



Lesson 2: Using Energy at School

🕒 Overview

In this lesson, students investigate how energy is used at school.

🎯 Objectives

- Students will be able to identify several energy consumers in the building.
- Students will be able to differentiate between energy efficiency and energy conservation, citing examples of each concept.

📄 Materials

- Digital projector or overhead
- Notebook paper
- Pencils/markers
- Chart paper

Masters

- *Legend (2-1)*, page 20
- *Blank Grid (2-2)*, page 21
- *Kitchen Example (2-3)*, page 22
- *Building Inventory (2-4)*, page 23

Student and Family Guide

- *Student Informational Text*, pages 4-11
- *Using Energy at School, My School, My Classroom, and My Work Area*, pages 21-24
- *Reflections*, page 25

📋 Preparation

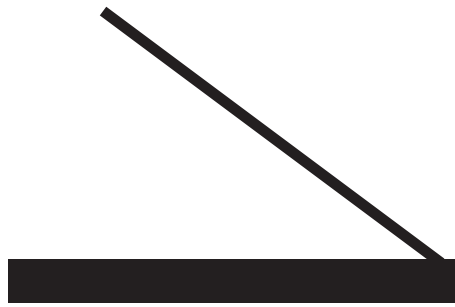
- Prior to the lesson, obtain permission for the students to investigate their assigned work areas throughout your school building.
- Make several copies of the *Legend* master and post around the room so all students can see them.
- Divide the class into four work area teams. Assign each team to one of the following areas: library, main office, gymnasium, and cafeteria.

✓ Procedure

1. Introduce the idea that energy is usually the second largest expense in school districts after personnel costs.
2. Ask students to brainstorm how they think schools use energy.
3. List student responses for the class to see. Make sure their examples include transportation, heating and cooling, lighting, cooking food, heating water, and running machines. Direct students to read the informational text in the Student and Family Guide.
4. Discuss the factors that affect the amount of energy schools use. Make sure to discuss the size of the building; the number and efficiency of windows and doors; the number and types of lights; the number of machines and how energy efficient they are; the efficiency and temperature settings of the heating, cooling, and water heating systems; the number of transportation vehicles, what fuels they use, and how far they travel; how well systems are maintained; and how people in the building manage all of these factors.
5. Introduce the activities that students will be doing to investigate their school building and how their school uses energy—drawing diagrams of the school building, their classroom, and their work areas.
6. Do the activity with notebook paper and pencils. Have the students walk around the outside of the school building with supervision, making sketches of the shape of the building and the placement of doors and windows. Return to the classroom when students have a good idea of the building's shape and design.
7. Display or project the *Legend (2-1)* master and explain the symbols.

8. Display or project the *Blank Grid (2-2)* master and draw a simple diagram of the school building using the symbols for doors and windows.
9. Discuss with the students what is accurate/inaccurate about your diagram, making changes until there is a consensus that the diagram is an accurate depiction of the school building.
10. Go to the *Using Energy at School* worksheet in the Student and Family Guide. Have the students read the instructions, examine the example, then draw their own diagrams of the school on page 22 of the Student and Family Guide. Instruct them to leave enough room around the outside of the diagram to add landscaping later.
11. Display the *Kitchen Example (2-3)* master. Indicate the symbols used to represent doors, windows, electrical outlets, lights, and energy-consuming appliances and devices. Display or pass out copies of the *Legend (2-1)*, and direct students to page 29 in the Student and Family Guide showing the symbols.
12. Go to page 23 of the Student and Family Guide and have the students make their diagrams of the classroom, following the instructions to make sketches first on notebook paper.
13. Draw a basic outline/diagram of your school building on the board, interactive board, or overhead for student reference.
14. Label the main office, cafeteria, gymnasium, library, and your classroom.
15. Add a map legend and compass rose to your diagram.
16. Instruct the students to locate each of the items contained in the legend in their classroom. Using the symbols on the legend, have student volunteers add these items to the diagram.
17. Give each team of students a large sheet of chart paper and ten markers, one color for each item on the map legend. Have each team choose a team leader. The team leader will be responsible for drawing the outline of their assigned location. Each team member will be assigned one or more items from the map legend. The team leader will monitor and assist as needed.
18. Discuss with the students the appropriate behavior for this assignment: no talking in the hallway; no running at any time; work cooperatively; do not disrupt any activity in your assigned location.
19. Student teams will go to their assigned locations and complete the diagram for that location.
20. Once the students have completed their inventory and diagrams, teams will return to the classroom and review what they found.
21. Go to page 24 of the Student and Family Guide, *My Work Area*, and have students draw their diagrams in their work groups.
22. Go to the *Reflections* activity in the Student and Family Guide, and have the students complete the questions at the top of the page.
23. Project or display the *Building Inventory (2-4)* master. Fill in the chart with data (numbers, locations, or important notes) from the work groups as the students complete their charts on the bottom of the *Reflections* activity.
24. Discuss what the students learned while completing the diagrams.

