

Challenge of the Week

Challenge of the Week # 9 - March 28 to April 4, 2008

This is the annual April Fool's edition of the Challenge of the Week.

1. One person is standing on the balcony. On the ground immediately below, another person is standing. The two people shout "Hey" at exactly the same time. Who hears the other person's shout first, the person on the ground or the person on the balcony?

2. Find the two leftmost digits of the following number:

$$1^1 + 2^2 + 3^3 + \dots + 999^{999} + 1000^{1000}.$$

3. Put one mathematical sign between the digits 5 and 6 to get a number between 5 and 6. (Note: $5 - 6$, $5\sqrt{6}$, and $5/6$ will not work.)

4. Are there two different sequences of 9 consecutive integers such that the product of the integers in one sequence equals the product of the integers in the other sequence? How many pairs of such sequences are there?

In each case, justify your answer.

Direct any questions concerning this week's challenge to Gregory Galperin, OM 3361

Rules and Awards

- 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 (OM3611) by 2:00 p. m., Friday, April 4.
- Entries will be graded on the basis of clarity of exposition and elegance of solution.
- An award of \$20 will be given for the best solution. In the case of a two-way tie, the award will be split. If there are more than two 'best' solutions, a drawing will be held for the award. In case no award is made for this week's challenge, \$20 will be added to the next week's award.
- Names of all solvers will be posted on the Challenge of the Week bulletin board and on the Challenge of the Week homepage: <http://www.ux1.eiu.edu/~dmbroline/chalweek/index.html>