LIVERPOOL PHYSICS OLYMPICS

2002

Team _____

Rank _____

Fermi Questions

1	What is the ratio of the Earth's mass to the Moon's mass?	2	
2	What is the mass of the Earth's atmosphere?	19	kg
3	What is the temperature of the surface of the Sun?	4	K
4	How much water is used by the population of the UK?	12	kg/yr
5	If a signal is transmitted along a transatlantic optic fibre from Liverpool, how long will it take to reach New York?	−2	s
6	How many seconds have passed in this millennium?	8	
7	If one Gbyte of information is printed out as text (using this font size) what mass of paper would be required?	3	kg
8	If Pluto is the same size as the Moon, but ten thousand times further away, how many times fainter does it appear to be?	11	
9	How many atoms are there in a cup of tea?	25	
10	By how much does the water flowing over a 100 m high waterfall heat up if its potential energy is converted into thermal energy?	−1	K
11	What is the angle subtended by this full stop (.) when viewed from a normal reading distance?	−3	rad
12	What is the mass of a droplet of drizzle?	−8	kg
13	What is the smallest object that the Hubble telescope could resolve on the surface of the Moon? (Hint: $\theta = \lambda / d$)	2	m
14	By typing the letters on a keyboard at random, one key per second, how long is it likely to be before the word 'Liverpool' is spelled out?	5	yr