Clinical Application questions test your ability to research and synthesize material of anatomy and physiology in a medical situation. Please respond to the questions according to the following guidelines:

- Type the question
- Type your response
- Provide a works cited for each response
- Worth 50 points
- Due no later than January 8, 2009

1. A patient has hyperparathyroidism and produces excessive amounts of parathyroid hormone. What effect would this hormone have on bone? Would administration of large doses of vitamin D help the situation? Explain.

2. As Harry was jogging down the road, he tripped and his left ankle twisted violently to the side. When he picked himself up, he was unable to put any weight on that ankle. The diagnosis was severe dislocation and sprains of the left ankle. The orthopedic surgeon stated that she would perform a closed reduction of the dislocation and attempt ligament repair using arthroscopy.
   a. Is the ankle joint normally a stable joint?
   b. What does its stability depend on?
   c. What is a closed reduction?
   d. Why is ligament repair necessary?
   e. What does arthroscopy entail?
   f. How will the use of this procedure minimize Harry’s recuperation time (and suffering)?

3. Tess is diagnosed with a disease that affects the membranes surrounding the brain. The physician tells her family that the disease is caused by an airborne virus. Explain the possible ways this virus could have entered the cranium.
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1. As result of vitamin D3 deficiency, would you expect changes in blood levels of the hormones calcitonin and PTH. Thoroughly explain the consequences of abnormal hormone levels and their effect on the skeletal system.

2. A babysitter is on trial for the death of a 10 month old infant. The prosecutor contends that the child died as the result of being violently shaken. The defense claims that the child’s head became stuck in the slats of his crib, and in trying to twist free the child broke his neck. The medical examiner gave the following report:
   a. Death was due to compression of the spinal cord between the 6th and 7th cervical vertebrae.
   b. The superior articular processes of the 7th cervical vertebra and the inferior articular processes of the 6th cervical vertebra were fractured.
   c. The processes on the right side were laterally displaced causing the 6th cervical vertebra to slide laterally across the 7th damaging the spinal cord.

3. Assume that two patients have identical breaks in the femur. One is bedridden and the other has a walking cast?
   a. Which patient’s fracture heals faster? Explain
   b. Explain the process of bone repair in a fracture.