

# Top Secret Periodic Table

**Purpose** To discover patterns from various kinds of information in order to arrange elements or items into a meaningful sequence.

**Discussion** Because of your expertise in such matters, you have been chosen for this top secret mission. Your mission, should you choose to accept it, is to work with the “sketches” of the suspicious characters on the secret agent list. They are part of a family of secret agents, but the most deadly of all has never been sketched. Your job is to arrange the sketches in a pattern so that you can draw the missing secret agent.

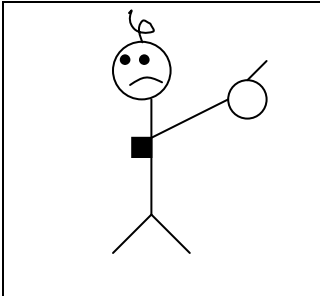
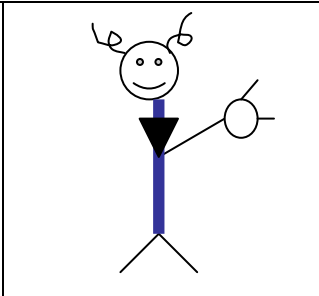
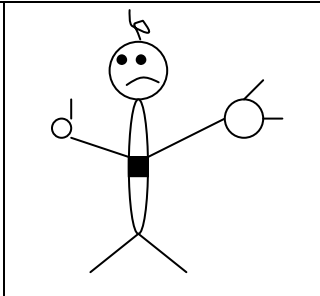
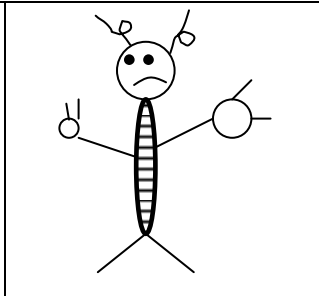
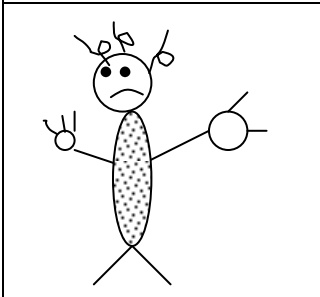
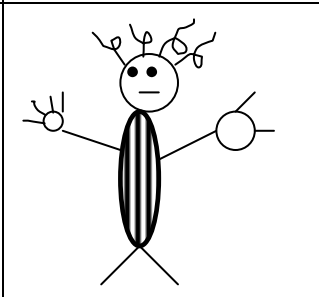
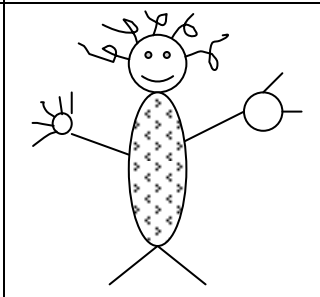
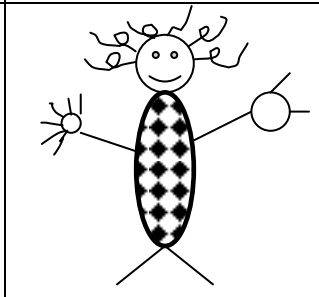
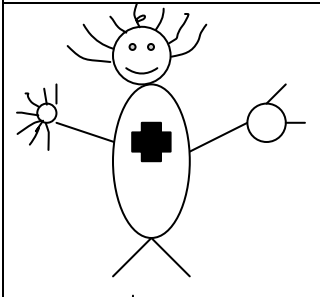
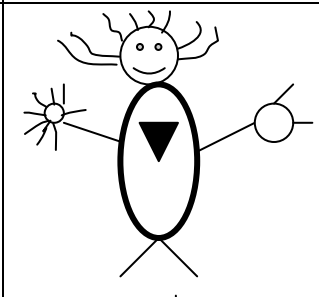
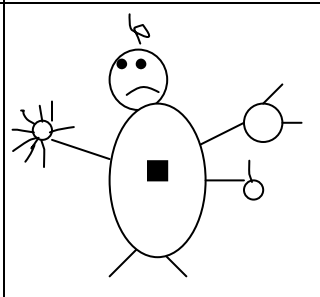
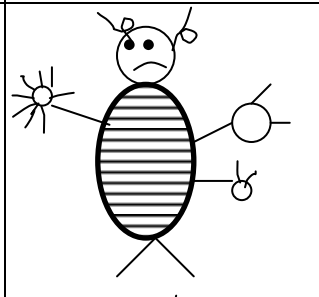
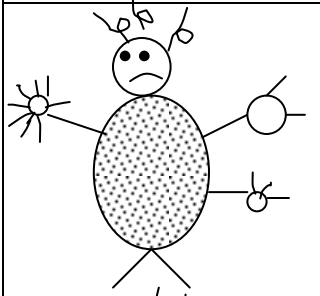
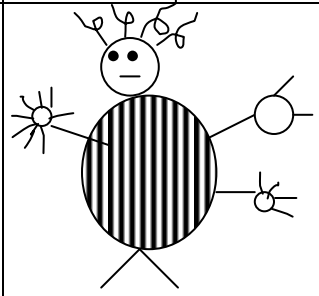
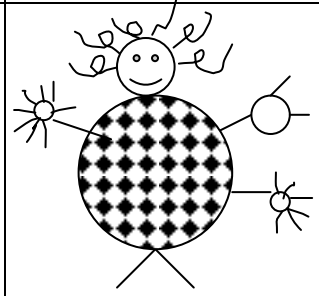
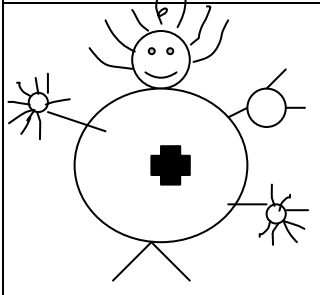
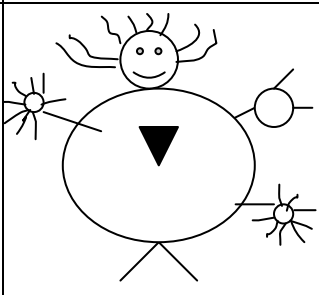
## Procedures

