ken
Johann	Julia	Tom
Josh	Julia	Alicia
Julia	Andrew	Josh
Ken	Andrew	Alicia
Roberto	Julia	Ken
Tom	Johann	Josh

Measuring contacts

The **out-degree** is the number of people the student named:
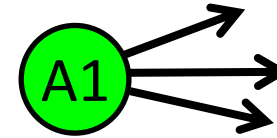
The **in-degree** is the number of people who named the student:

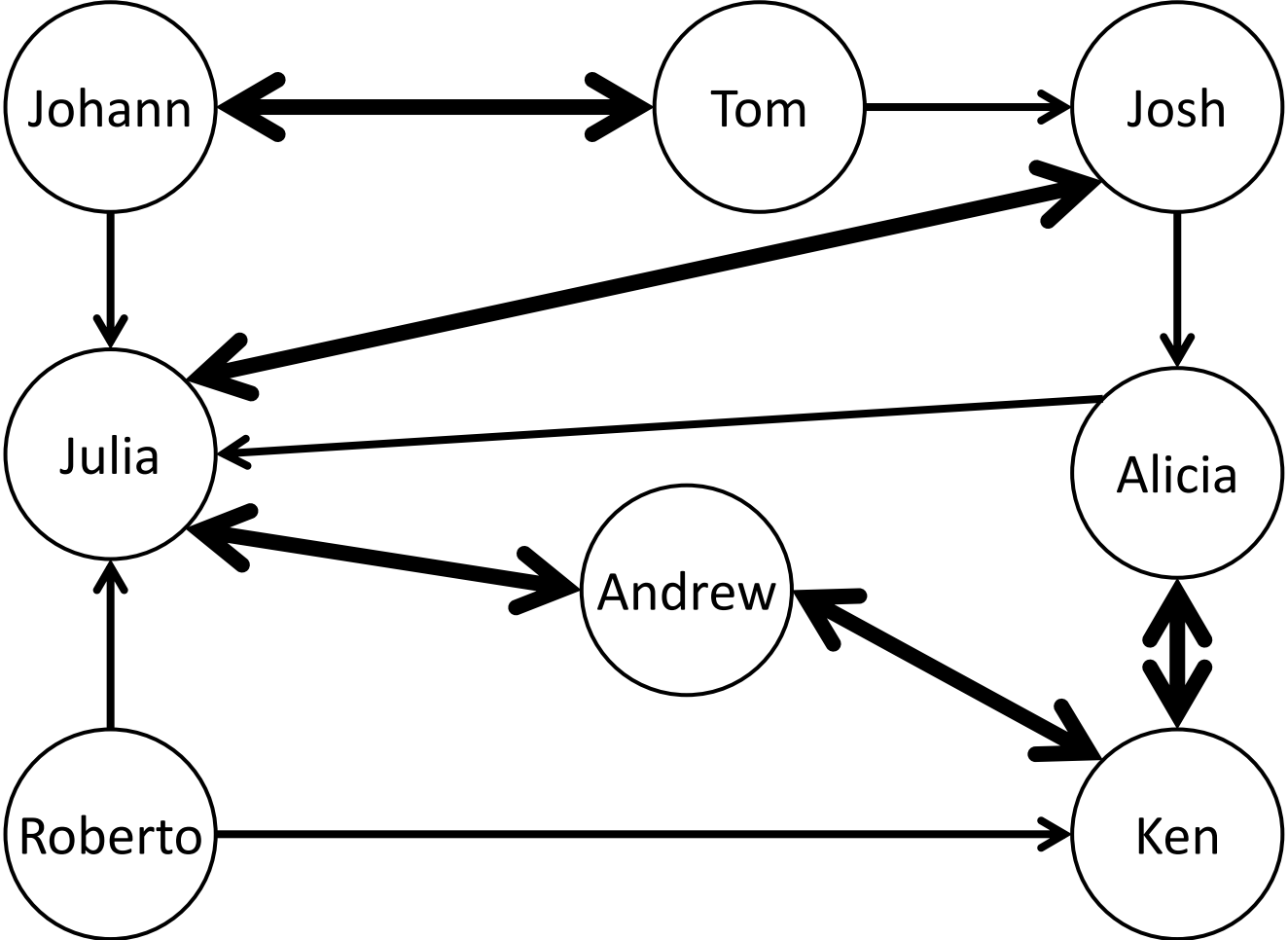Two students who each name each other form a **mutual link**

