

## 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  $\text{kg m/s}^2$ ,  $m$  has units of  $\text{kg}$ ,  $h$  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)  $195.9 \pm 2.8 \text{ cm}^2$   
 (e)  $196 \pm 2.8 \text{ cm}^2$