

Name:

Reuse, Recycle, Renovate

Your answers to the following questions will be part of a presentation to Congress to make federal dollars available to poor counties for similar projects. Counties may apply for the money to retrofit abandoned facilities for use by nonprofit organizations. If the effort is successful, poor counties will enjoy a new source of income from rental facilities and more services will be available to the county residents.

Question 1

The old nursing home was at 90% capacity when clients were moved to the new home. After the move, the new home was at 52% capacity. What is the capacity of the new nursing home if the capacity of the old home was 52 clients? Show or explain how you found the answers.

Question 2

In one vacated nursing home there are three wings. In each wing, 23 of the rooms need an extra outlet and 8 rooms need new wiring. Across all three wings, there are a total of 104 rooms that need work.

Write and solve equations to find:

- the total number of rooms in all three wings; and
- how many rooms need no electrical work.

Show or explain how you found the answers.

Question 3

This table shows adjustments to the weight of the seat for each type of bike. Use ONLY At the Congressional hearing, Senator A argued that rent from a renovated building only increases revenue by 7%. Senator B argued the rent would result in 107% of current revenue. The current county revenue is 28 million. Use mathematics to explain who is correct.

Question 4

To maintain and heat a vacant building costs the county \$30,000 a year for heat and \$3900 for maintenance. If $\frac{1}{3}$ of the building is rented, the renters pay 30% of the heating cost and maintenance is reduced 20% as renters pay for the inside cleaning.

- a) How much does the county save by renting $\frac{1}{3}$ of the building? Show or explain how you found the answer.

- b) Is the savings more or less than $\frac{1}{3}$ of the unrented cost for heat and maintenance?
Explain why or why not.

Question 5

Several florescent light fixtures may be operated by the same switch.

Ellie's Electric sells packages that contain two florescent light fixtures and one switch.
Twenty packages cost \$1380.00.

- a) If purchased separately, one switch costs \$9.89. Write and solve an equation to find the cost for a single light fixture, rounded to the nearest cent. Explain the sequence of operations used to solve the equation.

Franklin Electric sells 50 florescent light fixtures and 25 switches for \$1750.00.

- b) If purchased separately, one switch costs \$9.89. Write and solve an equation to find the cost of a single light, rounded to the nearest cent, at Franklin Electric. Explain the sequence of operations used to solve the equation.

Question 6

In an office, the wattage for a 15 amp circuit needs to be less than 1380. Light bulbs use 150 watts and a computer/printer uses 250 watts.

Write and solve an inequality to find the number of light bulbs that can be on same circuit as the computer/printer.

Question 7

Researchers are studying the impact of renovating unused county space for offices and other uses.

In one eight-county area, $\frac{1}{3}$ of each county's population uses services in the renovated building. Each county also rents office space to 15 people. Across all 8 counties, a total of 120,000 people use the services or rent office space in the renovated building. How many people live in the area? (Assume each county has same population.)