Bones, Muscles, and Joints 6th Grade Health Study Guide Test Date _____

Musculoskeletal System – Together the bones, muscles, and joints – along with the tendons, ligaments, and cartilage make up this system.

Bones

- There are 206 in the human skeleton
- Bones take about 20 years to finish developing
- Calcium- Needed to make bones hard, which allows them to support your weight
- Bone Marrow- Located in the center of some of our bones where the majority of the body's blood cells are made.
- Two types of Bone
    - Compact Bone – the hard, outer part of the bone
    - Cancellous Bone – the spongy, inner part of the bone
- Ligaments – Connect bones to other bones
- Cartilage – A flexible, rubbery substance in our joints. It supports and protects the bones where they rub against each other.

Muscles

- Muscles pull on the bones which allows for us to move
- The human body has over 650 muscles
- Muscles make up approximately 50% of a person's body weight
- Tendons - A tough, cord-like tissue on the end of each muscle that connect the muscles to bones. This allows for the muscles to pull on the bones, which causes us to move.
- There 3 types of muscle are
    - Skeletal Muscle
        - Attach to the bones (skeleton)
        - These are voluntary muscles – You control them when you move (i.e. walking, jumping, writing, sitting up, twisting/turning, etc.)
    - Smooth Muscle
        - These are found in the walls of the stomach, intestines, and blood vessels
        - These are involuntary muscles – You can't control them, they naturally function without thinking about it. (i.e. moving your food through your digestive track, blood circulating through your arteries and veins.
    - Cardiac Muscle
        - Muscle found in the heart
        - This is an involuntary muscle – You can't control it, it naturally functions without thinking about it. (i.e. Your heart rate/beat slows or goes faster when it's needed without you having to think about how fast your heart should be beating)
- Muscles work in pairs to move your body by contracting and relaxing
- Your muscles can pull on the bones but they can't push them back to their original position, so they work in pairs called FLEXORS and EXTENSORS.
    - Flexors – Contract to BEND the limb at the joints. (i.e. The bicep muscle (front, upper arm) contracts to bend your elbow – When you think about "FLEXING" your muscles in your arm, you probably think about bending your elbow and flexing your bicep muscle.)
    - Extensors— Contract to EXTEND or straighten the limb at the same joint. (i.e. The tricep muscle (back, upper arm) contracts to straighten your elbow – Think straightening your arm to "EXTEND" your hand out help to someone.

Joints

- There are 3 Classifications of Joints
- Immovable Joints
    - These joints don't move (The dome of the skull)
- Partially Movable Joints
    - These joints move a little (The vertebrae in the spine)
- Freely Movable Joints
    - These joints move in many directions and have 3 different kinds of joints within this classification.
        - Hinge Joint
            - Allow movement in one direction, as seen in the knees and elbows (Think like a hinge on a door)
        - Pivot Joint
            - Allow for a rotating or twisting motion, like that of the head moving from side to side (Think like a pivot one your foot when you turn to change directions during a sport or activity)
        - Ball and Socket Joints
            - Allow for the greatest freedom of movement, like the hips and shoulder. (Move in a variety of directions)

Health issues/concerns – What can go wrong with the bones, muscles, and joints?

- Arthritis – The inflammation of the joint (Swelling within the joint cause pain with movement.)
- Fracture – Occurs when a bone breaks (This includes crack, snap, or shattering of bone tissue.)
- Repetitive Stress Injuries – A group of injuries that happen when too much stress is place on one part of the body, resulting in inflammation (pain and swelling), muscle strain, or tissue damage. This stress usually occurs from repeating the same movements over and over again.
- Strains – Occur when a muscle or tendon is overstretched (i.e. Strain you hamstring – a muscle)
- Sprains – An overstretching or partial tear of ligaments connecting the bones (i.e. SPRAIN your ankle – bones/joint)
- Tendonitis – A common sports injury that usually happens after over exercising a muscle.

Identify the names and locations of each of the 15 skeletal muscles on the diagrams below.