EVENT 1: FERMI QUESTIONS

(Dated 10/1/17)

OBJECTIVE: To estimate the order of magnitude of a quantity that is difficult or impossible to measure.

RULES:

a. Each team will be provided with a list of ten Fermi Questions.
b. Each team will have 30 minutes in which to answer the questions.
c. Each team will submit a single set of answers.
d. All answers must be recorded in order of magnitude format
(i.e., $\mathbf{10^4}$, not 3.0×10^4, $\mathbf{10^6}$, not 7.0×10^5).
e. No devices, such as cell phones, ipods/ipads, calculators, tablets, smart watches, computers, etc., or preprinted references material shall be permitted to be used during the event.

COMPETITION AND SCORING:

Ten points will be awarded for each correct answer (correct order of magnitude).
There will be 1 point off for each order of magnitude difference from the accepted order of magnitude.
No answer will score less than zero.

Sample Fermi Questions:

How much land area (in square meters) is found on earth?
(Answer is 10^{14})

How many revolutions will a 14-inch tire have to make during a crossing of the continental United States?
(Answer is 10^6)

How many liters of air does an adult inhale in a 24-hour day
(Answer is 10^4)

How many square meters of turf (real or artificial) are there in a National Football League Stadium? ***(Answer is 10^4)***

An automobile travels 100,000 km before the tire tread wears out.
What thickness of rubber wears off a tire each revolution of a wheel? Please express your answer in centimeters.
(Answer is 10^{-8})

Updates to the rules answers are available at: njaapt.wildapricot.org – go to the "*Forum*" section to read or post questions.
It is the team's responsibility to check for changes and clarifications to the rules.