Add degree data

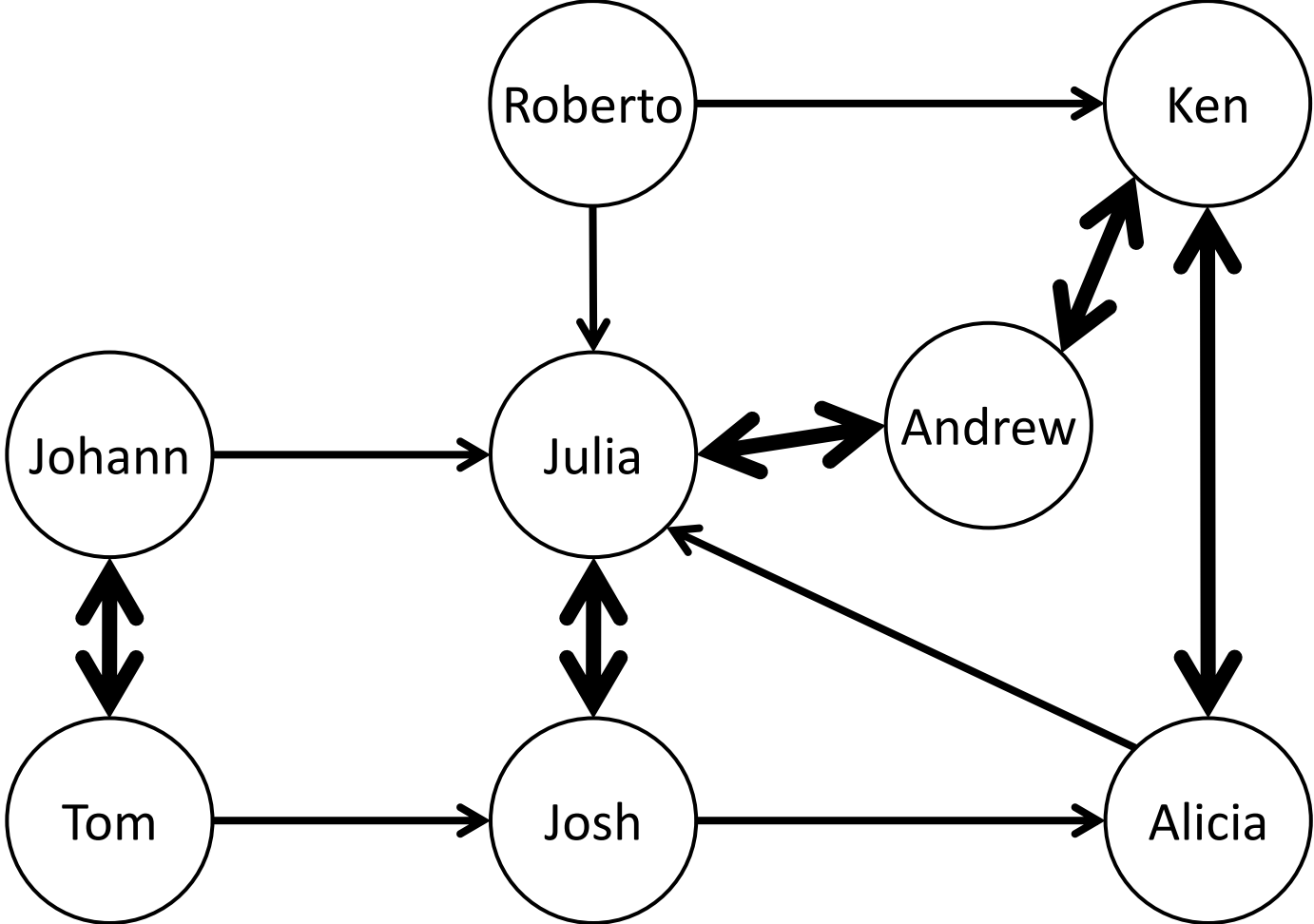| Person	Contact1	Contact2	Out-Degree	In-degree	Mutual Links
Alicia	Julia	Ken	2	2	1
Andrew	Julia	Ken	2	2	2
Johann	Julia	Tom	2	1	1
Josh	Julia	Alicia	2	2	1
Julia	Andrew	Josh	2	5	2
Ken	Andrew	Alicia	2	3	2
Roberto	Julia	Ken	2	0	0
Tom	Johann	Josh	2	1	1

