

A Bridge to the Future



NAME: _____

DATE: _____

Private residences aren't the only things damaged in times of a natural disaster. Public infrastructure can also be wrecked. When a bridge is destroyed, it can be difficult for a community to get back on its feet. Actuaries need to understand costs of repairs and building materials, and the timeline of rebuilding projects, so they can make pricing estimates for repair jobs.

Go figure!

Examine the costs below for repairing a bridge destroyed in an earthquake. Based on the information given, answer the questions below.

Cost to Rebuild Bridge	\$3 million
Cost of Bridge Maintenance and Salaries (per year)	\$1 million
Number of Crossings (per day)	10,000



Questions:

1. What are the total costs (rebuilding, maintenance, and salaries) after 5 years? _____
2. If the costs you found in question 1 are to be paid off during those five years, what toll should you charge per crossing? (Round your answer up to the nearest 5s or 10s place.) _____
3. After the bridge construction is paid off, how much do you need to charge per toll crossing to cover maintenance and salaries each year? _____
4. If you kept the toll the same as the amount you found in question 2, what could you do with the extra toll money? _____
5. How do you think the cost of maintenance and salaries would be affected by inflation? _____

Think About It

What kinds of costs must be considered when building any public structure? Research online or through your town's public works department and see what you can find.

