Bone and Brawn

Bone Basics

Made of: *Compact (aka dense) bone, and spongy bone. Most bones contain both types. Compact bone is dense, hard, and forms the protective exterior portion of all bones. Spongy bone is inside the compact bone and is very porous (full of tiny holes).*

How many? *300+ at birth, 206 as adults*

Why does it change? *As you grow, some of your bones fuse together*

Skeleton: All your bones working together

Structure: *Gives you your shape! Otherwise you would be a blob*.

Support: *Holds up the weight of your body and all its organs*

Protection: *Protects important organs like your brain, heart, and lungs*

Joints: *Allow you to move in some directions without moving in others (you wouldn't want to bend your knee backwards!) Different joint types allow for different types of movement.*

Fun Trivia:

Most broken bones aren't actually broken, they are fractured. It is basically a crack in the bone.

The femur is the largest bone in the body

More than half of the bones in your body are found in your hands and feet

Muscle Basics

How many? 640ish *in adults, varies by source.*

What do they do? *Produce force and cause motion*

Ligaments: *Attach muscle to muscle*

Tendons: *Attach muscle to bone*

Muscle reactions

Voluntary: *You can control them by thinking about them, like lifting your arms or bending your knee*

Involuntary: *Your body makes them work without you realizing it, like breathing or your heart beating.*

Both: *Some muscles can be both voluntary and involuntary. For example, you can make your eyes blink or hold them closed, but if you don't think about it your eyes will blink on their own automatically*

Types of Muscle:

Skeletal: *"voluntary muscle" is connected by tendons to bone and is used to control movement and in maintaining posture. Is striated- muscle fibers bundle together. Approx. 40% of body mass in adults is skeletal muscle.*

Cardiac*: "involuntary muscle" similar in structure to skeletal muscle, found only in the heart. Is striated- muscle fibers bundle together*

Smooth: *"involuntary muscle" is found within the walls of organs like the stomach, intestines, and throat. Unlike skeletal muscle, smooth muscle is not under conscious control.*

Fun Trivia:

Strongest force exerted by a muscle is the jaw muscle (biting force), of 975 lbs for 2 seconds

Largest muscle in your body is the Back muscle (Latissimus Dorsi)

By the time you turn 70, your heart will have beat some two-and-a-half billion times

It takes 17 muscles to smile --- 43 to frown.

Bones You Should Know

- Ankle
- Collar Bone
- Femur
- Fibula
- Fingers
- Heel
- Hips
- Humerus
- Jaw
- Knee Cap
- Radius
- Ribs
- Skull
- Spine/Vertebrae
- Sternum
- Tailbone
- Tibia
- Toes
- Ulna
- Wrist

Types of Joints:
Ball and Socket (Shoulder, Hip)
Hinged (Elbow, Knee)
Gliding
Saddle
Ellipsoid

