



Moody's Mega Math Challenge

A contest for high school students

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Modeling Scenarios

1. Suppose people enter the elevators in a skyscraper at random during the morning rush hour. The result will be several elevators stopping on each floor to discharge one or two passengers each.
 - a. Discuss schemes for improving the situation.
 - b. How could improvement be measured?
 - c. How could you model the situation to decide what scheme to implement?
2. What is the optimal shape for a lecture hall?
3. How fast can a skier ski down a mountain slope?
4. Should you buy or rent a house? A car?
5. Should a medical firm buy or lease a computer?
6. How far does a car travel after the driver perceives a need to stop?
7. What is the relationship between the speed of a car and its gasoline mileage?
8. What is the relationship between body weight and height?
9. A doctor wants to prescribe a safe but effective dosage. How much should she prescribe, and how often should the patient take the medicine?
10. Should an airline overbook? By how much?

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