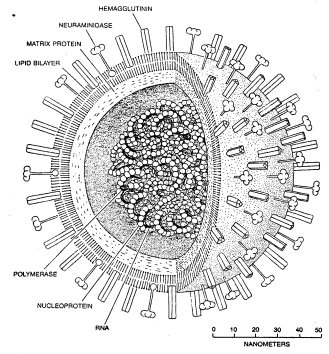
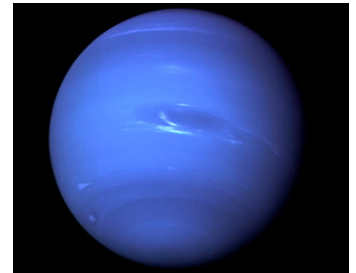


Viruses display a wide diversity of shapes and sizes, called *morphologies*. Generally viruses are much smaller than bacteria. Most viruses that have been studied have a diameter between 0.00000001 and 0.0000003 meters. Some filoviruses have a total length of up to 0.0000014 meters; their diameters are only about 0.00000008 meters. [61] Most viruses cannot be seen with a light microscope so scanning and transmission electron microscopes are used to visualize virions.[62]



With a mass of 102,430,000,000,000,000,000,000 kg,[7] Neptune is an intermediate body between Earth and the larger gas giants: its mass is seventeen times that of the Earth but just 1/19th that of Jupiter.[12] The planet's surface gravity is only surpassed by Jupiter, making the two gas giants the only planets in the solar system with a surface gravity higher than the Earth.[42] Neptune's equatorial radius of 24,764,000 m[9] is nearly four times that of the Earth.



1) Considering the most commonly studied viruses, how much bigger are the diameters of the larger viruses compared to the smaller viruses?

2) What is the mass of Earth (roughly)?

Interesting Examples...

$$5 \times 10^0 \quad 0.5 \times 10^1 \quad 0.05 \times 10^2 \quad 0.005 \times 10^3$$

$$3 \times 10^0 \quad 30 \times 10^{-1} \quad 300 \times 10^{-2} \quad 3000 \times 10^{-3}$$

Scientific Notation: _____ where _____

Examples:

Standard Form	Scientific Notation
1,000,000	
153,000	
0.0009	
0.005	
	2.0075×10^6
	1.685×10^{-4}

Operations With Scientific Notation:

1) Put the following numbers in order from least to greatest:

(a) 2.7×10^5 3.401×10^4 27500

(b) 7.8×10^{-8} 0.0000001034 8.076×10^{-7}

2) Simplify in Scientific Notation:

(a) $(8.5 \times 10^2)(1.7 \times 10^6)$

(b) $(1.5 \times 10^{-3})^2$

(c) $\frac{1.2 \times 10^4}{1.6 \times 10^{-3}}$