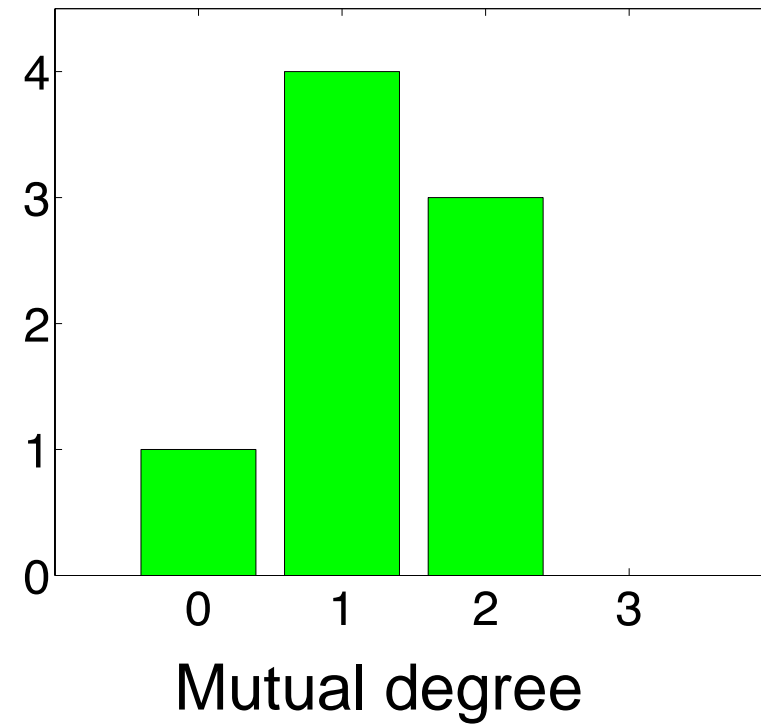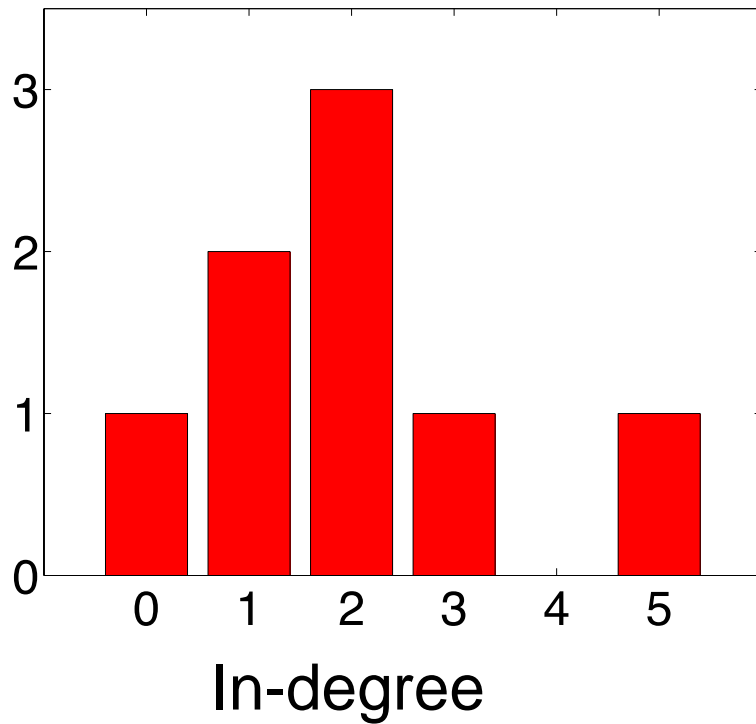**Network structure**
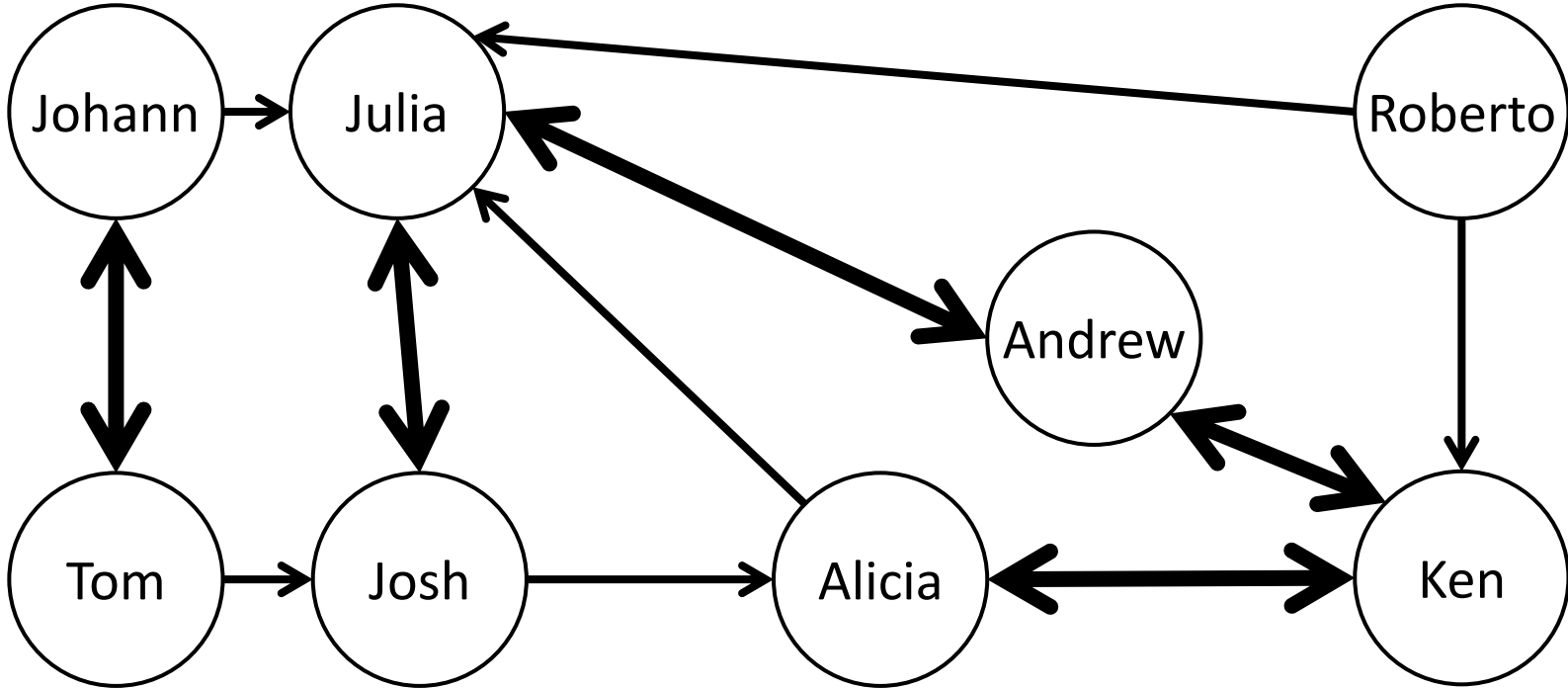
Network structure

