

HOMWORK HELP

CREWE LIBRARY

Monday 15th January 3.30 - 4.30pm

Wednesday 17th January 3.30 - 4.30pm

Staff, books and our specialist eResources will all be available to help you complete your homework.

22. Satellite 1 makes a circular orbit around the Earth with a radius $r_1 = R$. Satellite 2 makes a circular orbit around the Earth with a radius $r_2 = 2R$. We let v represent the speed of a satellite and a represent the magnitude of a satellite's acceleration. Which one of the following choices gives the correct relation between the speeds and accelerations of the satellites?

- (A) $v_2 = \frac{1}{\sqrt{2}}v_1$; $a_2 = \frac{1}{4}a_1$
- (B) $v_2 = \frac{1}{2}v_1$; $a_2 = \frac{1}{4}a_1$
- (C) $v_2 = \frac{1}{\sqrt{2}}v_1$; $a_2 = \frac{1}{2}a_1$

- (D) $v_2 = \frac{1}{2}v_1$; $a_2 = \frac{1}{2}a_1$
- (E) $v_2 = v_1$; $a_2 = \frac{1}{2}a_1$

23. A car moves with constant speed around a horseshoe-shaped path as shown with the arrows in the figure. Which one of the following choices best describes the direction of the average acceleration of the car in traveling from W to X?

- (A)
- (B)
- (C)
- (D)
- (E) There is no average acceleration



24. A mass on a frictionless incline has a gravitational force F_g acting vertically downward, and a force applied by a person F_a acting parallel to the incline. The mass remains at rest, and the incline makes an angle θ with the horizontal. Which one of the following choices best describes the orientation of the total force F_{tot} acting on the mass?

- (A) The applied force F_a is vertically upward.
- (B) The applied force F_a is vertically downward.
- (C) The applied force F_a is horizontally to the right.
- (D) The applied force F_a is horizontally to the left.
- (E) This is a completely impossible situation.

