Lesson 12: Ratios of Fractions and Their Unit Rates

Classwork

During this lesson, you are remodeling a room at your house and need to figure out if you have enough money. You will work individually and with a partner to make a plan of what is needed to solve the problem. After your plan is complete, then you will solve the problem by determining if you have enough money.

Example 1: Time to Remodel

You have decided to remodel your bathroom and install a tile floor. The bathroom is in the shape of a rectangle and the floor measures 14 feet, 8 inches long by 5 feet, 6 inches wide. The tiles you want to use cost $5 each, and each tile covers $4\frac{2}{3}$ square feet. If you have $100 to spend, do you have enough money to complete the project?

Make a Plan: Complete the chart to identify the necessary steps in the plan and find a solution.

What I Know	What I Want to Find	How to Find it
dimensions of the floor	Area	- convert inches to fractions of feet $A = Lw$
Area of 1 tile	# of tiles needed	divide total area by the area covered with 1 tile
Cost of 1 tile	total cost of all tiles	- multiply # of tiles by cost per tile

$14'8'' = 14\frac{8}{12} = 14\frac{2}{3}$

$5'6'' = 5\frac{6}{12} = 5\frac{1}{2}$

Compare your plan with a partner. Using your plans, work together to determine how much money you will need to complete the project and if you have enough money.

Area

$A = Lw$

$A = 14\frac{2}{3} \times 5\frac{1}{2}$

$A = 80\frac{2}{3}$ sq ft.

# of tiles

$\frac{80\frac{2}{3}}{4\frac{2}{3}} = 17\frac{2}{7}$

we need 18 tiles

Total cost

$18 \times 5 = \$90$

we have enough money b/c the tiles only cost $90 and we have $100.

Exercises

Which car can travel further on 1 gallon of gas?

Blue Car: travels $18\frac{2}{5}$ miles using 0.8 gallons of gas

Blue

$\frac{18\frac{2}{5}}{\frac{8}{10}} = 23$ miles per 1 gallon

Red Car: travels $17\frac{2}{5}$ miles using 0.75 gallons of gas

$\frac{17\frac{2}{5}}{\frac{3}{4}} = 23\frac{1}{5}$ miles per 1 gallon

23.2 → 2nd → PRB → Frac

↓

$23\frac{1}{5}$