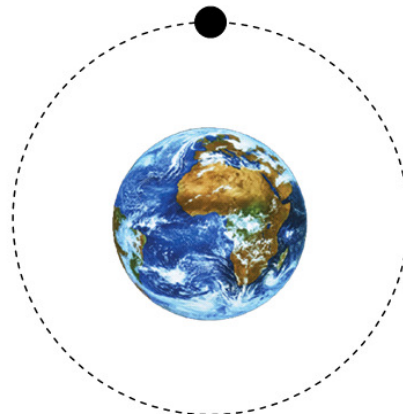Name _____ Date _____ Period _____

Worsheet: Satellite Motion
CHAPTER 14: SATELLITE MOTION

Directions: *Answer the following questions based on in-class notes and your textbook.*

1. Look at the diagram of a satellite orbiting the Earth in a circular orbit. Draw **vectors** and label them showing the **force** acting on the satellite as well as it's **tangential velocity**.
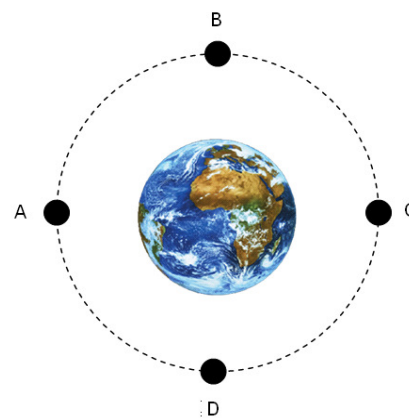
2. Describe the relative amounts of Potential Energy (**PE**) and Kinetic Energy (**KE**) at each of the positions in the diagram to the right.
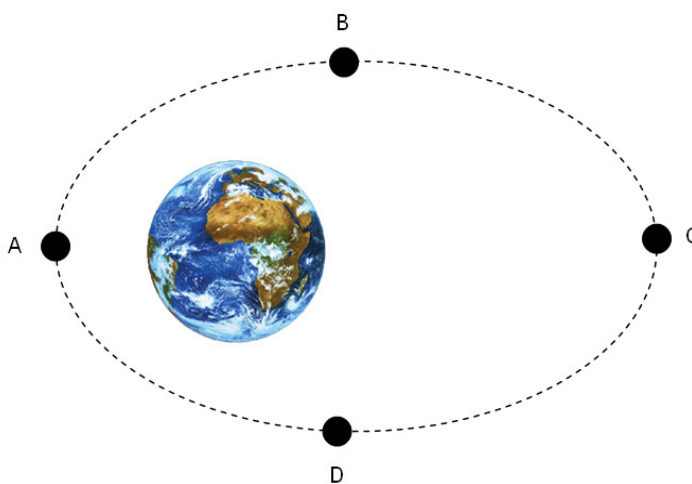
A-

B-

C-

D-

3. Describe the relative amounts of Potential Energy (**PE**) and Kinetic Energy (**KE**) at each of the positions in the diagram to the right.

A-

B-

C-

D-

4. How would you describe the **total amount of energy** at each of the 4 positions in the diagrams above?

5. Does the **period** of a satellite in a circular orbit increase of decrease as its distance from Earth increases?

6. Where in an elliptical orbit is the speed of a satellite at its **maximum**?

7. Where in an elliptical orbit is the speed of a satellite at its **minimum**?

8. When is the **speed** of a satellite greatest, when closer to Earth or farther from Earth?

9. What is the minimum speed for an object circling the Earth?

9. The positions (A, B, C, and D) of a satellite in elliptical orbit are indicated. Rank these quantities from <u>greatest</u> to <u>least</u>.

a. **gravitational force-**

b. **speed-**

c. **momentum-**

d. **KE-**

e. **PE-**

f. **total energy (KE + PE)-**

g. **acceleration-**