

The Orchestra Expedition: Instrument Classification Challenge

Learning objective: To identify, classify, and explain the physical properties of musical instruments within the four main orchestral families.

Max the monkey has been tasked with organising the instrument storage room. Help him sort the instruments by their method of sound production. For each instrument listed, identify its family (Strings, Woodwind, Brass, or Percussion) and describe the physical method used to create sound. Finally, justify why certain instruments might be tricky to classify.

Word bank: String · Woodwind · Brass · Percussion · Vibration · Resonance · Air column · Tension

1. Max has found a flute and a cello. Classify each instrument into its correct family and explain how the player creates sound in each one. (4 marks)

2. Compare and contrast the way a trumpet produces sound versus how a snare drum produces sound. Why are they in different families? (3 marks)

3. A piano is often difficult to classify because it has strings but is struck by hammers. Justify why it is most commonly categorised as a percussion instrument. (3 marks)

4. Explain why increasing the length of an air column in a trombone changes the pitch of the note produced. (2 marks)

5. What might happen to the sound produced by a violin if the tension of the strings were significantly decreased? Justify your scientific reasoning. (2 marks)

6. Design a new, original musical instrument. Describe which family it belongs to and explain the mechanism by which it produces its unique sound. (4 marks)

Draw: In the space below, draw a diagram of a string instrument. Label the parts that create the vibration and the part that helps to amplify the sound (the resonator).



Extension challenge: Research the 'Orchestral Seating Plan'. Create a labelled map showing where each instrument family sits on stage. Explain why you think the conductor places the louder brass instruments behind the quieter string instruments.