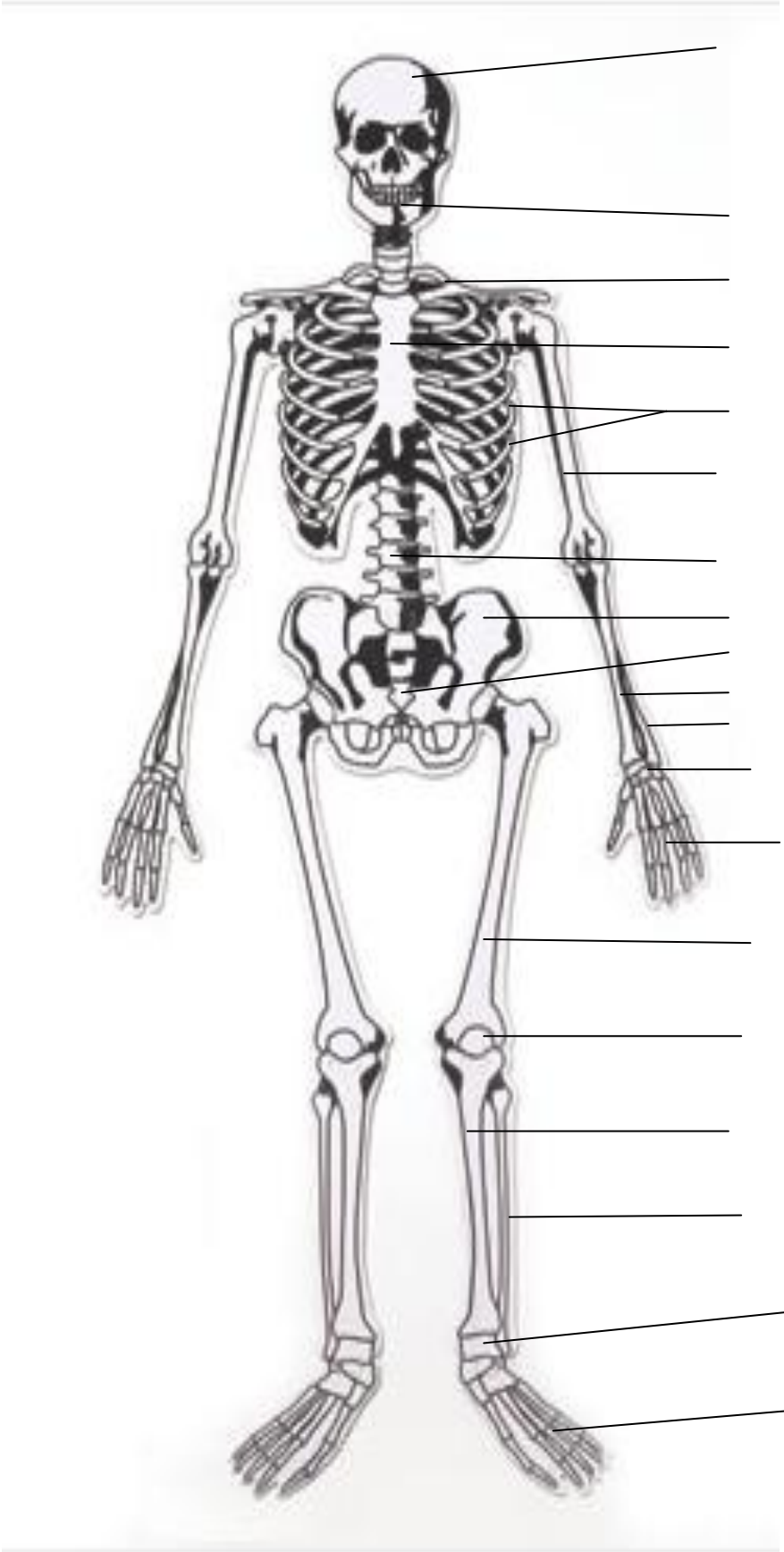
Muscles You Should Know

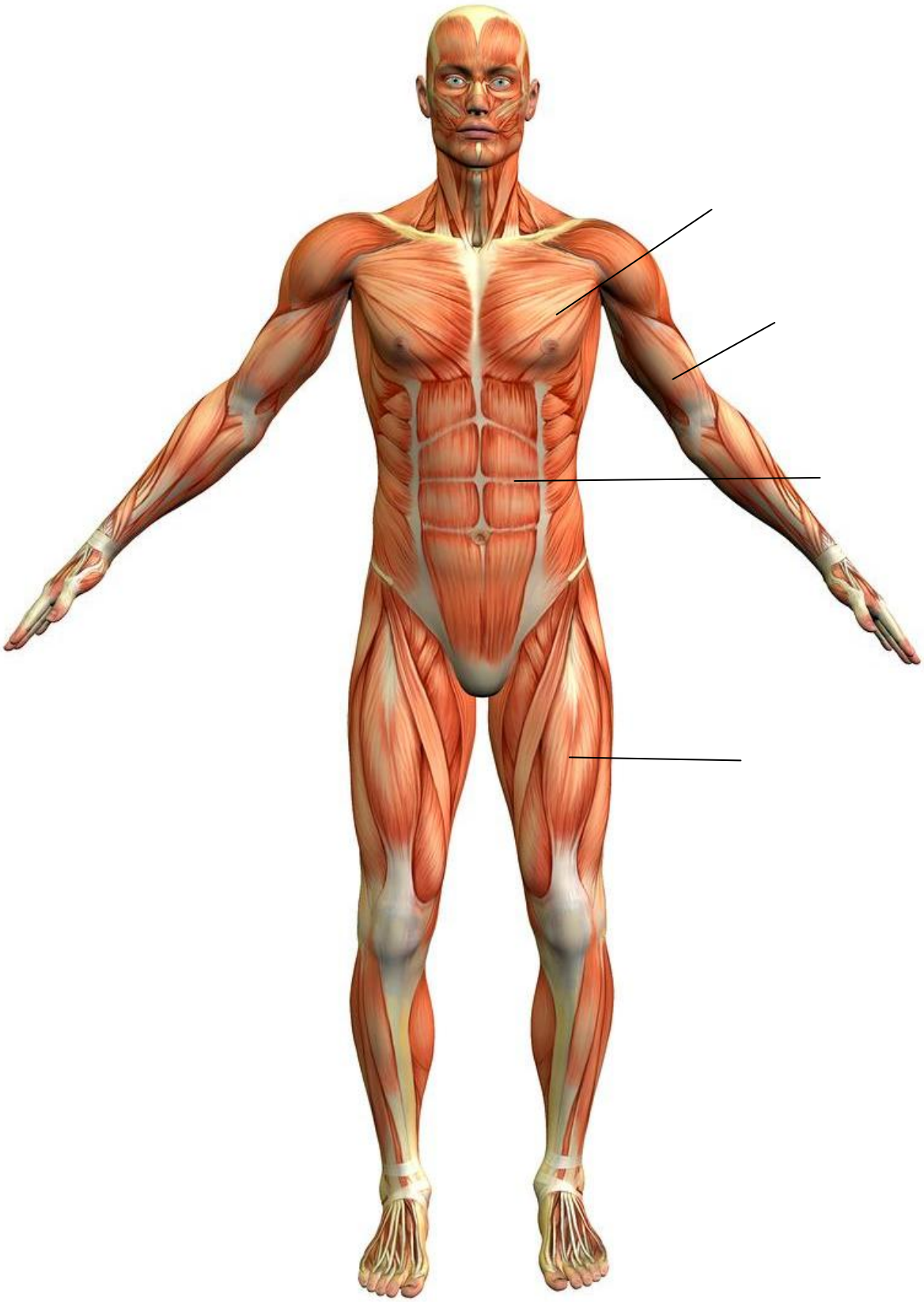
- Abdominals
- Back Muscle
- Biceps
- Calves
- Chest Muscle
- Diaphragm
- Glutes
- Hamstrings
- Heart
- Quadriceps
- Triceps

