School name

Place a checkmark or X in all circles (○) when you have inspected that the instruments satisfy the stated conditions. Score the students by entering a number before the slash in each scoring box \[
\frac{\text{score}}{\text{maximum points}}\] where \( n \) is the maximum number of points for that category.

Team member name A  _____  Grade

Instrument type  _____  Senior?

○ No electric or electronic parts
○ No toys or professional instruments or their parts
○ No purchased items: bells, whistles, mouthpieces, reeds, instrument strings, audio oscillators
○ Energy supplied solely by student, no electricity
○ Wind instrument family
○ Built by student within the last year

\[
\frac{\text{score}}{5}
\]

Play the lowest and highest notes. How many octaves?

1  Less than a fifth
2  An octave or less
3  Less than 2 octaves
4  Two octaves
5  More than 2 octaves

\[
\frac{\text{score}}{5}
\]

Sound quality compared to standard instruments:

0  No sound at all
1  Pathetic
2  Poor
3  Adequate
4  Pretty good
5  Sounds like the standard instrument (or better), and in standard tune (check with pitch pipe)
Team member name B

Instrument type

Senior?

- No electric or electronic parts
- No toys or professional instruments or their parts
- No purchased items: bells, whistles, mouthpieces, reeds, instrument strings, audio oscillators
- Energy supplied solely by student, no electricity
- Wind instrument family
- Built by student within the last year

/ 5 Play the lowest and highest notes. How many octaves?

1 Less than a fifth
2 An octave or less
3 Less than 2 octaves
4 Two octaves
5 More than 2 octaves

/ 5 Sound quality compared to standard instruments:

0 No sound at all
1 Pathetic
2 Poor
3 Adequate
4 Pretty good
5 Sounds like the standard instrument (or better), and in standard tune (check with pitch pipe)

Theory

Ask questions as necessary to establish their understanding of music science. (30 points total; either student can answer)

/ 6 What is sound, and how do your instruments produce it? (Full-credit answer must mention vibration and resonance)

/ 4 How do you change the pitch?

/ 2 How do you change the volume?

/ 5 Show two waveforms with different amplitude. How do they sound different?
Show two waveforms with different frequency. How do they sound different?

If \( A_4 \) is 440 Hz, what is the frequency of \( A_3 \)?

If \( C_4 \) is 256 Hz, what note is three times that frequency?

**Team performance (3 minutes total)**

Points are assigned on overall musical quality and how well the members play together.


Difficulty.

1. Tune? What tune?
2. *Mary had a little lamb*
3. Simple tune
4. Adequate tune
5. Challenging
6. *Flight of the Bumblebee* or harder

Quality of written notation

0. Useless
1. Illegible
2. Poor
3. Adequate
4. Attractive
Team scoring

Evaluate the instrument designs, performances, and the team’s understanding of theory as a whole:

/ 10 Originality/creativity

0–4 Fundamental design flaws
5 Decent copies of an existing design in the same material
10 Would require all of: novel or unique materials (2); novel or unique design (3)

/ 10 Variety

5 Same instrument, about the same range
7 Same instrument, different ranges
8 Different instrument families (e.g., flute vs. reed), similar ranges
10 Different ranges and families

/ 10 Workmanship

0–4 Did not survive the demonstration in working order
5 Ugly but it worked
10 Would require all of: high quality materials (1); beautiful fabrication and finish (3); decorative touches (1)

______________________________  Judge’s signature