



Physics Olympiad and Problem Solving Programs
N210 - Introductory Physics Olympiad
Problem Set 1.1 - Units and Scientific Notation Solutions

Name:

Date:

1. (a) 1.156×10^6
(b) 2.18×10^2
(c) 6.8×10^{-3}
(d) 2.7635×10^1
2. (a) 3
(b) 4
(c) 3
(d) 2
3. 1 mile $\approx 1.6 \times 10^3$ meters. Then, 93 million miles = $9.3 \times 10^7 \times 1.6 \times 10^3 = 1.496 \times 10^{11}$ m.
4. 1.7372×10^5 s
5. In metric prefixes, $\mu\text{m} = 10^{-6}$.
 $1.00 \text{ m} + 142.5 \text{ cm} + 1.24 \times 10^5 \mu\text{m} = (1.00 + 1.425 + 0.124) \text{ m} = 2.55 \text{ m}$.
Remark: Since 1.00 has only three significant digits, the final answer should be rounded accordingly.
6. B.
7. D. In metric prefixes, one nanometers (nm) = 10^9 m.
Thus, $1 \text{ km} = (10^3 \text{ m}) \times \frac{(10^9 \text{ nm})}{(1 \text{ m})} = 10^{12} \text{ nm}$.
8. B. As defined by the International Astronomical Union (IAU), a light year is the distance that light travels in a vacuum in one Julian year. In astronomy, a Julian year is a unit of measurement of time defined as exactly 365.25 days of 86,400 SI seconds each, totaling 31,557,600 seconds. The speed of light is 299,792,458 m/s.
9. B. Trailing zero is significant.
10. B. The metric prefixes for 10^6 is *M*.