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Introduction

Project Format and Materials

Each project contains the following materials:

Teacher Pages

- **Overview:** information on project learning goals, prior knowledge or experience needed by students, time needed for the project, and team formation information
- **Suggested Steps:** a day-by-day view of how to deliver project activities
- **Project Management Tips and Notes:** suggestions for how to handle possible issues or information on project options and variations
- **Extension Activities:** suggested activities for extending the project or exploring related areas
- **Learning Concepts:** a list of concepts students will address through the project
- **Answer Key:** answers for Before You Go and Skill Check questions (Many answers will vary, and therefore, have been omitted from the answer keys.)

Student Pages

- **Expedition Overview:** a description of the project challenge, learning objectives, key vocabulary terms, materials needed and web resources students use for project activities
- **Before You Go:** lead-in activities designed to review fundamental skills or knowledge needed for the project
- **Off You Go:** activities that support the core project, including guidelines and instructions for final products or presentations
- **Expedition Tools:** handouts and worksheets associated with project activities
- **Check Yourself:** two assessment tools that students use to check skill development (practise problems or questions) and evaluate their project performance overall

A Geometry Project Assessment Rubric is also included and can be used with any project.

Ripping Rooms

Suggested Steps

Preparation

- Gather materials for each project.
- Find two or three examples of floor plans. (Use the Internet to search for keywords “floor plan”)
- If possible, find and print out pictures of common floor plan symbols.

Days 1 and 2

1. Provide an overview of the project and review materials.
2. Divide students into groups of four to six people for **Before You Go: Newspaper Room Design Challenge**. You need an even number of teams.
3. Support students by suggesting strategies for how the teams should work together during the design process.
4. Consider saving construction for the second day of the project.
5. Once construction is complete, prompt discussion. Ask the following questions:
 - Which structures were strongest? Weakest? Why?
 - Which shapes or structures were used and to what purpose?
 - Did drawings help or hinder construction? How difficult was it to draw the design?
 - How many teams made prototypes? How did this change their design? What effect did a prototype have on the final design?

Day 3

1. Review the concept of floor plans. Show samples to the class. Emphasise that floor plans use geometric shapes and symbols to represent features.
2. Introduce **Before You Go: Miniaturise It**.
3. Identify three or four objects that should appear in the class floor plan. Choose items that give students the measurement or calculation practice they need (circles, trapezoids and so forth).
4. Assign individuals or pairs of students to collect measurements for the objects and the room.
5. Have students work in groups of two to three people to create the floor plan.
6. Explain **Activity 1: My Old Room**. Show students the **Current Room Plan Worksheet**.
7. Indicate whether students will complete assignments for homework or if you will provide class time.
8. Give due dates for the **Current Room Plan Worksheet** and floor plan.

Ripping Rooms

Suggested Assessment

Use the Geometry Project Assessment Rubric or the following point system:

Team and class participation	10 points
Current room plan measurements	20 points
Current room plan scale drawing	20 points
Two new plan scale drawings	50 points
Materials budget	Bonus points

Extension Activities

- Explain the one-point drawing technique (perspective drawing). Have students create the cross-sectional drawing of the new room using the technique.
- Invite an architect, a contractor or an interior designer to class to show students how to read blueprints, floor plans and interior design plans.

Other Helpful Resources

A Lesson on Drawing in One-Point Perspective

www.olejarz.com/arted/perspective/

Learning Concepts

Measurement

- Make decisions about units and scales appropriate for problem situations involving measurement.

Geometry

- Analyse characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships.
- Use visualisation, spatial reasoning and geometric modelling to solve problems.
- Use geometric ideas to solve problems in, and gain insights into, other disciplines and other areas of interest such as art and architecture.

Problem Solving

- Apply and adapt a variety of appropriate strategies to solve problems.

Ripping Rooms

Off You Go

Activity 1: My Old Room

Goal: To measure and create a floor plan for your existing bedroom

Tools: Current Room Plan Worksheet

Ripping Rooms needs to know the basic structure of your bedroom. They want to feature “before” and “after” views of your room in the final article.

Directions

1. Use the **Current Room Plan Worksheet** to record measurements of your current bedroom. Include dimensions of windows, doors, wardrobes, pieces of furniture and other items.
2. Draw or use your computer to create a floor plan of your room.

Current Room Floor Plan Criteria

- Your floor plan should be two-dimensional and drawn to scale. For example, if you use $\frac{1}{2}$ -centimetre graph paper, each square might equal 1 metre.
- Represent furniture and other objects to scale.
- Use basic shapes and symbols to represent objects and features. For example, a rectangle might represent a bed, a circle might represent a lamp and a polygon might represent a computer.
- Label everything. Provide a legend that indicates scale.
- Note dimensions for all items. Your floor plan will be two-dimensional, so you won't need to include height measurements.

3. Optional: Take pictures of your room and objects in it, especially anything you want to redesign.