1. Here is a helpful activity en route to solving your caper. You are given the numbers from 0 to 99 written on little squares of paper. You can arrange these numbers in order so that each number is greater than the previous number by placing them all one by one in order from lowest to highest. Once they are in one long row of 100 squares, you can now, **WITHOUT CHANGING THE ORDER**, organize the sequence of 100 numbers into columns and rows so that there are similarities in columns as well as rows. You must still keep the numerical sequence: each number is greater than the previous number.

0	1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29
30	31	32	33	34	35	36	37	38	39 ....

Notice that each number is one greater than the last. Also, now there is organization in columns as well → all the numbers in a column end in the same digit and begin with digits in consecutive order. And, finally, all the numbers in a row begin with the same digit. It might be useful to point out here that “**columns**” are vertical lists of numbers, and “**rows**” are horizontal strings of numbers.

2. Use this same idea with the sketches of suspicious characters. First arrange them in one single line so that each little man is **DIFFERENT** from every other by one item. Once you have that arrangement, organize the sequence (*as done with the numbers*) so that you have commonalities in columns as well as rows. Remember to keep the original arrangement as you do this! Unlike the numbers, not all the columns and rows need to have the same number of squares. **HINT:** look at the pattern of the actual Periodic Table.
3. Once you have the correct arrangement, you will be able to draw the missing secret agent. Draw him and add him to your chart.
4. Now list **ALL** the relationships you see as you look down a column of agents.
5. List **ALL** the relationships you see as you look across a row.

			
			
			
			
