# Residential Home Expense Lesson Plan: 5th Grade

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**Overview:**

5th grade science students will be learning about the different functions of a house and learn about the different expenses it takes to operate a home.

**Purpose:**

Students will be able to identify different components of a house and ways to save money on their home’s expenses, as well as the importance of maintaining a property. Students will use math skills to calculate electric usage, garbage waste, water consumption/waste.Students will learn what makes a utility an expense, and the importance of why, when, and who we pay them to. Students will learn slide by slide about the different utilities that it takes to run a home, and different ways to save money. Students will learn in depth the components of an AC system, heating system, and plumbing system. Students will then learn about the expenses of maintaining a home, and why it is important for the property value to do so.

**Materials**:

* PowerPoint presentation
* Copy of worksheet for each student
* Pencils
* Calculators for each student

**Activity/Discussion:**

Pass out the worksheet to each student and have them get into groups of three. Make sure they are sitting in a way that they can work together as well as see the PowerPoint presentation and participate in that discussion.

**Conclusion:**

After groups have had time to discuss, pull the whole class back and spent 5-10 minutes reviewing what the students have learned, then what these topics have to do with Home building.

**Assessment:**

Students will be assessed on their participation in the discussions, as well as the completion of the worksheet. They may also be assessed up their participation in their groups.

**Curriculum:**

**5th Grade Science Curriculum:**

5-PS1-1 Matter and Its Interactions: Planning and carrying out investigations, Analyzing and interpreting data, using mathematics and computational thinking, constructing explanations for science and designing solutions, Engaging in argument from investigation.

**Common Core Standards:**

* 5.MP.1 Make sense of problems and persevere in solving them.
* 5.MP.5 Use appropriate tools strategically.
* 5.NBT.5 Fluently multiply multi-digit whole numbers using the standard algorithm.
* 5.NBT.7 Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. In this standard, dividing decimals is limited to a whole number dividend with a decimal divisor or a decimal dividend with a whole number divisor. Compare the value of the quotient on the basis of the values of the dividend and divisor.

**Residential Utilities and Maintenance Expense PowerPoint Script**

**Use to follow along and explain the PowerPoint presentation**

**Slide 1**: Introduce yourself (who you are, what you do and why you are there).

**Slide 2:** Ask if the class knows what utilities or expenses are:

* Utilities: Useful features found in homes that are provided by companies.
  + Electricity, gas, water, cable
* Expense: the cost required for something; the money spent on something. Hold three marbles (or other similar items) in your hand that symbolize income, take one away to explain what an expense is.
* Explain that today you are going to talk more about utilities and expenses in homes. Put students into small groups (2-3) and pass out the worksheet.

**Slide 3-7**: Go over Electricity Slides,ask the students the questions posed in the slides and discuss them as a group.

* Leave slide 7 on the screen and have the students do question #1 on the worksheet. They may use calculators.
* Do the first appliance on the chart as a class

(ex: 24 hours \* .33/hr = $7.92 per day. $7.92 \* 30 days= $245.52 a month).

* Give students about 10 minutes to do question #1.

**Slide 8- 10:** Go over gas and water slides,ask the students the questions posed in the slides and discuss them as a group.

* Once you have presented about water and water usage/leaks. Have each group complete question #2 on the worksheet. After giving them a few minutes, as a whole class check their work and discuss the results.

**Slide 11-12:** Go over Garbage Slides, ask the student the questions posed in the slides and discuss as a group.

* Give the groups time to do question #3 on the worksheet
* Ask the groups for answers then show how to solve the problem

16/.55 = 29.09 about 29 pounds are needed or 902 cans (29.09 \* 31).

**Slides 13-14:** Go over maintenance slides, ask the student the questions posed in the slides and discuss as a group.

* Give the groups time to do questions #4 & #5 on the worksheet.
* Give them a few minutes and then go over as a whole group.

**Slide 15:** Closing slide.

* Ask the students what they think utilities/maintenance and expenses have to do with home building?
  + If necessary, review with them what utilities and expenses are
* Possible topics include:
  + The builder influences or chooses the appliances that are used in a home effecting efficiency
  + How a home is built influences how energy efficient it is (leaky vs tight, insulation, doors, & windows)
  + If people pay a lot for utilities after they move in will they be happy with the builder?
  + Construction generates a lot of waste too.
  + Life-cycle cost tradeoffs, something may be cheaper at first but cost more over time.