- Achilles Tendon

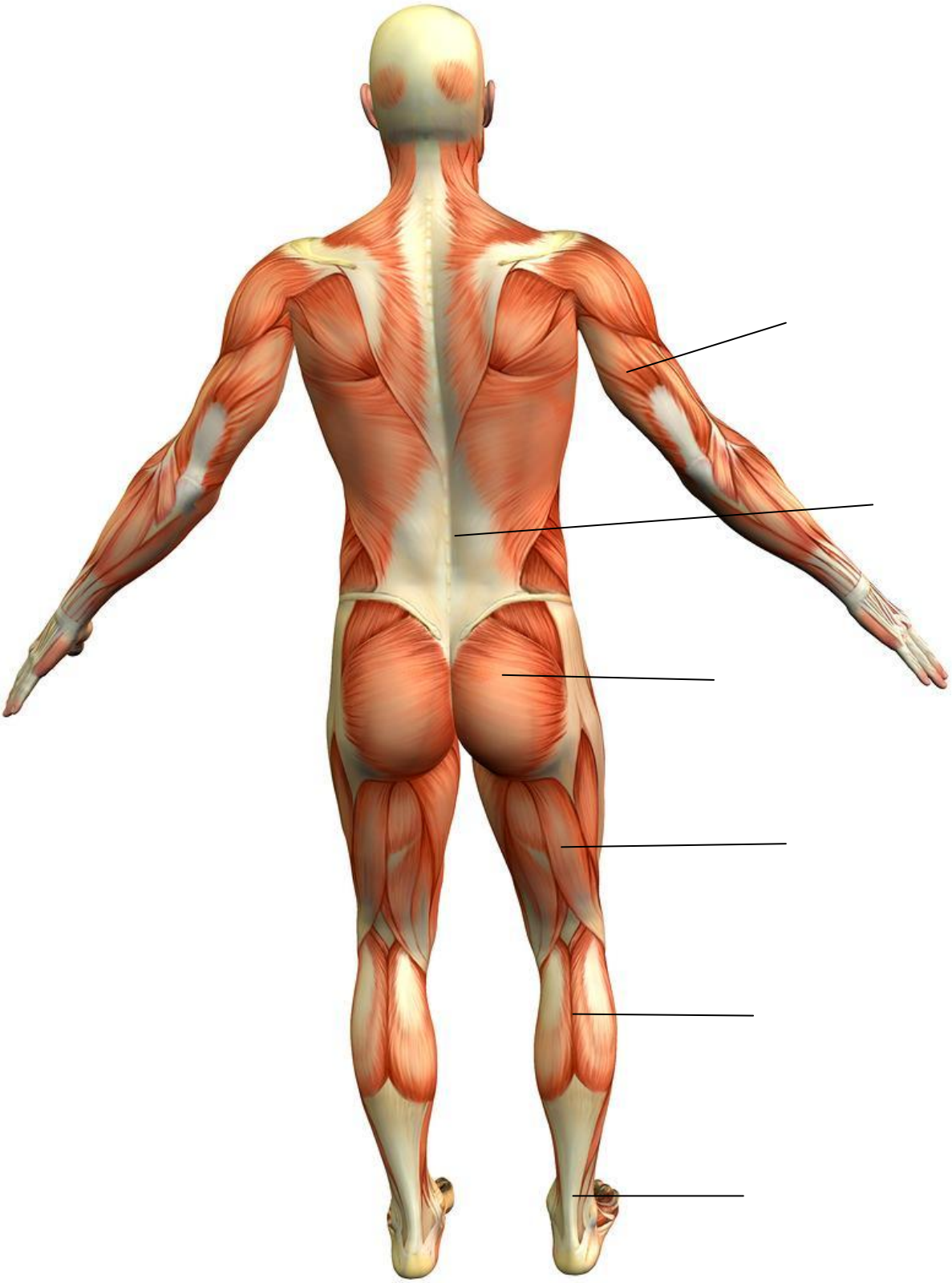
Types of Muscle:
Smooth
Cardiac
Skeletal

