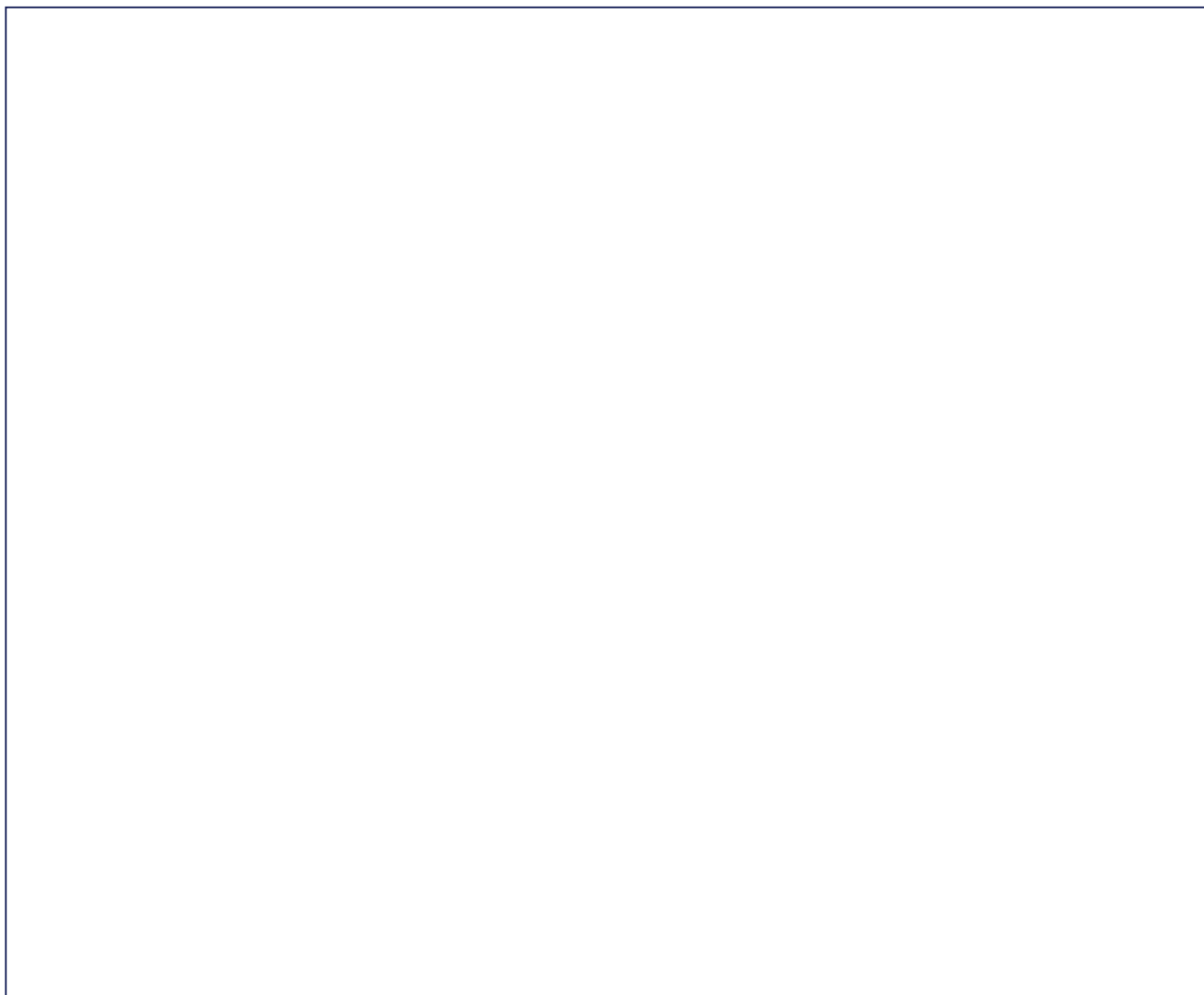


Max's Orchestral Math: Designing Your Own Instrument

Learning objective: To identify and categorize musical instruments into families (strings, woodwind, brass, percussion) and understand how their physical structure affects the sound they produce.

Max the monkey is putting together an orchestra for the forest concert, but he needs some unique instruments. Use the word bank to label your invention. Think about how your instrument creates vibration and how the size of the instrument changes the pitch.

Draw: Draw a brand-new, original musical instrument in the center of the page. The style should be clear and technical, like a blueprint. Include detailed labels for its components. Ensure the drawing shows how the sound is made (e.g., if it is a string instrument, show the strings clearly; if it is percussion, show the surface to be struck).



Label words: String family · Woodwind family · Brass family · Percussion family · Vibration · Pitch · Resonance · Body · Bridge · Mouthpiece

Steps:

1. Label your instrument drawing with the correct instrument family and at least three parts that help it produce sound.
2. Explain why the size or length of a string or tube changes the pitch of the note produced.
3. Compare and contrast how a percussion instrument creates sound versus a string instrument.

4. If you wanted your instrument to play a very low, booming sound, would you make it larger or smaller? Justify your answer using the term 'vibration'.
5. What might happen to the sound of your instrument if you changed the material it was made from (e.g., from wood to metal)?
6. Design a 'special feature' for your instrument that helps a musician play it more easily. Describe how it works.