



## 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  $\$2 \text{ per km} \times 63 \text{ km} = \$126$ . 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  $\$126 \div 126 \text{ km} = \$1.00$  per km per person. So Andy pays \$21, Bob pays \$42, and Curly pays \$63.