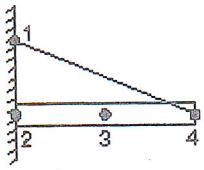
5. Assume that Earth is in circular orbit around the Sun with kinetic energy K and potential energy U, taken to be zero for infinite separation. Then, the relationship between K and U:

A) is $K = U$
B) is $K = -U$
C) is $K = U/2$
D) is $K = -U/2$
E) depends on the radius of the orbit

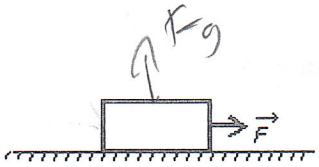
As objects get closer to the Sun they get faster

6. The uniform rod shown below is held in place by the rope and wall. Suppose you know the weight of the rod and all dimensions. Then you can solve a single equation for the force exerted by the rope, provided you write expressions for the torques about the point:

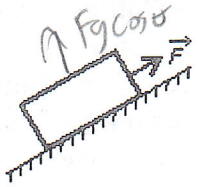


A) 1
B) 2
C) 3
D) 4
E) 1, 2, or 3

7. A heavy wooden block is dragged by a force $\vec{F}$ along a rough steel plate, as shown below for two possible situations. The magnitude of $\vec{F}$ is the same for the two situations. The magnitude of the frictional force in (ii), as compared with that in (i) is:



(i)



(ii)

A) the same
B) greater
C) less
D) less for some angles and greater for others
E) can be less or greater, depending on the magnitude of the applied force.