

Exam-like questions on "Units and Measurements"

1. Solve this problem showing the correct number of significant figures: $81300 + 411.8 =$
 (a) 82000 (b) 81700 (c) 81710 (d) 81712 (e) 81711.8
2. Solve this problem showing the correct number of significant figures: $3.021 \times 8.0 =$
 (a) 24.168 (b) 24.17 (c) 24.2 (d) 24 (e) 20
3. Suppose $A = B^n C^m$, where B has dimensions L, and C has dimensions LT^{-1} . If $n = 2$ and $m = -1$, what are the dimensions of A ?
 (a) $L^2 T^1$ (b) $L^1 T^1$ (c) $L^1 T^{-2}$ (d) $L^2 T^{-2}$ (e) $L^{-1} T^1$
4. Dimensionally speaking, could this equation be correct? (Show the dimensions for both sides.)

$$2gh = Fxm^{-1}$$

 Here, F has units of kg m/s^2 , m has units of kg , h and x have units of meters, and $g = 9.8\text{m/s}^2$.
 (a) Yes (b) No
5. If Mo runs 10 m right, 15 m left and 20 m right in 60 seconds, what was his average velocity?
 (a) 0.75 m/s left (b) 0.75 m/s right (c) 0.25 m/s right (d) 0.25 m/s left
 (e) 0.5 m/s right
6. If Mo runs 10 m right, 15 m left and 20 m right in 60 seconds, what was his average speed?
 (a) 0.75 m/s (b) 0.5 m/s (c) 0.25 m/s (d) 0.25 m/s (e) 4.0 m/s
7. What is the correct inequality symbol in the following: $|\Delta \vec{x}| \underline{\hspace{2cm}} d$.
 (a) $>$ (b) $<$ (c) \geq (d) \leq (e) $=$
8. What is the correct inequality symbol in the following: $s_{avg} \underline{\hspace{2cm}} |\vec{v}_{avg}|$.
 (a) $>$ (b) $<$ (c) \geq (d) \leq (e) $=$
9. A car to the left of the origin is driving to the left and slowing down. If we describe the motion using an x-axis which increases to the right, the signs of its position, velocity and acceleration are _____, respectively.
 (a) -, +, and + (b) +, -, and + (c) -, -, and + (d) -, +, and -
 (e) +, -, and -
10. What is the area of a rectangular plate with $L = 21.3 \pm 0.2 \text{ cm}$ and $W = 9.2 \pm 0.1 \text{ cm}$ (use quadrature method for errors).
 (a) $195.9 \pm 0.3 \text{ cm}^2$ (b) $195.9 \pm 3 \text{ cm}^2$ (c) $196. \pm 3 \text{ cm}^2$ (d) $196.0 \pm 2.8 \text{ cm}^2$
 (e) $196 \pm 2.8 \text{ cm}^2$