

# SKELETAL SYSTEM



# ANTERIOR VIEW

Cranium

Mandible

Sternum

Ribs

Clavicle

Scapula

Humerus

Ulna

Radius

Carpals

Metacarpals

Phalanges

Femur

Patella

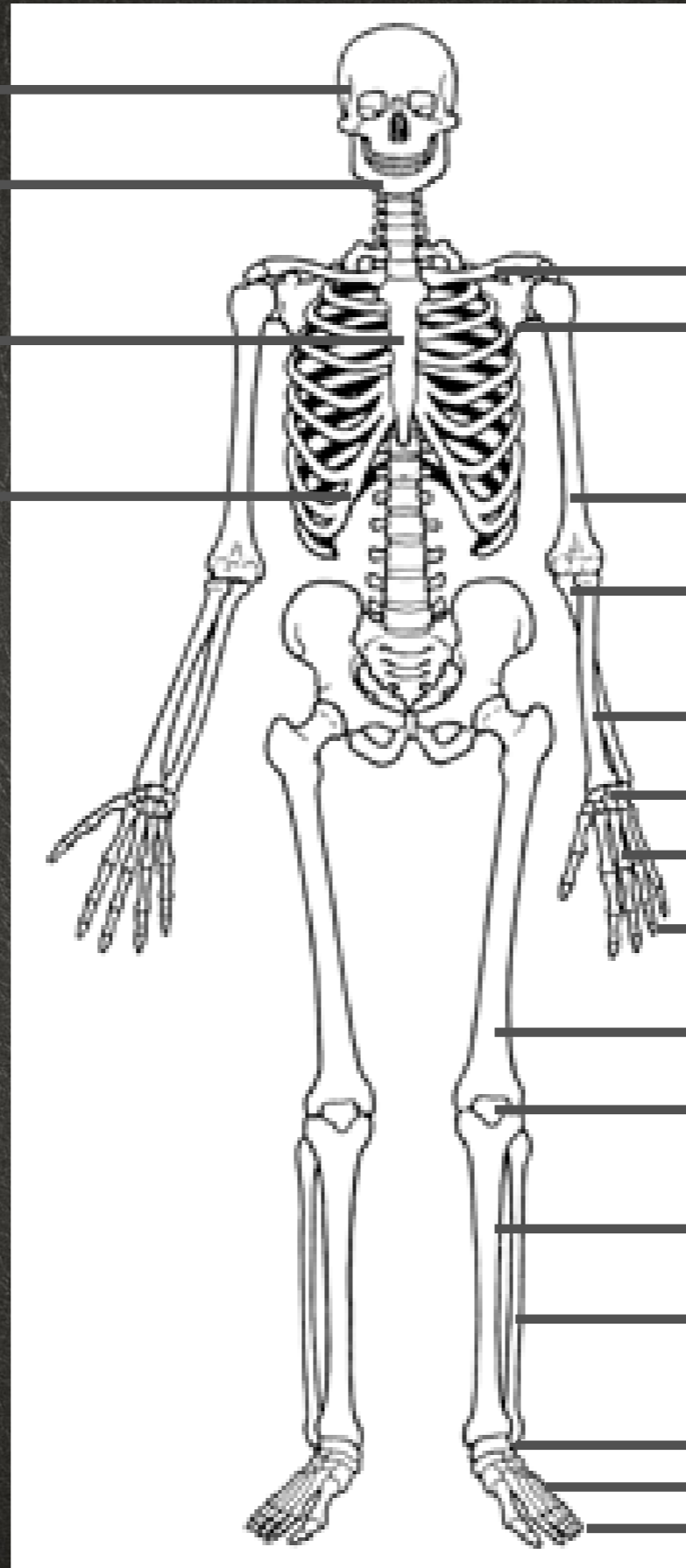
Tibia

Fibula

Tarsals

Metatarsals

Phalanges



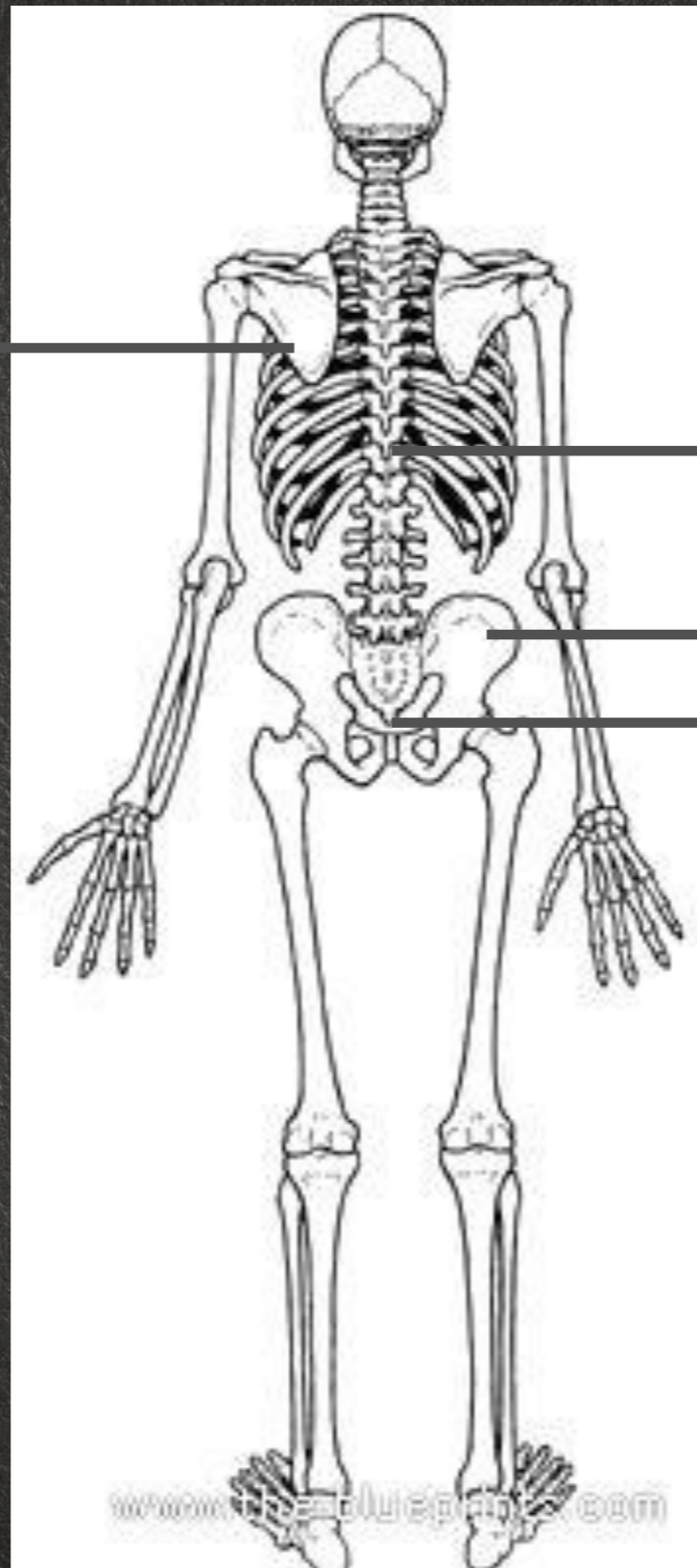
# POSTERIOR VIEW

Scapula

Vertebrae

Pelvis

Coccyx



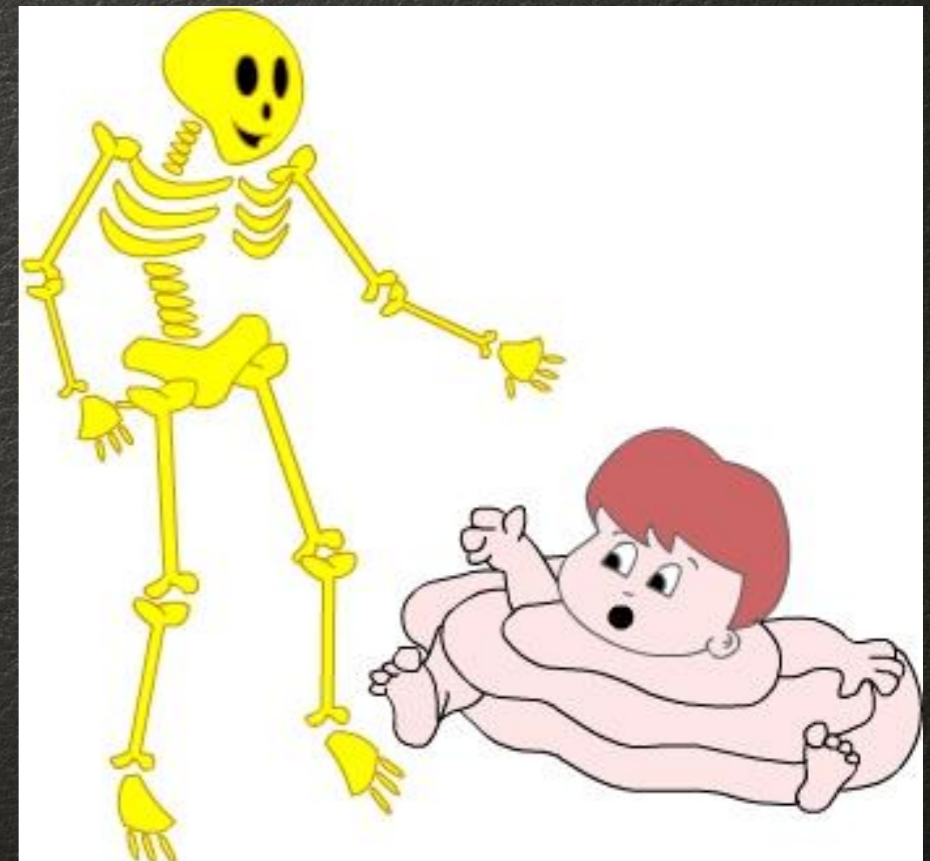
# **FUNCTIONS OF THE BONES**

There are 206 bones in a 'normal' adult skeleton

1. **SUPPORT** - is provided for soft tissues. The skeleton provides the framework for our body shape.
2. **PROTECTION** - for our vital organs eg our skull protects the brain and our ribs protect the lungs.
3. **MOVEMENT** - Our bones act as leavers when the muscles work in pairs.

