

MATH

Can Take You Places

LESSON 10

“Tile My Bathroom Floor”

by Sabrina McCullough

CONCEPT AREA Measurement

GRADE LEVEL 6

TIME ALLOTMENT Two 60-minute sessions

LESSON OVERVIEW Each student will be given a bathroom floor plan and will create his or her own design of floor tiles to cover a bathroom floor.

LESSON ACTIVITIES OVERVIEW Students will apply real-life problem-solving strategies to a tiling project, focusing on measurement, proportionality, estimation and area. Students will design floor tiles using centimeter graph paper.

LEARNING OBJECTIVES Students will be able to:

- Apply proportional reasoning unit analysis and measurement conversion throughout the problem-solving process.
- Estimate areas by applying problem-solving strategies.
- Determine the amount of tile that will be required to tile a specified area of a bathroom floor.
- Use problem-solving strategies to calculate the dimensions of the given floor plan, taking into account that there are areas in the bathroom that will not be tiled.
- Verify their estimate by tiling the floor plan using centimeter grid paper.

STANDARDS (TEKS) From the Texas Essential Knowledge and Skills for Math for grade 6:

Grade 6.
6.4(A), 6.5(A), 6.8(B), (D), 6.11(A)

MEDIA COMPONENTS Video: *Math Can Take You Places* #001 “Measurement”
Internet:

HGTV

The Home and Garden Network Web site has design information, floor plans, remodeling information and cool projects for kids.

<http://www.hgtv.com/>

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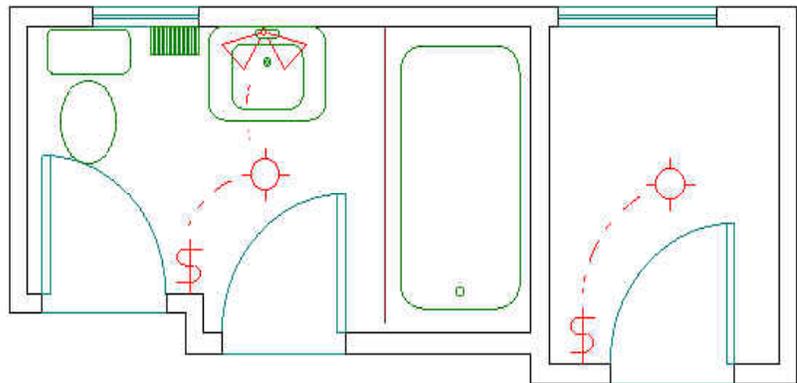
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- MATERIALS**
- Per class
 - Books, magazines, photos of tiled bathroom floors
 - Videos of home improvement shows
 - Per pair of students
 - Original floor plan
 - Construction paper
 - Per student
 - Centimeter graph paper
 - Rulers
 - Floor plans (bathrooms)
 - Colored pencils/markers
 - Glue sticks

PREP FOR TEACHERS See example below. This example has a copyright.

Width is
approximately
5 cm



Length is approximately 6.25 cm

1 centimeter = 0.5 meter

Collect floor plans (of bathrooms) or create your own floor plans.

- Collect pictures, books and magazines that show floor plans.

A pair of students will have a bathroom floor plan. Students will use the scale given on the bottom of the floor plan to calculate the total area of the bathroom.

Note:

The following concepts will be covered during this lesson: **centimeter**, **meter**, **area**, **length** and **width**. Students may need to review the concepts prior to beginning the activities, especially if your class includes students who are acquiring English as a second language (ESL).

**INTRODUCTORY
ACTIVITY: SETTING
THE STAGE**

Allow students 15-20 minutes to browse through magazines, books and photos to get some ideas of how bathrooms look with tiled floors. Students may also watch short clips from home improvement shows and/or browse the Internet.

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LEARNING ACTIVITIES

1. Give each pair of students an assigned floor plan. The students will also see different types of tile arrangements that may include various colors and designs. Have students describe the patterns they see and how they think the arrangement was done.
2. Allow students time to analyze the bathroom floor plans and discuss strategies for estimating the area (in square centimeters and square meters) of the bathroom floor that will be tiled.
3. Students will apply problem-solving strategies to arrive at the most accurate estimate. Students will devise and write out a plan that describes how they and their partner attacked the problem and determined the amount of tile needed to cover the bathroom floor.
4. Students should keep in mind that their solutions must be in both square centimeters and square meters.
5. Once the students have had an opportunity to devise their plans, pass out the centimeter grid paper and colored pencils, so they can begin using their creativity to tile the bathroom floor plan.
6. Students will verify the reasonableness of their estimates based on the number of centimeter squares that they cut out and paste to the tile floor plan.
7. Lastly, students will determine how far off they were from their estimate and the actual number of tiles used to tile the bathroom floor. If some groups had estimates that were much better than others, allow students to share the strategies they used that were more accurate.

CULMINATING ACTIVITY

1. Play the video, *Math Can Take You Places #001 “Measurement”*. Students will observe another need for finding area and perimeter.
2. Students will display their problem-solving pages and tiled bathroom floor plans for a gallery walk. Allow students to present their work and share their problem-solving strategies and final tiled floor plans. They will compare their strategy with those demonstrated on the video.
2. Time to remodel. Students will rearrange the tiles to create a new design. Have students duplicate the tile colors and designs from their floor plan using the same colors, because now it’s time to remodel the bathroom! Students will cut out the tiles and rearrange them to create a totally new bathroom floor plan using the same tiles. Allow students to determine the dimensions of the new bathroom, but remind them that the new design must have the same components as the original bathroom. Have students share their new designs.

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CROSS-CURRICULAR EXTENSIONS

Social Studies

Have students create a tiled mural representing a cultural, historical or current event. Students will need to estimate the amount and cost of materials needed to create the mural by first calculating the area that will be covered. Students must work cooperatively to plan and create the tiled mural. The mural can be formally presented to the school and community. Invite the art teacher and parents to assist in creating the tiled mural.

REAL-WORLD CONNECTIONS

Invite a contractor, professional flooring/carpeting installation technician or interior designer to visit with your class and discuss how mathematics is applied in their professions.

Extend the lesson by pricing ceramic tiles and carpeting. Have students discuss the pros and cons of tiling the bathroom versus carpeting the bathroom.

ASSESSMENT

Informal assessment can be done to determine clarity and understanding. Observe the students as they work. Decide how well the students are doing based on the following rubric:

Complete understanding

If students are completing the project with ease and no questions.

Understanding

If students are asking minor questions to get them through the project.

Lack of understanding

If students are struggling and unable to work without guidance. Try peer tutoring and/or small pair instruction.

Once students have completed the project, decide on a participation grade as well as a completion grade.

STUDENT HANDOUTS

None