

**ZMATH 2016c.00936**

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**Encouraging optimization of energy.**

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From the text: Designing strategies to optimize energy is a concern that we face in our daily lives. Scientists in different fields often encounter situations in which they need to optimize. For instance, engineers frequently minimize the material used in construction, and biologists advise on spending the least amount of non-renewable natural resources. Additionally, employees in the business world who travel might visit multiple locations and want to reduce travel time and expenses. Avoiding using the same road twice would minimize backtracking and costs associated with it (this becomes the Traveling Salesman problem). In our daily schedules, we find ourselves running such errands as visiting stores, the school, and the bank, and we often plan our routes to save gas and time. We could design a delivery map in our heads, then sketch it on paper, representing each location with a dot and representing roads between those locations with lines. People in a branch of mathematics called graph theory commonly call a diagram consisting of dots and lines a graph. The activity presented here corresponds to a variety of mathematics concepts.

*Classification:* M42 K32 N62

*Keywords:* graph theory; primary education; student activities; student presentations; mathematical models; visualization; graphs; optimal paths; efficient paths; Euler paths; pattern descriptions; mathematical applications; ecology; optimization

<http://www.nctm.org/Publications/Teaching-Children-Mathematics/2015/Vol21/Issue9/Encouraging-optimization-of-energy/>