Handshakes Lesson Plan

- Lesson Plan for Year 7
- Time: 1 hour
- The aim of this lesson is for pupils to investigate the mathematical situation of counting the total handshakes when a group of people shake hands with each other. The focus of the investigation is on choosing the mathematical means to solve a problem.
- Preparation: organise two sets of groups of 4 with different membership for the two activity sections.

Starter: (15 mins)

Ask a group of volunteers to come to the front to demonstrate the problem (i.e. each must shake hands with each of the others; how many handshakes will there be?). Demonstrate and work out the answer for 0, 1, 2 and 3 people. Write the answers in a table on the board.

Activity: (15 mins)

Students work in groups of 4, each working on one of 3 different worksheets. (Note: each sheet gives different ways of setting out the problem). Each group member should be assigned a group role: scribe, person to report back, checker, discussion leader. The group’s task is to write down one strength and one weakness of the method for showing the handshakes from their worksheet.

Feedback: (10 mins)

Groups report back on the strengths and weaknesses of the method they have used.

Activity 2: (20 mins)

New groups (composed of at least one member of each method group).

Solve the problem for 5 people shaking hands and above, using the preferred method for the group. Record results of extra worksheet. (Same group roles).

Homework:

Write a report of what has been found out.
Worksheet Method 1

Write your group role:
Scribe .............................................................................
Reporter ...........................................................................
Checker .......................................................................... 
Discussion Leader..........................................................

Everyone in your group shakes hands with everyone else. Write down a list of all of the handshakes.

How many handshakes are there?

Now work out how many handshakes there would be with 5 people.

Write down one strength and one weakness of writing down the handshakes in a list:

Strength:

Weakness:
Worksheet Method 2

Write your group role:
Scribe .................................................................................................
Reporter ...........................................................................................
Checker .............................................................................................
Discussion Leader.............................................................................

Everyone in your group shakes hands with everyone else.
Give each person a letter A, B, C, D.
When A shakes hands with B, you should write AB.

Fill in the table to show all of the handshakes:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How many handshakes are there?

Now work out how many handshakes there would be with 5 people.

Write down one strength and one weakness of writing down the handshakes in a table like this:

Strength:

Weakness:
Worksheet Method 3

Write your group role:
Scribe ..........................................................................................
Reporter ..................................................................................
Checker ...................................................................................
Discussion Leader.................................................................

Everyone in your group shakes hands with everyone else. 
Give each person a letter A, B, C, D. 
When A shakes hands with B draw a line from A to B on the diagram. 
Complete the diagram to show all of the handshakes.

\[ \begin{array}{c}
A \\
B \\
C \\
D \\
\end{array} \]

How many handshakes are there ?

Now work out how many handshakes there would be with 5 people.

Write down one strength and one weakness of writing down the handshakes as a diagram:

Strength:

Weakness:
Worksheet

Write your group role:
Scribe ......................................................................
Reporter ..................................................................
Checker ............................................................... 
Discussion Leader......................................................

• Work out how many handshakes there would be with 5 people.
• Now, work out how many handshakes there would be with 6 people.

Complete the table below:

<table>
<thead>
<tr>
<th>Number of people</th>
<th>Number of Handshakes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
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<td>4</td>
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<td>6</td>
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<td>7</td>
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<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

• Write down a rule for working out the number of handshakes for any number of people.