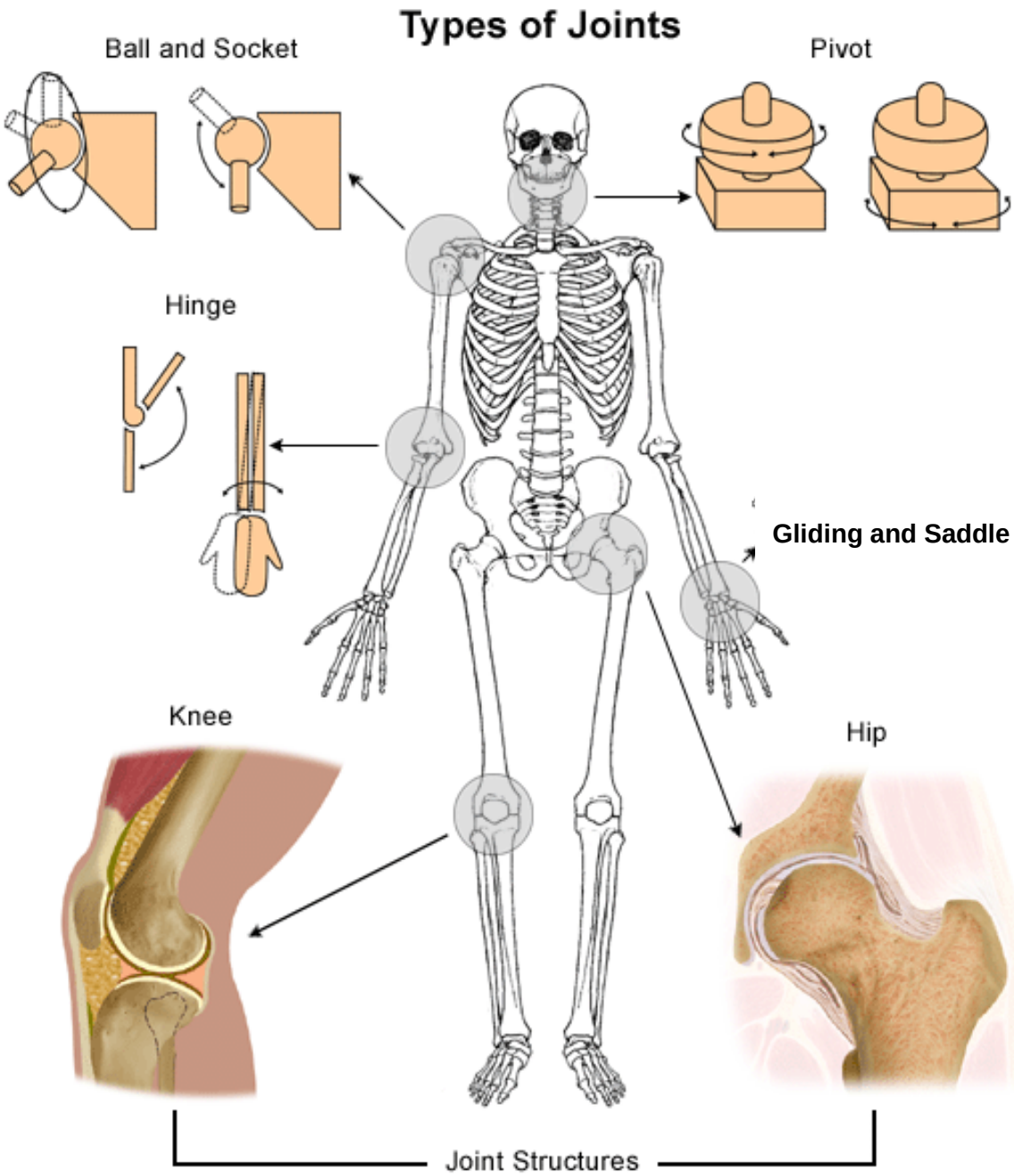
Ligament vs Tendon





**Heart and diaphragm are not shown





Hinge - A hinge joint allows extension and retraction of an appendage.
Ball and Socket - A ball and socket joint allows for radial movement in almost any direction. They are found in the hips and shoulders.
Saddle - A saddle joint allows movement back and forth and up and down, but does not allow for rotation like a ball and socket joint. Your thumb is a saddle joint where it joins your palm.
Pivot - Pivot joints allow rotation around an axis. The neck and forearms have pivot joints.
Gliding - In a gliding or plane joint bones slide past each other, like between your wrist and your palm.

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