Problem of the Week
Problem B and Solution
Fare's Fair!

Problem

Three brothers, Andy, Bob, and Curly, take a taxi together home from the airport.

Their homes lie along the same route;

- Andy's is 21 km from the airport,
- Bob's is 42 km, and
- Curly's is 63 km.

If the taxi fare is \$2.00 per km, try to find at least two possible fair ways for each of the three travellers to pay the driver (not including the tip)?

Solution

The total cost is \$2 per km $\times$ 63 km = \$126. Here are three possible ways to pay the driver.

SOLUTION 1:
If each passenger pays $\frac{1}{3}$ of the total cost, then they each pay \$126 $\div$ 3 = \$42.

SOLUTION 2:
Three passengers travel the first $\frac{1}{3}$ of the trip (21 km) for \$42, so each pays \$42 $\div$ 3 = \$14 for that portion of the trip. So Andy pays \$14.
Two passengers travel the next 21 km for \$42, so each pays \$42 $\div$ 2 = \$21 each for that portion of the trip plus \$14 for the first portion of the trip. So Bob pays \$21 + \$14 = \$35.
Only one passenger, Curly, travels the final 21 km for \$42. So Curly pays \$14 + \$21 + \$42 = \$77 for all three portions of the trip.
Notice the total paid is \$14 + \$35 + \$77 = \$126.

SOLUTION 3:
A third possibility is that they each pay according to their distance travelled. Andy travels 21 km, Bob travels 42 km, and Curly travels 63 km, a total of 21 + 42 + 63 = 126 km. Thus it would cost \$126 $\div$ 126 km = \$1.00 per km per person. So Andy pays \$21, Bob pays \$42, and Curly pays \$63.