



Designing an Electric Guitar with Shapes

OVERVIEW

ESSENTIAL QUESTION

How can shapes be used to design an electric guitar?

OVERVIEW

The instrument is relatively simple: 6 strings, a fretboard, and some magnetic pickups set into a wooden body. But coupled with an amplifier, the electric guitar has provided musicians with an endless variety of sounds, from the crackling riffs of Chuck Berry to the echoey reverberations of Dick Dale to the fuzzy crunch of Kurt Cobain.



But it's more than the sound of the electric guitar that has made it the seminal rock instrument: it's the look as well. The shape of the electric guitar has become the unofficial symbol of Rock and Roll, and various guitar models have become synonymous with rock guitarists, from the lightning bolt shape of James Hetfield's Gibson Explorer, to Angus Young's devil-horned Gibson SG, to Randy Rhoads' futuristic Flying V. Today, the shape of electric guitars have become almost as diverse as the sounds they produce.

In this lesson, students learn how to identify shapes, and examine how different shapes combine to form well-known models of electric guitars. Students then design their own electric guitars, making sure to include all the components essential to the instrument.

Materials Required:

- Crayons, Markers, or Colored Pencils

OBJECTIVES

Upon completion of this lesson, students will:

1. KNOW (KNOWLEDGE):

- How to identify a shape based upon its characteristics
- The difference between parallel and perpendicular lines
- The construction and components of an electric guitar

2. MASTERY OBJECTIVE:

- Students will be able to use shapes to design their own electric guitar.

ACTIVITIES

MOTIVATIONAL ACTIVITY

1. Tell students that in this lesson, they will be learning about shapes. Show **Image 1, Types of Shapes**. Ask students:
 - Have you ever seen these shapes before? Which one? Where have you seen it?
 - How are these shapes different?
2. Point to each shape, and ask:
 - How many sides does this shape have? Can you count them?
 - Are all the lines in the shape the same length, or are some lines longer than others?
 - Do all the lines go in the same direction, or do they go in different directions? Are they **parallel**, meaning they will never cross into each other, or are they **perpendicular**, meaning if they keep going they will cross?
3. Tell students shapes are categorized based on the number of sides they have, how long the sides are, and whether the sides are parallel or perpendicular.
4. Give students graphing paper, and ask them to practice drawing a few of the shapes they see in the image. (*Alternatively, teachers may print out **Image 1** as a coloring activity.*)

PROCEDURE

1. Tell students that shapes are used to create many things, and in this lesson they will be looking at what shapes are used to make a guitar. Show **Image 2, Electric Guitar Diagram**. Go over each of the main components of the guitar, asking students what shapes each component resembles (*The neck is a rectangle, the pick-ups are rectangles, the volume and tone knobs are circles, etc.*)
2. Tell students that most of the shapes of guitar components are similar, but the body of electric guitars come in different shapes, and some electric guitar bodies are combinations of shapes. Show students **Images 3-7** of various guitar models. After showing each body type, ask students:
 - Is this electric guitar body one shape, or a combination of shapes?
 - What shapes are combined to make this guitar body? What shapes do you see first? (*Encourage students to locate the shapes they identified verbally, drawing upon what they learned in Image 2: "I see a triangle under the tone knobs."*)
3. Print out several copies of **Handout 1 - Electric Guitar Templates**. Give students the template of the guitar body type they would like to design. Show again **Image 2, Electric Guitar**

Diagram. Ask students to design their own guitar using marker, crayons, or colored pencils, making sure that components in the diagram are present in their guitar designs. Encourage students to be creative with their designs, and use as many shapes as they can in creating their own electric guitar.

4. Once students are finalizing their design, pass out to each student **Handout 2 - Peer Assessment Checklist**. Pair students, and have each student use the checklist to assess their partner's project. Have the students make sure each needed element is in their partner's guitar design, and have them identify which shapes are used in their partner's design. If an element is missing, students should revisit their design to add the missing component.

SUMMARY ACTIVITY

1. Have students present to the class their electric guitar designs. Ask them about the shapes they used, the colors, and the other creative decisions they made in their design.
2. Share your student's creations by sending images to info@rockandrollforever.org!

EXTENSION ACTIVITY

1. Show works by famous artists, and ask students to create a guitar design in the style of a particular artists. Suggestions of artists include:
 - Keith Haring
 - Alma Thomas
 - Carmen Herrera
 - Ellsworth Kelly
 - Jean Michel Basquiat
 - Yayoi Kusama
 - Takashi Murakami
 - Sol Lewitt
 - Icy and Sot
 - Jasper Johns
2. Have students use their design to create a functional electric guitar with the **The Guitar: A Musical Transducer** lesson.

STANDARDS

COMMON CORE STATE STANDARDS

Math Standards

K.G.A.1: Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to.

K.G.A.2: Correctly name shapes regardless of their orientations or overall size.

K.G.B.4: Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length).

K.G.B.5: Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.

1.G.A.1: Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.

2.G.A.1: Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.1 Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

4.G.A.1: Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.

4.G.A.2: Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.

College and Career Readiness Anchor Standards for Reading

Integration of Knowledge and Ideas 7: Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.

College and Career Readiness Anchor Standards for Language

Language 1: Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

Vocabulary Acquisition and Use 6: Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing,



speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression.



RESOURCES

HANDOUTS

- Handout 1 - Electric Guitar Templates
- Handout 2 - Peer Assessment Checklist