

## FERMI QUESTIONS DRAFT RULES 17

1. DESCRIPTION: Teams provide answers to a series of “Fermi Questions”; science related questions that seek fast, rough estimates of a quantity, which is either difficult or impossible to measure directly. For example, the question “How many drops of water are there in Lake Erie?” requires an estimate of the volume of a drop, the volume of Lake Erie from its approximate dimensions and conversion of units to yield an answer. The answers should be an estimate within an order of magnitude recorded in powers of ten.  
A TEAM OF UP TO: 2 APPROXIMATE TIME: 50 minutes
2. EVENT PARAMETERS: The participants may bring in two pencils. No other materials or resources are allowed. The event supervisor will provide the questions and answer sheets.
3. THE COMPETITION:
  - a. Each team will have the same amount of time to answer as many questions as possible.
  - b. All teams competing in a given time block will be quizzed together and will be given feedback during the contest.
  - c. One teammate will be designated to serve as the team captain and will indicate on the score sheet the team’s answers.
  - d. All answers are to be written to the correct power of ten (exponent) as follows.
    - i. For a number in the form  $C \times 10^E$ , the guide for rounding the coefficient (C), is: if C is 5 or greater (to 9.99...), round C up to 10. For example, if the number is  $5.001 \times 10^3$ , the correct power of 10 is 4. Responses recorded as  $5.001 \times 10^3$  on the answer sheet will be marked as incorrect.
    - ii. If C is below 5 (and greater than 1), round C down to 1. For example, if the number is  $4.99 \times 10^6$ , you record 6 as your answer.
  - e. Positive exponents are the default. For negative exponents, the minus (-) sign must be included in the answer. If the number is  $1.5 \times 10^{-3}$ , the correct power of ten is -3.
  - f. Teams are allowed to finish before the allotted time: they should hand in their answer sheet, have the time recorded by the event supervisor, and exit the room quietly.
4. SCORING:
  - a. High Score wins.
  - b. Ties are broken by counting the highest number of answers that receive 5 points. If the number of 5-point answers is the same, the number of 3 point answers will be used. Time is used as the third tiebreaker, if needed.

If the response is:	It earns:
Equal to the accepted value	5 points
$\pm 1$ of the accepted value	3 points
$\pm 2$ of the accepted value	1 point

5. Scoring Example: If the accepted value is seven and the response given is 7; then five(5) points are awarded. A response of 6 or 8 receives three (3) points and a response of 5 or 9 receives one (1) point.