Engineering the Roman Way: A Design Challenge with Ellie

Learning objective: To understand the structural components and engineering significance of Roman architecture, specifically the aqueduct and the arch.

Follow Ellie the elephant's expert guidance to illustrate a Roman aqueduct. Use your drawing to show how the Romans used arches to transport water across the empire. Ensure your labels clearly identify the key architectural features.

Draw: Create a detailed sketch of a Roman aqueduct stretching across a rolling landscape. Use a 'cross-section' style for the top channel to show the water inside. Include rugged terrain in the background. Ensure the arches are drawn with precision, showing the individual stone blocks used in the construction. The style should be realistic and technical, similar to an architect's blueprint.

Label words: Aqueduct · Keystone · Arch · Conduit · Pillar · Gravity

Steps:

1. Step 1: Draw a series of five semi-circular arches supported by tall, sturdy pillars. Add a stone channel on the very top of the arches where the water would flow. Label the 'Arch' and the 'Pillar'.
2. Step 2: Draw a small, wedge-shaped stone at the very top centre of each arch. Label this the 'Keystone'.

3. Explain why the Romans chose to build aqueducts using a series of arches rather than a solid, thick stone wall. Consider the use of materials and the flow of water.

4. Justify why the 'keystone' is the most critical part of an arch's structure. What might happen to the arch if this specific stone were removed?

5. Compare and contrast a Roman aqueduct with a modern-day water supply system. What are the similarities in their purpose?

6. If you were a Roman engineer, where would you position the start and the end of an aqueduct to ensure water flows correctly using only gravity?