University Math Challenge

PROBLEM 1

John and Alice decided to buy a book with pictures. John is $20 short of being able to buy this book, and Alice is 1 cent short. When they add their money together, they still do not have enough money to purchase the book. How much does the book cost? Show all possible answers and justify each of them.

PROBLEM 2

John, Alice, and Bill decided to buy a thick book on arithmetic whose price is expressed as an integer multiple of 10 dollars. John is $30 short of being able to buy this book, Alice is $40 short, and Bill is $50 short. If any two of the children add their money together, they will also not be able to buy the book. But the total amount of money from all three children is enough to buy this book. How much does the book cost? How much money did each child have? Show all possible answers and justify them.

Direct any questions to
Grant Lakeland (OM 3226) or Gregory Galperin (OM 3361)

Rules & Rewards

- Any undergraduate currently enrolled at EIU is eligible to participate.

- Each solution is to be the work of one individual and is to be submitted with the solver's name, year in school, email address, local address, and home address.

- Each solution is to be written or typed and is due in the main Mathematics Department office (OM 3611) by 2:00pm, Friday, October 11, 2019.

- Entries will be judged on the basis of clarity of exposition and elegance of the solution. That is to say, the *explanation* is more important than the answer.

- An award of $50 will be given for the best solution. In the case of a two-way tie, the award will be evenly split. If there are more than two 'best' solutions, a drawing will be held for the reward. In the case no award is made for this week's challenge, $50 will be added to the next week's award.

- Names of all solvers will be posted on the Challenge of the Month bulletin board and on the Challenge homepage: `http://www.eiu.edu/math/challenge.php`