Scientific Notation I

Astronomers rely on scientific notation in order to work with very large, and very small things in the universe.

Convert the decimal numbers below into Scientific Notation:

1) Length of a year. 31,560,000.0 seconds

2) Speed of light: 299,792.4 kilometers/sec

3) Mass of the sun: 1,989,000,000,000,000,000,000,000,000,000,000 grams

4) Mass of Earth: 5,974,000,000,000,000,000,000,000 kilograms

5) One light-year : 9,460,500,000,000 kilometers

6) Power output of sun : 382,700,000,000,000,000,000,000,000 watts

7) Mass of an electron: 0.00000000000000000000000000000091096 kilograms

8) Radius of hydrogen atom : 0.00000000529177 centimeters

9) Radius of Earth's orbit: 14,959,789,200,000 centimeters

10) Diameter of Visible Universe: 26,000,000,000,000,000,000,000,000,000 centimeters

Answer Key:

1) Length of a year. 31,560,000.0 seconds

Answer: **3.156×10^{7} seconds**

2) Speed of light: 299,792.4 kilometers/sec

Answer: **2.997924×10^{5} km/sec**

3) Mass of the sun: 1,989,000,000,000,000,000,000,000,000,000,000 grams

Answer: **1.989×10^{33} grams**

4) Mass of Earth: 5,974,000,000,000,000,000,000,000 kilograms

Answer: **5.974×10^{24} kg**

5) One light-year : 9,460,500,000,000 kilometers

Answer: **9.4605×10^{12} km**

6) Power output of sun : 382,700,000,000,000,000,000,000,000 watts

Answer: **3.827×10^{26} watts**

7) Mass of an electron: 0.000000000000000000000000000000091096 kilograms

Answer: **9.1096×10^{-31} kg**

8) Radius of hydrogen atom : 0.00000000529177 centimeters

Answer: **5.29177×10^{-9} cm**

9) Radius of Earth's orbit: 14,959,789,200,000 centimeters

Answer: **$1.49597892 \times 10^{13}$ cm**

10) Diameter of Visible Universe: 26,000,000,000,000,000,000,000,000,000 centimeters

Answer; **2.6×10^{28} cm**