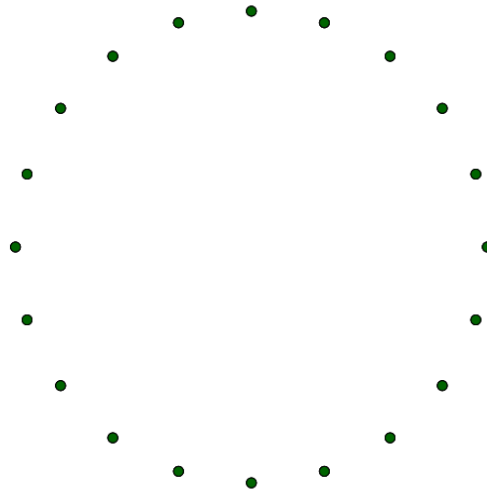




Advanced Mathematics
Support Programme®

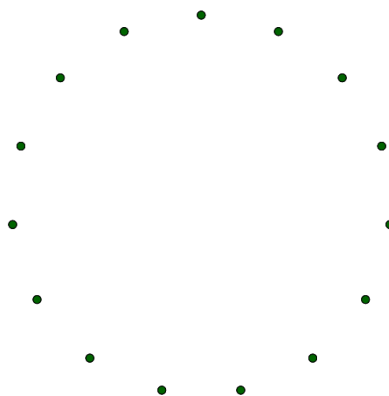
The Connected World

- 1) Connect the 20 people in this diagram with 4 friends each (next door neighbour and next but one).



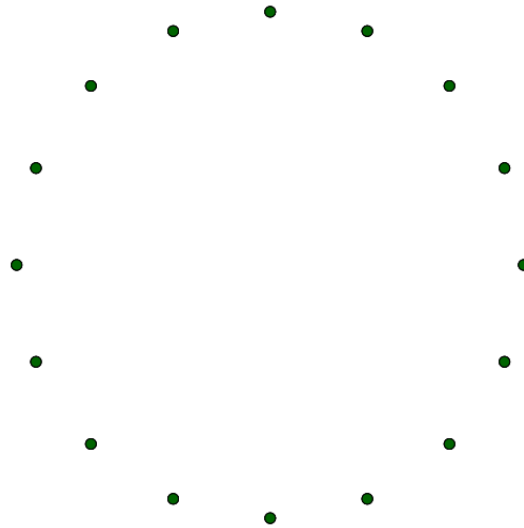
- i) What is the maximum separation in this diagram?
- ii) What happens if you change the number of friends to 6?

- 2) Connect the 15 people in this diagram with 4 friends each (next door neighbour and next but one).



- i) What is the maximum separation in this diagram?
- ii) What happens if you change the number of friends to 6?

3) Connect the 16 people in this diagram with 4 friends each (next door neighbour and next but one).

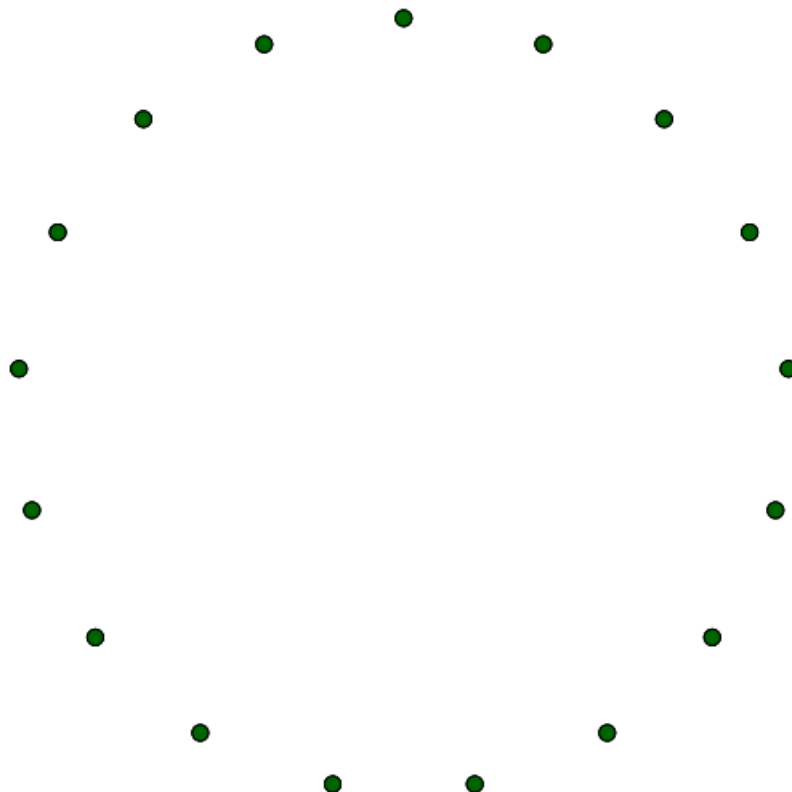


i) What is the maximum separation in this diagram?

ii) What happens if you change the number of friends to 6?

4) Below is the diagram with 17 dots. Can you predict what the separation would be for 4 and 6 friends before you draw the diagram?

5) Draw the diagram to check.



| Number of people (n) | Number of friends (f) | Size of separation(S) |
|----------------------|-----------------------|-----------------------|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

Can you find a formula that connects S, f and n?