Biomedical Engineering Focus Areas: Application

Name: _____ **Date:** _____

Directions: For each scenario, choose two Biomedical Engineering focus areas introduced during the presentation. First, briefly describe them. Then describe how the work of researchers in each of the selected focus areas might be applied to the scenario. You can either brainstorm a new solution or research an existing solution. Be sure to include information on:

1) What the problem is,
2) How the focus areas are related to the problem,
3) The strategy an engineer in either focus area would take to solve the problem.

Scenario 1: Anthony has a motor disorder that affects his hands, limbs, torso, and speech muscles. As a result, he struggles with balancing, walking, being understood when speaking to new people, and performing fine hand movements. He hopes to gain independence in accomplishing some Activities of Daily Living (ADLs) such as personal hygiene, dressing, moving around, communicating, and eating.

Scenario 2: During rugby practice, Ramona collapses after colliding with another player. They have scrapes and bruises on their arms, and the coach thinks that the athlete may have hit their head or even broken a bone. Dr. Cacéres wants to determine where they're injured and how severe the injuries are, and also wants to heal any injuries quickly so that Ramona can get back to playing.

Scenario 3: Kira notices a lump in one of her breasts. Her primary care physician wants to determine the lump's location and whether it's cancerous. If the lump is malignant, the physician also wants to recommend potential treatment options to Kira.

For any one of the above scenarios: Compare the two strategies that you outlined. How are they similar? How are they different? Can the strategies be implemented at the same time, or should they be used separately? Why or why not? *Be sure to identify the scenario you're analyzing.*