

## **Preliminary Instructions for Fermi Questions – Solon HS Invitational SO Tournament**

Coaches, please share this information with the students competing in the Fermi Questions event.

Testing for Fermi Questions is in the Cafeteria with all 66 teams testing at the same time, a rather unusual testing situation for Science Olympiad. Certain logistical problems arise because of the large number of students who will be testing.

Testing will begin promptly at 8:00 a.m. Students will be allowed to enter the testing area at 7:50 a.m. Seating will be assigned by team number, with odd numbered teams on one side of the room, and even numbered teams on the other side of the room. Team name cards will be placed on the tables in numerical order for seating. Any team arriving after 8:00 may compete but will not be given extra time. The test will be in a sealed envelope. Students must leave the test in the envelope until the signal to begin testing is given.

Participants must have writing utensils. **No other materials or resources are allowed.** The event supervisor will provide the questions with identifying units, scrap paper, and answer document. No calculators, reference materials, Apple watches, computers, cell phones, etc., are allowed. Anyone using any prohibited items will be disqualified from the event.

Do not bring any food or drink to the testing area.

There are 100 questions on the test. Although a team may compete with one person, two participants are highly recommended. Team members may work on items separately. Any talking between team partners should be kept to a whisper so as not to disturb other teams.

Team members must write answers (positive or negative integers, or zero, not units) to the Fermi questions on the answer document provided. **Answers must be written clearly and legibly. Any illegible answers or blanks will be scored zero points.** The only things to be graded are the written answers to the Fermi questions on the answer document. No work shown will be graded. The answers to the Fermi questions are not open to debate after the event is over. The judgment of the event supervisor is final. **It is to your advantage to write an answer in every space in the answer document.**

When you write your digits, write them in the following manner: *0123456789* not like *ø 1 4 7*.

Each team will have the same amount of time to answer as many questions as possible. The event ends at 8:50 and students must stop writing immediately when time is called. A warning at five minutes and one minute remaining will be announced by the event supervisor.

Teams will be given no feedback or assistance during the contest.

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 of 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 ten and Fermi answer is 4. Responses recorded as  $5.001 \times 10^3$  or  $10^4$  on the answer sheet will be marked as incorrect. **Only write the exponent (rounded appropriately) as your Fermi answer.**

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 Fermi answer.

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.

Teams are allowed to finish before the allotted time. Teams should hand in their answer sheet at the designated table, have the time recorded by the event supervisor, and exit the room quietly.

**SCORING:** High score wins. If the response is equal to the accepted value, it earns 5 points. If the response is equal to  $\pm 1$  of the accepted value, it earns 3 points. If the response is equal to  $\pm 2$  of the accepted value, it earns 1 point. Ties are broken by counting the highest number of answers that receive five (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 students leave the room during the testing period, they may not return.**

**If students are still working when time is called, they must put down their writing utensils immediately.**

To give students an idea of what the answer document will look like, part of it is presented below.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100