Network structure

Degree distribution
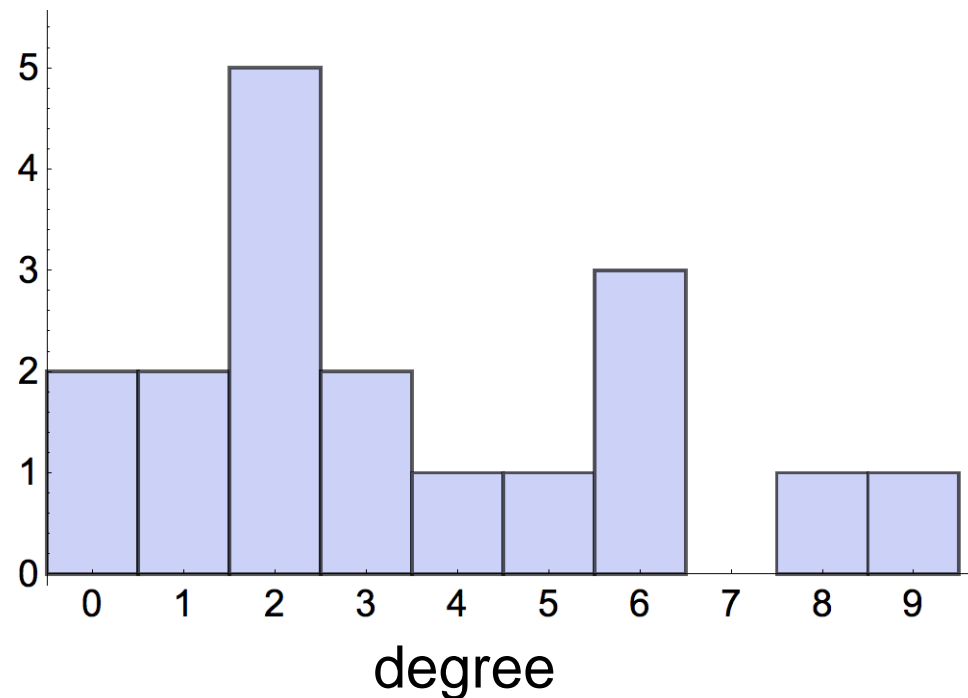
We can plot the degree distribution as a histogram

