ANSWERS

FERMI QUESTIONS-NJAAPT PHYSICS OLYMPICS-2019

Express your answer in order of magnitude format (i.e., 10^4 not 3×10^4, 10^6 not 7×10^5). Ten points will be awarded for each correct answer. There will be one point off for each order of magnitude the answer differs from the accepted. No more than ten points will be taken off for any one problem. No devices (cell phones, ipods/ipads, calculators, netbooks, computers, etc.) or preprinted references material shall be permitted to be used during the event.

1. **How many Harry Potter movies could you watch going from Earth to Pluto, assuming you are traveling at 1 millionth the speed of light?**

   Ans____6____

2. How many 10 cm long hairs would it take to fill the volume of the Sun? (Assume the hair follicles are perfect cylinders)

   Ans____36____

3. If you stack quarters, (US currency,)from the base of Mars' largest volcano, Olympus Mons, to its peak, how many quarters would be needed

   Ans____7____

4. How many 32-gallon trash bags would it take to contain all of Earth's water?

   Ans____19____

5. How many with 3" x 3" sticky notes would be needed to cover the surface area of the Great Wall of China.

   Ans____10____

6. How many cell phones pictures are taken in the USA annually?

   Ans____10 or 11____

7. How many total rotations do the wheels on all passenger vehicles in the US make, annually?

   Ans____15____

8. How many adult hands span across the Prime meridian?

   Ans____8____

9. How many quarks in a cup of water?

   Ans____26____

10. How many bathtubs would it take to hold the total amount of water a human would drink over a lifetime?

    Ans____2____