

INVESTIGATION # 7

# Dots and Lines

## Task #1:

Mark three dots on a page as shown in the diagram here:



How many lines are needed to join each dot to every other dot?

## Task #2:

Mark four dots on a page.

How many lines are needed to join each dot to every other dot?

Can you draw the dots in another pattern so that more lines are needed?

In this investigation you need to make sure you always draw the dots so that you get the **maximum number of lines possible**.

## Task #3:

Complete this table using what you have found already and by drawing more diagrams.

No. of dots	1	2	3	4	5	6
No. of lines						

## Task #4:

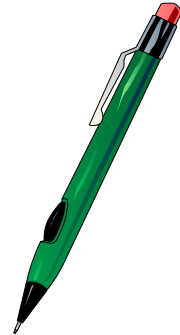
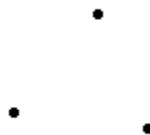
Using the table find a pattern or rule to predict:

- how many lines are needed when there are 10 dots?
- how many dots would need 91 lines to join them?

ASSESSMENT TASK

## Dots and Lines

If three dots are marked on a page as shown in this diagram it requires three lines to join each dot to every other dot.



1. Draw a diagram showing clearly the maximum number of lines required to join
  - (a) 4 dots
  - (b) 5 dots

- 2.. Complete this table showing the **maximum number of lines** needed to join various amounts of dots:

No. of dots	1	2	3	4	5	6	7	8	9	10
No. of lines										

3. How many lines would be needed to join 40 dots?
4. How many dots would require 1326 lines to join them?

### Handshakes:

A group of three people meet in a room and introduce themselves by shaking hands with each other. This requires three handshakes.

5. Work out how many handshakes it would require for five people to introduce themselves to each other.
  
6. If a group of people took 105 handshakes to introduce themselves to each other how many people were there?

### Gifts:

A group of three people give a gift to each other. This requires six gifts.



7. Work out how many gifts it would require if a group of 20 people were to give gifts to each other.
  
8. If 56 gifts were given between a group of people, how many people were in the group?