



Guitar Anatomy and Cost Estimate

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:

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:

CCSS.Math.Content.HSN-Q.A.2 Define appropriate quantities for the purpose of descriptive modeling.

CCSS.Math.Content.HSN-Q.A.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities

Materials Required:

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



Safety:

N/A

References:

Website: www.guitarbuilding.org

Activity:

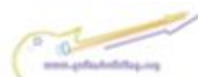
Step 1: Using the Guitar Anatomy Diagram below, complete the Guitar Part Spreadsheet. To find vendor, manufacturer, part number, and unit cost, use your web browser to search for guitar components.

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 cost for each part, and a sum of part costs to determine the total guitar kit cost.

Guitar Part Spreadsheet

| PART | VENDOR/ WEBSITE | MANUFACTURER | PART # | UNIT COST | QUANTITY |
|-----------|--------------------|--------------|--------|--------------|----------|
| Body | | | | | |
| Neck | | | | | |
| Fretboard | | | | | |



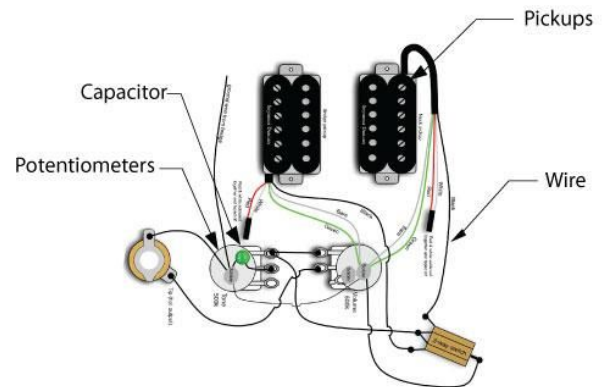
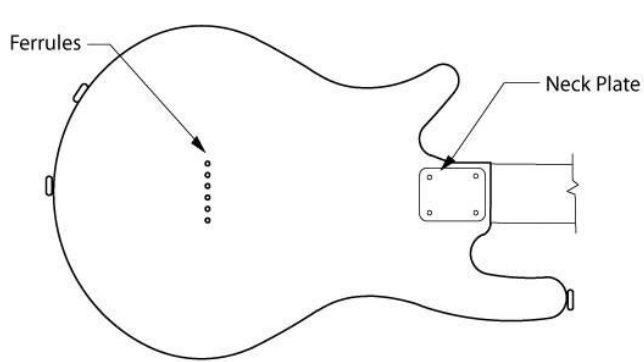
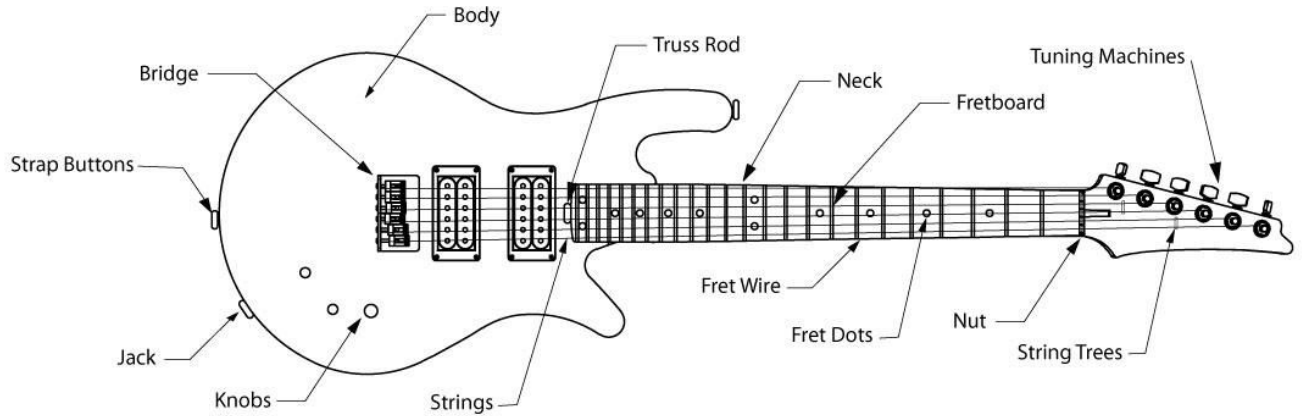


| | | | | | |
|---------------------------------------|--|--|--|--|--|
| Pickups and mounting screws (QTY 2) | | | | | |
| Potentiometers 2 - 500K ohm | | | | | |
| Jack & jack plate | | | | | |
| Fuse & holder (.5 amp) | | | | | |
| Capacitor (.47 micro farads) | | | | | |
| Wire 1-1.5 feet | | | | | |
| Strap Buttons | | | | | |
| Bridge | | | | | |
| Knobs | | | | | |
| Ferrules - back of guitar for strings | | | | | |
| Neck plate and Neck mounting screws | | | | | |
| Tuning Machines | | | | | |
| Fret wire* | | | | | |
| Nut* | | | | | |
| Truss Rod* | | | | | |
| Fret Dots* | | | | | |
| String trees* | | | | | |
| Strings | | | | | |

* If not included in neck assembly.



Guitar Anatomy Diagram





Name _____

Assessment
Guitar Anatomy and Cost Estimate

1. The neck is connected to the body of the guitar using the neck plate.

True -or- False

2. Which of the following is NOT a component of an electric guitar?

- A. Fret Board
- B. Nut
- C. Keyboard
- D. Truss Rod

3. Which of the following is the correct formula for calculating cost?

- A. Unit Cost x Cost = Quantity
- B. Unit Cost ÷ Cost = Quantity
- C. Unit Cost ÷ Quantity = Cost
- D. Unit Cost x Quantity = Cost

4. How many tuning machines are required for building a standard electric guitar?

- A. 3
- B. 4
- C. 5
- D. 6

5. Which component is attached to the body of the guitar?

- A. Nut
- B. Bridge
- C. Tuning Machines
- D. String Tree



6. Match the following guitar components with the correct label on the image above:

- | | |
|-------|----------------|
| ___ 1 | a. Bridge |
| ___ 2 | b. Fret Dots |
| ___ 3 | c. Nut |
| ___ 4 | d. String Tree |
| ___ 5 | e. Jack |

7. Consider a spreadsheet where guitar parts are listed in rows 2 through 22, with part cost calculations entered in column H. Which of the following formulas could be used to determine the total cost for the guitar kit?

- A. =sum(2:22)
- B. =sum(H2:H22)
- C. sum(2:22)
- D. sum(H2:H22)

8. Consider a spreadsheet where unit cost is entered in column E and quantity is entered in column F. Which of the following formulas could be used to determine the part cost for the part entered in row 2?

- A. =E2*F2
- B. =2E*2F
- C. E2*F2
- D. 2E*2F



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

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