

Join the Dots

In this investigation, you will investigate the number of lines that can be used to join a different number of dots.

- Here is one dot. No lines can join a single dot.
- Here are 2 dots that can be joined by 1 line.

Draw 3 dots. How many lines can be used to join the 3 dots?

Continue with 4, 5 and 6 dots.

Join the Dots

Draw a table and record your results. Use the example to help you.

Number of dots	Number of lines
1	0
2	1

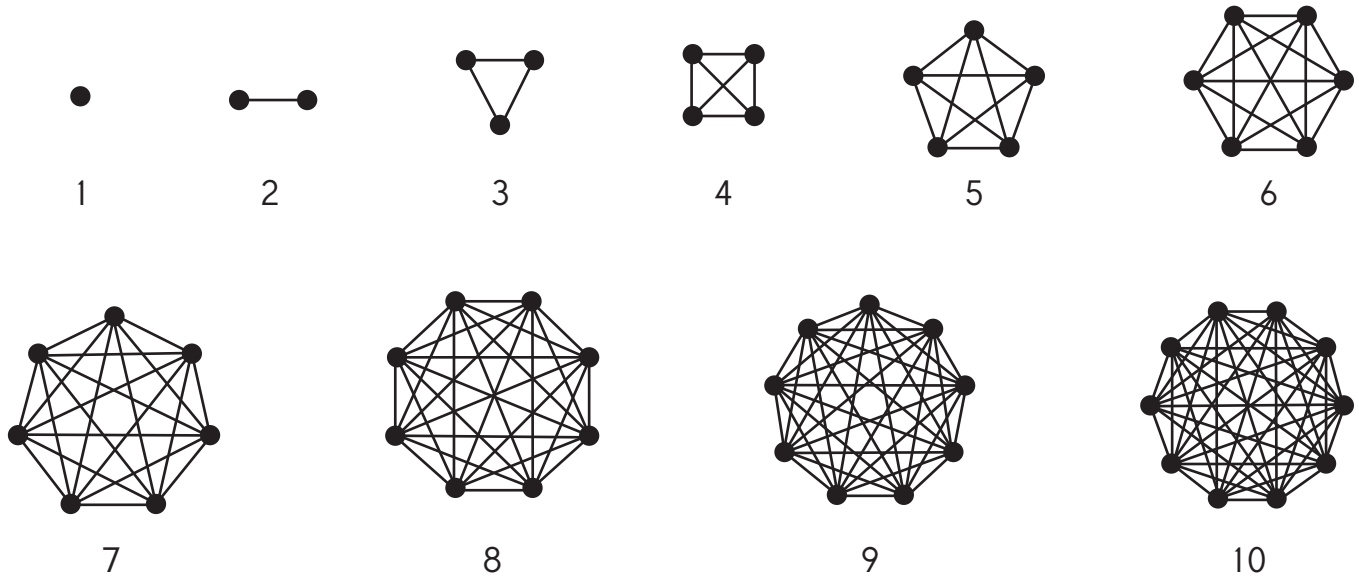
Can you spot any patterns?

Can you predict the number of lines used with 7, 8, 9 and 10 dots?

Test your answers.

Teacher Guidance

You may wish to model how to lay out the three dots and connect all of them so that the children find the correct number of lines.



Number of dots	Number of lines
1	0
2	1
3	3
4	6
5	10
6	15
7	21
8	28
9	36
10	45

The pattern of the number of lines are the triangular numbers.

It works because with 2 dots, you join the first dot to the other. (1)

With 3 dots, you join the first dot to 2 dots and the second to one dot. (2 + 1)

With 4 dots, first dot to 3 dots, 2nd dot to 2 dots, 3rd dot to 1 dot. (3 + 2 + 1)