Concordia University
MATHSCI BOWL

Sample Questions

- **Toss-up Questions**

    1. For ten points, what is the common ratio in the following geometric sequence? 2, -2, 2, -2, 2,... And so on
    2. There are three major latitude lines on a globe. One is the equator. The other two are known as tropics. For ten points, what tropic passes through the center of Australia?
    3. Sailors found that scurvy could be prevented as long as they had the opportunity to eat foodstuffs such as sauerkraut and fresh citrus fruit. For ten points, what vitamin is found in these foods which prevents scurvy?
    4. Ted bought a $60,000 Porsche and its value depreciated 10% per year. For ten points, how much was it worth after three years?
    5. Helium is listed before Gold in the periodic table, because, for ten points, our periodic table arranges elements according to what?

- **Bonus Questions**

    1. For ten points apiece, I will give you two sets of waves from the electromagnetic spectrum. You are to indicate out of the sets which has the shortest wavelength.
        a. Radio, radar, or television
        b. Ultraviolet, infrared, or microwave
    2. For ten points each, in exponential notation, using base 10, state the following numbers:
        a. One million times one trillion
        b. One decillion times one millionth
    3. There are two temperate zones of the earth, each having four seasons per year. For ten points each, between what two imaginary lines paralleling 23 and one half degrees north and 66 and one half degrees north does the northern temperate zone occur?
    4. A certain right triangle has an acute angle equal to 42 degrees. For ten points each
        a. What is the measurement of the other two angles?
        b. If we were working in hyperbolic geometry, what property of triangles would make the previous question impossible to answer with the given data?
    5. For ten points each:
        a. This man viewed an electron as a particle and stated that there is always uncertainty regarding an individual electron's location and momentum. Name this German.
        2. This man viewed the electron as a wave and his equation used four quantum numbers in describing its behavior. Name this Austrian.