



STEM Guitar Building

Lesson Plan

Instructor: Kenneth L. Jagon

Subject: Woodworking

Guitar Anatomy and Cost Estimate

Description of Activity

In order to successfully estimate the cost of building an electric guitar, students must calculate the cost and quantity of the following components: body, neck, fretboard, jack, potentiometers, capacitors, pickups, strap buttons, bridge, volume/tone knobs, ferrules, neck plate, screws, tuning machines, fret wire, fretboard, nut, truss rod, fret dots, bridge, and strings. In doing so, students will learn basic business math computation; how to create and use an Excel spreadsheet with formulas; how to search and locate specific items online; how to compare/contrast the quality vs. cost of different options for purchasing one specific part over another; make final selection decisions for each part; and identify each component of the electric guitar anatomy.

Learning Objectives:

(List measurable objectives.)

1. Students will identify all the parts and components of an electric guitar.
2. Students will compute the cost of purchasing the components necessary to build an electric guitar.
3. Students will construct an Excel spreadsheet that uses formulas to calculate the total cost of the components necessary to build an electric guitar.

Standards:

STANDARD: 2	
BENCHMARK: 2.1	The student will perform the use of the four basic operation of Mathematics
BENCHMARK: 2.3	The student will analyze simple quantitative problems using their

	critical thinking skills.
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STANDARD: 3	The student will be able to read and understand drawings, prints and plans and know how to read measuring tools, to the 1/16 of an inch and understand the metric system.
BENCHMARK: 3.1	The students will demonstrate reading the scale correctly to the 1/16 of an inch.
BENCHMARK: 3.2	Given a task, the student will be able to sketch, label and use the correct measurements.

Materials Required:

1. Computer or Tablet
2. Microsoft Excel or a comparable spreadsheet application
3. Web browser with internet access for each student

Safety:

N/A

References:

- Website: www.guitarbuilding.org

Activity:

Step 1: Using the Guitar Anatomy Diagram below, complete the Guitar Part Spreadsheet. To find vendor, manufacturer, part number, and unit cost, use your web browser to search for guitar components.

Recommended vendors include: Stewart-MacDonald - www.stewmac.com

, Luthiers Mercantile International - www.lmii.com

and ALLPARTS - www.allparts.com

Step 2: Using Microsoft Excel, construct a spreadsheet that uses formulas to calculate the total cost of the components necessary to build a guitar. Your calculations will include unit cost and quantity to determine the cost of each part and a sum of part costs to determine the total guitar kit cost.

https://docs.google.com/document/d/1J1BjcyhbW5bDV5I_ZYSNEaHS3koolTjnYSFkHOqsUgw/edit

Quiz:

<https://docs.google.com/document/d/1DnNs19Qpy56YyoH9mKUCWsmW5JFwAHyXkwoVHUvYs6g/edit>

Assessment Key:

1. True
2. C - Keyboard
3. D - Unit Cost x Quantity = Cost
4. D -6
5. B - Bridge
6. d, c, e, a, b
7. B - =sum(H2:H22)
8. A - =E2*F2

· **Reviewing Faculty Cohort Members:**

- Include at least two names and schools of reviewing faculty cohort members (refer to the email list for faculty cohort member email addresses).

[Kenneth Jagon](#) NVTHS, Construction Trades, kenneth.jagon@doe.as

[Seanette Thompson](#) NVTHS Mathematics seanette.thompson@doe.as

Ailen Borres NVTHS Science ailen.borres@doe.as