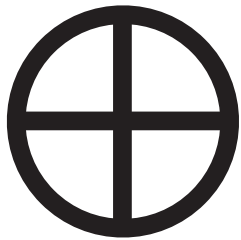
LEGEND



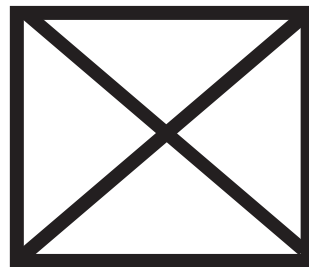
Door



Window

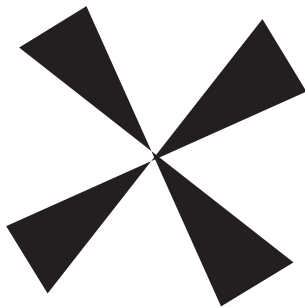


Light



Appliance or
Electrical Device

- R - Refrigerator
- S - Stove/Oven
- DW - Dishwasher
- MW - Microwave
- W - Washer
- D - Dryer



Ceiling Fan



Heating or
Cooling Device
or Vent



Utility Meter



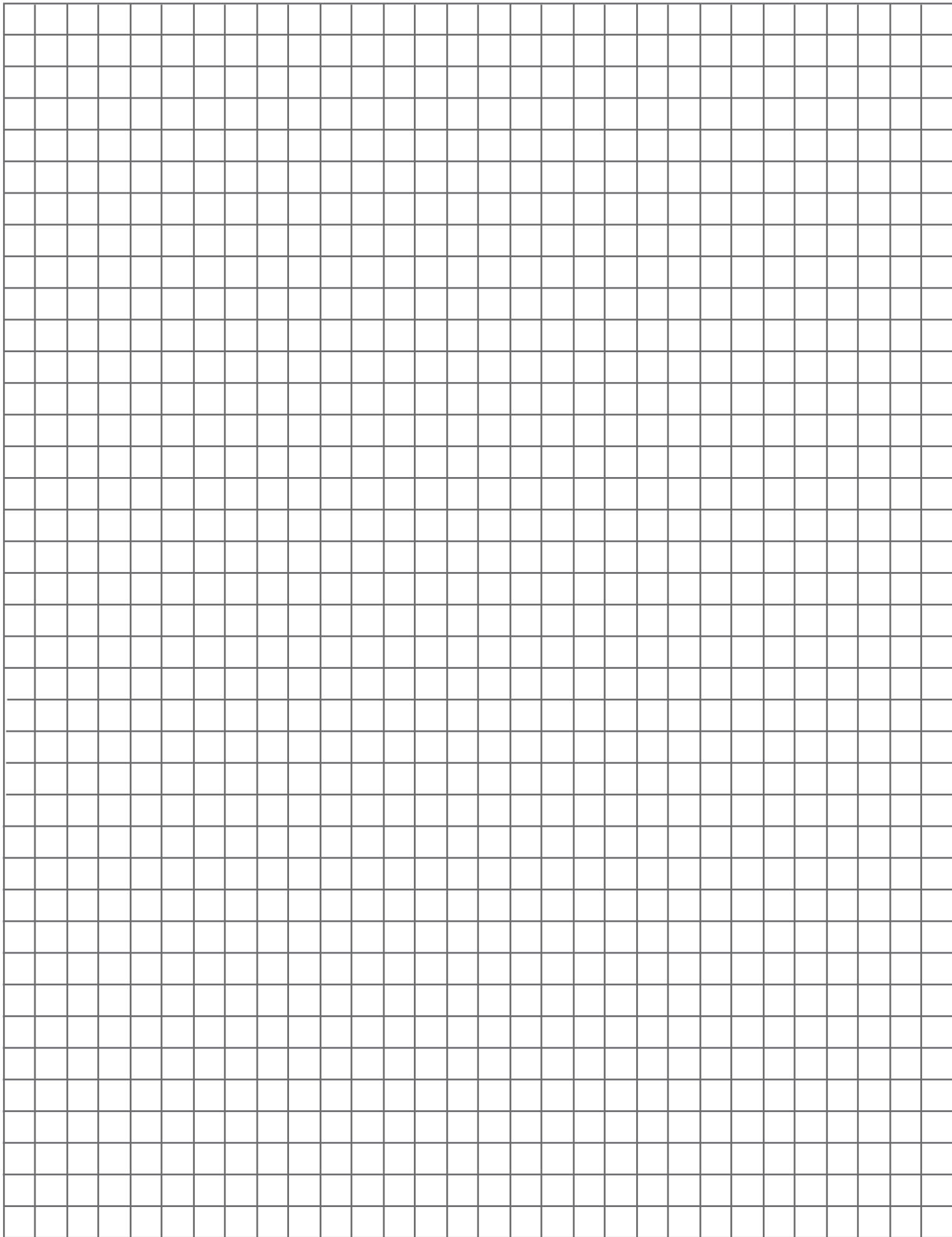
Thermostat

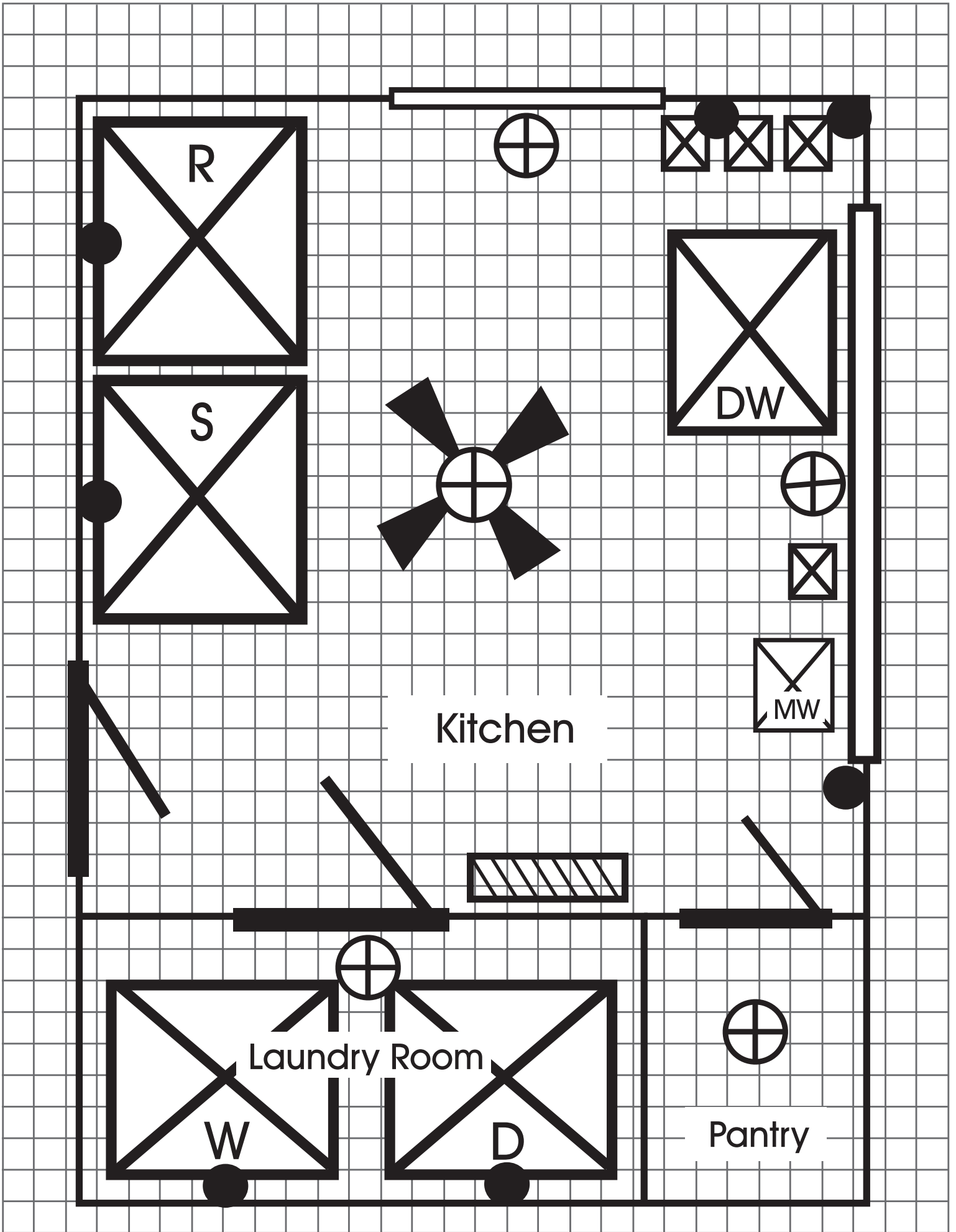


Water Heater



Electrical Outlet







Building Inventory

LOCATION	DOORS	WINDOWS	LIGHTS	ELECTRICAL DEVICES	HEATING/COOLING DEVICES/VENTS	ELECTRICAL OUTLETS	OTHER
BUILDING							
CLASSROOM							
OFFICE							
LIBRARY							
CAFETERIA							
GYMNASIUM							