1.7 Analyzing Puzzles And Games

Both inductive and deductive reasoning are useful for determining a strategy to solve a puzzle or win a game.

Example 1: Use four 9’s in a math equation that equals 100.

\[
\frac{9}{9} + 99 + (9 \div 9) = 100
\]

Example 2: The following figure is made up of 12 sticks. Can you move just two sticks and create seven squares?

Example 3: Put the numbers 1 to 8 in each square so that each side adds to the middle term.

\[
\begin{array}{ccc}
6 & 5 & 1 \\
4 & 2 & 8 \\
7 & 3 & 2
\end{array} \\
\begin{array}{ccc}
1 & 8 & 4 \\
7 & 1 & 5 \\
5 & 2 & 6
\end{array} \\
\begin{array}{ccc}
8 & 1 & 5 \\
2 & 14 & 6 \\
4 & 7 & 3
\end{array} \\
\begin{array}{ccc}
8 & 4 & 3 \\
1 & 15 & 5 \\
6 & 2 & 7
\end{array}
\]

\[1, 2, 3, 4, 5, 6, 7, 8\]
**Kakuro** is an arithmetic puzzle in a grid. You must place the digits 1 to 9 into a grid of squares so that each **horizontal or vertical run of white squares adds up to the clue** printed either to the left of or above the run.

**No digit can be repeated** within any single run. Runs end when you reach a non-white square. Every puzzle has a **single unique solution** and can be solved purely by logic - no guessing is required.

**Example 4:** Complete the following Kakuro puzzles by filling in the grey squares.

![Kakuro puzzles](image)

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Assignments: pg. 55 #4, 5, 6, 7, 9, 10, 11