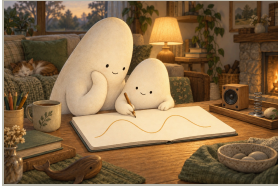


Follow the smooth wiggle

Why Electronics Use Sine Waves

Name _____

Date _____



Little Wonderer drew a line that rose, curved over, and dipped down. Again and again, it made the same smooth wiggle. "That shape is called a sine wave," said Big Wonderer. Sine is the math name for this smooth shape. Could a line on paper help explain a swing, a speaker, and electricity?



Outside, Little took a gentle swing. Near each end, the swing slowed, paused, and came back. It moved fastest through the middle. Its seat followed an arc. A sine-like line could show its back-and-forth position as time passed. The line was a record of the motion, not the shape of the seat's path.



At the table, Big held a spring above a tray. A spring is a coil that can stretch and return. Its lower end bounced up and down, slowing near each turn. Little watched the bounces grow smaller. A steady sine wave repeats evenly; this real spring gradually settled as it lost energy to its surroundings.

sine wave	the math name for a smooth, repeating wave shape
wiggle	a small movement back and forth
swing	a hanging seat that moves back and forth along an arc
spring	a coil that can stretch and return
generator	a machine that changes motion into electrical energy
speaker	a device whose moving cone nudges air to make sound

Follow the smooth wiggle

Why Electronics Use Sine Waves

Name _____

Date _____



Little moved one end of a rope gently from side to side along the floor. A wiggle traveled toward Big. Bits of rope moved back and forth while the wave moved along. Little drew its rounded shape. Smooth turning felt different from suddenly changing direction. The same kind of curve kept appearing in new places.



Big showed a generator: a machine that turns motion into electrical energy. Its magnet spins beside wire. The electric push grows, fades, and reverses smoothly. A sine wave records this change. Many spinning generators make AC power for homes. AC means the push changes direction again and again.



The speaker made a quiet tone. Its cone moved in and out, nudging air. A pure tone follows a sine-like rhythm. Smooth changes help machines work evenly. Electronics use other shapes too. Little wondered, "Where else can we find this smooth wiggle?"

1. Why does the wave drawing differ from the path of the swing's seat?
2. How does a spinning generator make a changing electric push?
3. What moves in a speaker to make a steady tone?

Your turn

Write one command sentence for a gentle wiggle.

Example: Swing gently, then draw the smooth path you felt.