'Average' degree

Mean: add up values and divide by number of values

Median: sort values into order and pick middle one

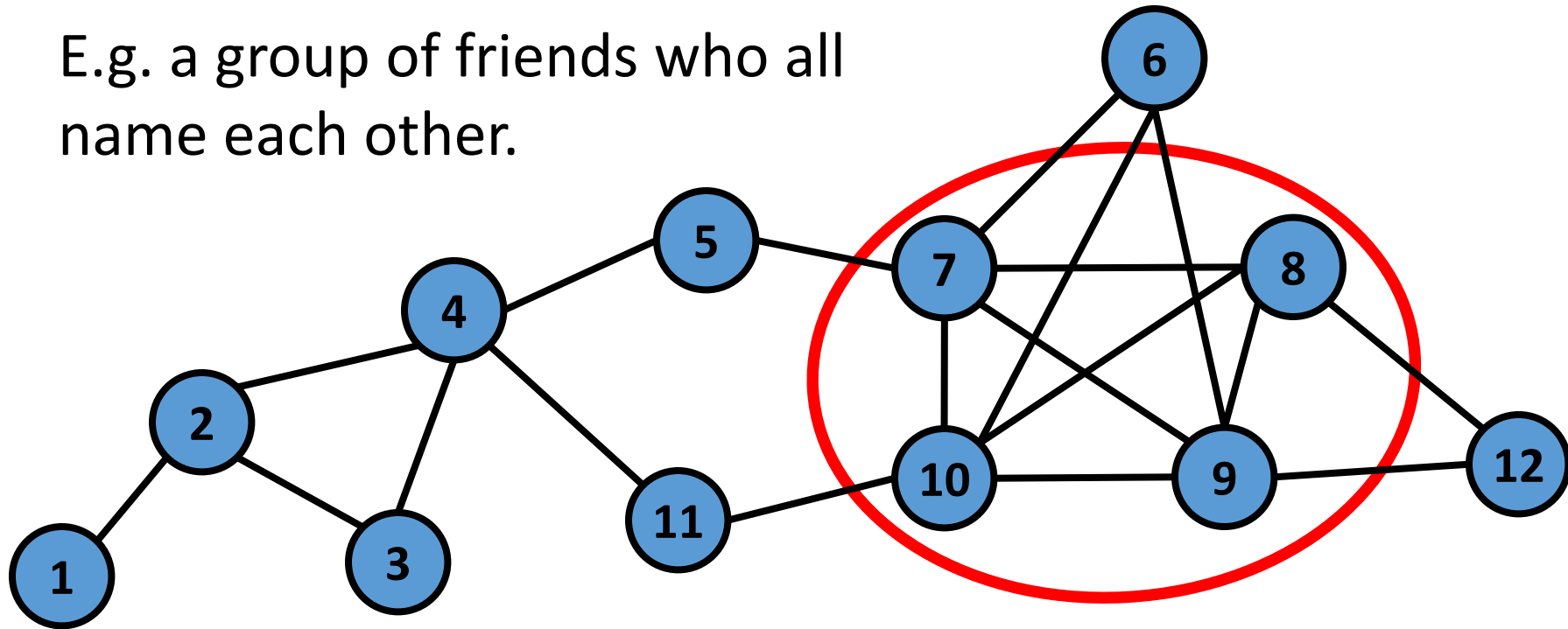**Mode**: pick most frequent value

Mean = 4.3

Median = 3

Mode = 2

Cliques

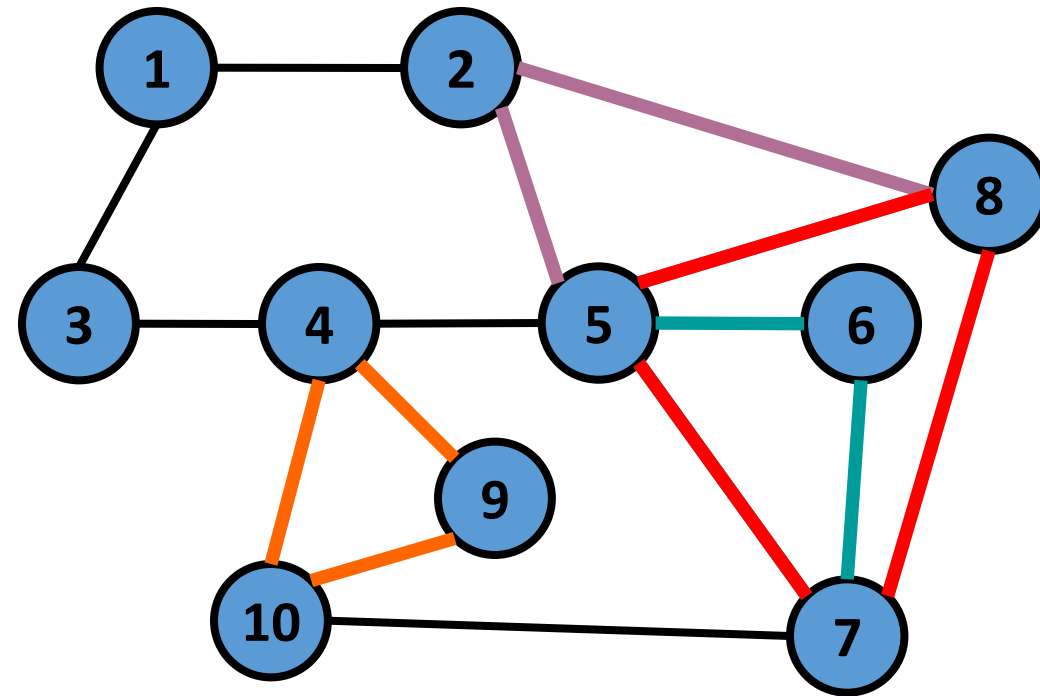A **clique** in a network is a set of points in which every pair of points is connected.

