PROBLEM # 1

The Olympic 100 meter sprint race finds the fastest, second fastest, and third fastest runners in the competition. One year, the organizers find that their timing devices do not work. However, since they know that each runner always runs the same time every time they race, and that each runner’s time is different, they know they can find the fastest three runners, in order.

(1) There are eight lanes available. If there are 64 runners, what is the least number of races they need to run in order to find the fastest three runners?

(2) This year in the Olympics there were 79 runners. What is the least number of races needed now?

(3) With 79 runners, would the organizers require fewer races if they opened a ninth lane?

Explain your answers.

Direct any questions to
Grant Lakeland (OM 3226)

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 to Dr. Lakeland or in the main Mathematics Department office (OM 3611) by 2:00pm, Friday, October 1, 2021.

• 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