1. A car moves to the right along a one-dimensional track for total time T in two parts. • Part One: The car maintains constant non-zero speed V for the first ¾ of the total time. • Part Two: The car accelerates uniformly to rest during the last ¼ of the total time. What is the ratio of the distance traveled during Part One of the trip to the distance traveled during Part Two of the trip?

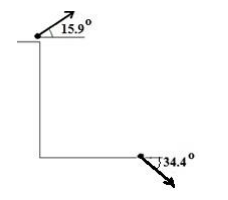
(A) 1:6 (B) :3 2 (C) The values of V and T are required to answer the question. (D) 3:4 (E) 3:8

2. A toy crane exerts an upward force and delivers a useful power output of 0.10 𝑊 to raise a block vertically at a constant speed. At what constant speed will this crane raise a 0.20 𝑘𝑔 block?

(A) 0.01 𝑚⁄𝑠 (B) 0.02 𝑚⁄𝑠 (C) 0.05 𝑚⁄𝑠 (D) 0.20 𝑚⁄𝑠 (E) 0.50 𝑚⁄𝑠

3. An object moves with constant acceleration starting with velocity 𝑣0 = 5.00 𝑚 𝑠 and ending with a velocity of 𝑣 = −1.00 𝑚 𝑠 in a time of 3.00 𝑠. For this motion, what is the average speed associated with the object?

(A) 2.00 𝑚⁄𝑠 (B) 2.17 𝑚⁄𝑠 (C) 2.50 𝑚⁄𝑠 (D) 2.83 𝑚⁄𝑠 (E) 3.00 𝑚⁄ 𝑠



4. A small 1.35 𝑘𝑔 mass is launched from the top of a cliff at an angle of 15.9 ° above the horizontal. When the mass reaches the ground 4.33 𝑠𝑒𝑐𝑜𝑛𝑑𝑠 later, its velocity is directed at 34.4 ° below the horizontal. What is the speed of the mass when it reaches the ground? Ignore air resistance

(A) 60.7 𝑚⁄𝑠 (B) 54.1 𝑚⁄𝑠 (C) 46.4 𝑚⁄𝑠 (D) 43.3 𝑚⁄𝑠 (E) 38.8 𝑚⁄𝑠

5. Which one of the following choices best represents the average angular speed of the hour hand on a standard clock (in units of rad/s)?

(A) 5.24 x 10-1 (B) 2.62 x 10-1 (C) 1.75 x 10-3 (D) 1.45 x 10-5 (E) 7.27 x 10-5

6. An object is thrown horizontally with speed 10.0m ⁄s from a height H above the ground. The object reaches the ground with a speed of 20.0m⁄s . Which one of the following choices best represents the time of the object’s flight to the ground? Ignore air resistance.

(A)1.00s (B) 1.22s (C)1.41s (D)1.50s (E) 1.73s