E.g. a group of friends who all name each other.

Triangles

- Finding cliques in large networks is hard.
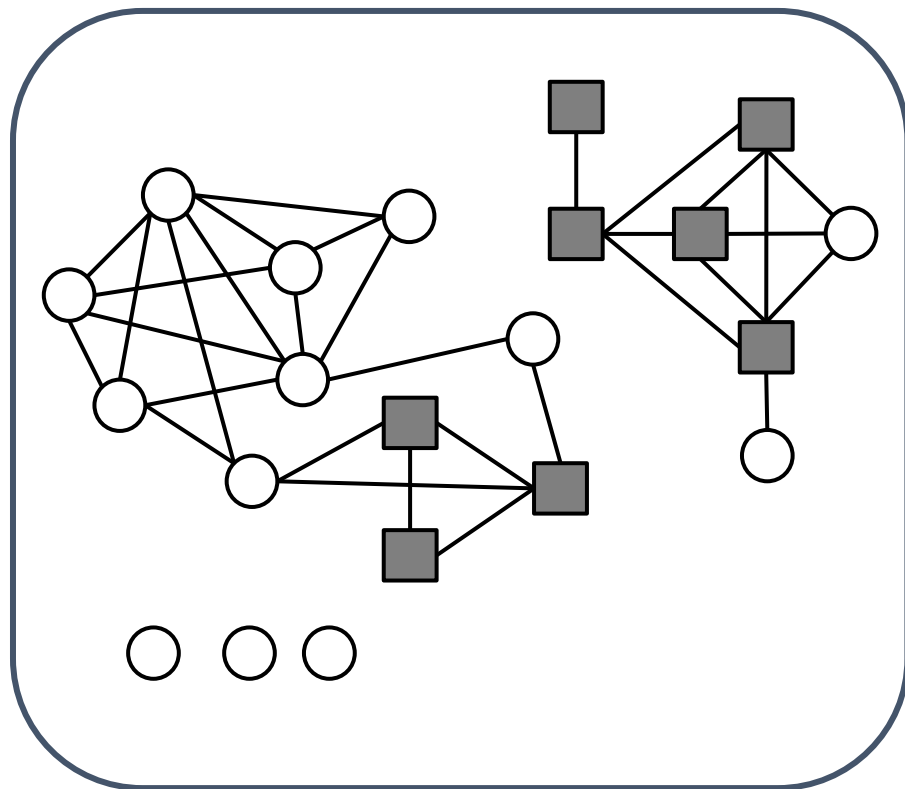- A **triangle** is a simple clique that is usually easier to find.

The number of triangles is a simple way to assess how socially clustered the network is.

Four triangles:

Ages 7-8

Ages 10-11