		<h1>Secret Agent</h1> <h1>Top Secret</h1>	

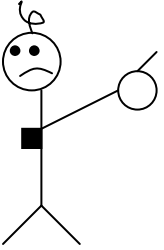
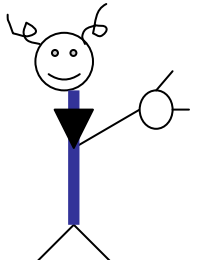
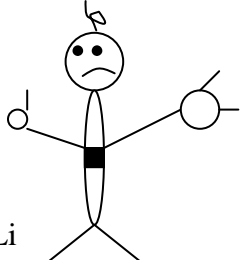
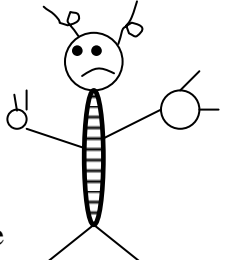
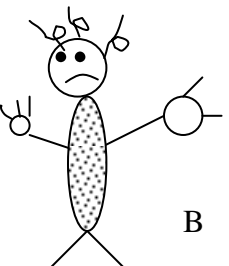
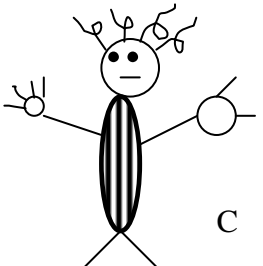
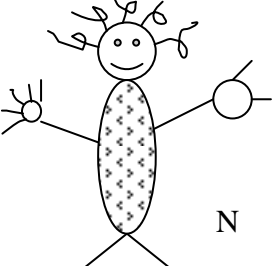
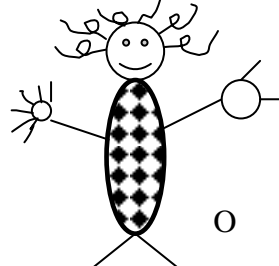
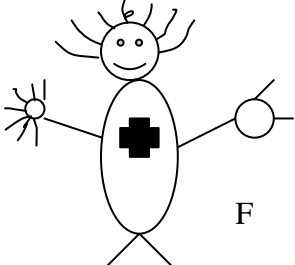
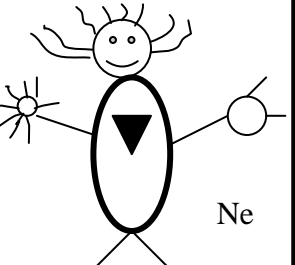
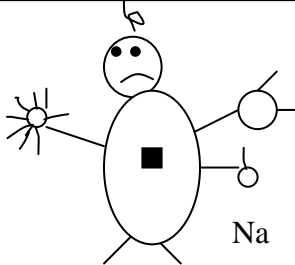
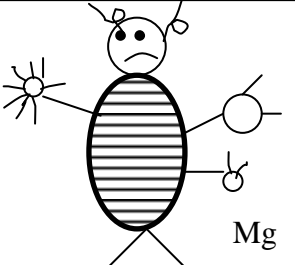
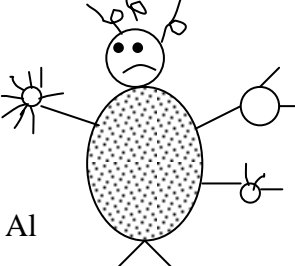
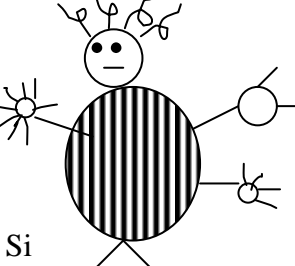
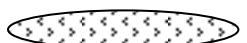
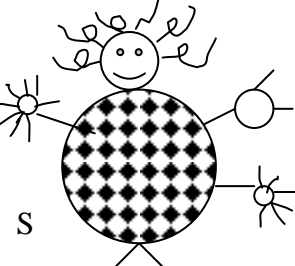
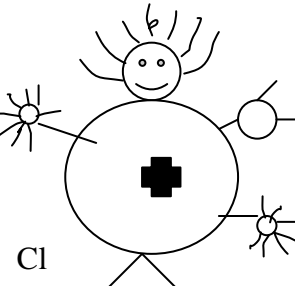
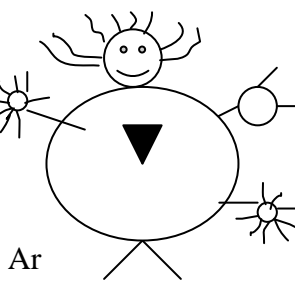
## INTRODUCTION to Top Secret Agent Activity

1. Discuss the concept of ‘Periods’
  - a. A repeating pattern
  - b. **Sentences** in a paragraph → subject predicate . subject predicate . subject predicate .
  - c. Hours, Blocks, **Periods in school** → start over each hour with same amount of time
  - d. “Rows” of typing on a computer → “enter” or “return” to the next line
  
2. Have students use numbers 0 – 99 and come up with repeating patterns ... give them a few minutes to draw the pattern without help.

0	1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29
30	31	32	33	34	35	36	37	38	39
40	41	42	43	44	45	46	47	48	49
50	51	52	53	54	55	56	57	58	59 ...

- The END number is the same in each column (VALENCE → up to 8 e-)
- Rows increase by 1 → atomic number (protons)
- Repeating pattern by 10’s → ROWS or PERIODS (7 periods)
- Columns = Groups = “Families” → possess similar properties

Answer Key

 <p>H</p>	 <p>He</p>	 <p>Li</p>	 <p>Be</p>
 <p>B</p>	 <p>C</p>	 <p>N</p>	 <p>O</p>
 <p>F</p>	 <p>Ne</p>	 <p>Na</p>	 <p>Mg</p>
 <p>Al</p>	 <p>Si</p>	<ul style="list-style-type: none"> <li>• 5 hairs</li> <li>• small smile</li> <li>• 5 fingers on 3<sup>rd</sup> hand</li> <li>• </li> </ul> <p>P</p>	 <p>S</p>
 <p>Cl</p>	 <p>Ar</p>	<ul style="list-style-type: none"> <li>• Arms = Energy shells (Rows)</li> <li>• Fingers = e- in each shell</li> <li>• Hairs = valence e-</li> <li>• Body Size = atomic mass</li> <li>• Facial expression = alkali metals (sad) Noble gases (happy)</li> <li>• Body pattern = family similarity</li> </ul>	