4. BLOOD CELLS - production of red blood cells, predominantly found in the marrow of long bones.

5. STORAGE OF MINERALS - bones store calcium, phosphorus, small amounts of magnesium and sodium.



## TYPES OF BONES

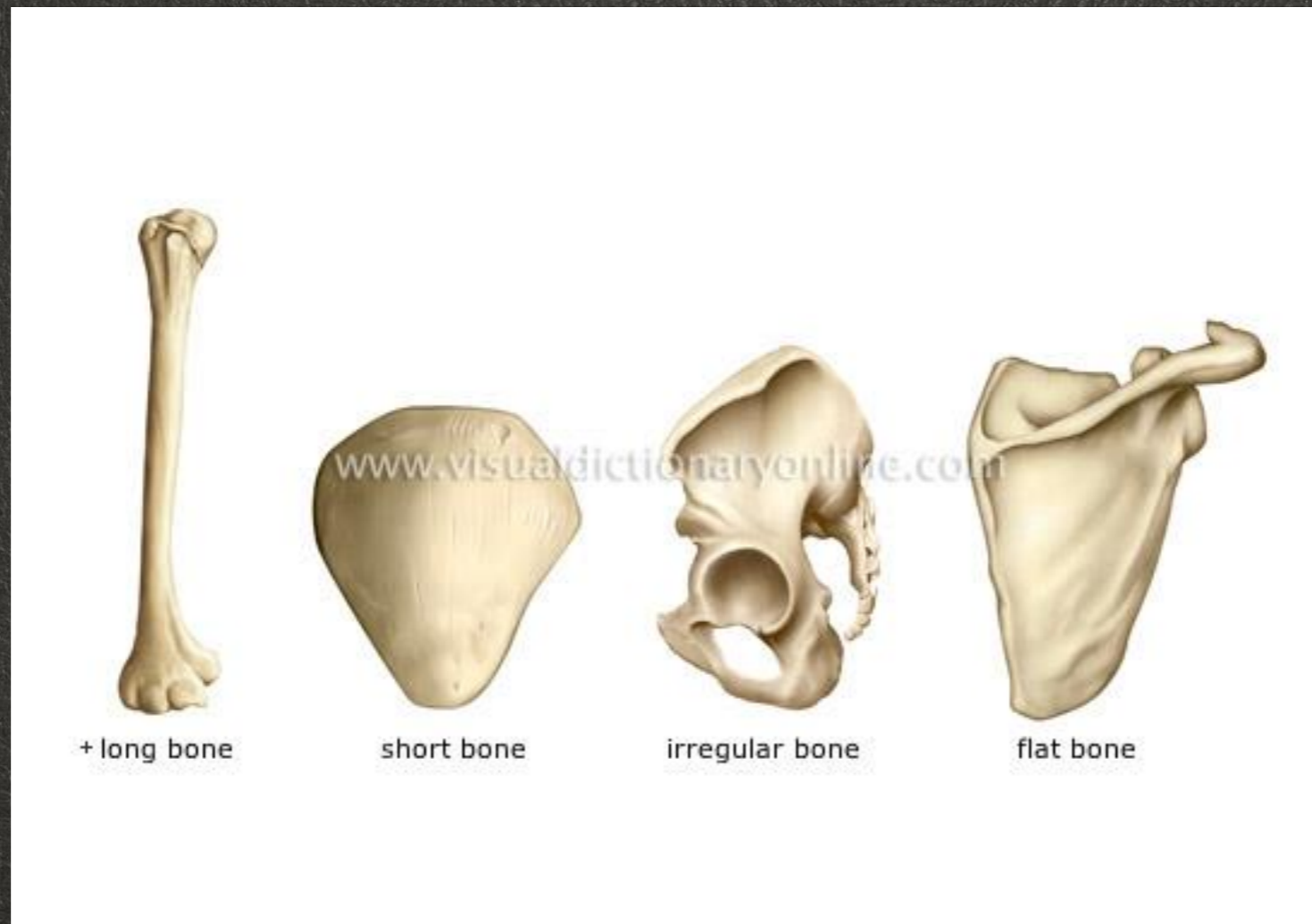
**LONG BONE** - light weight for movement eg femur, humerus

**SHORT BONE** - rounded and used for partial movement eg carpals, tarsals

**FLAT BONE** - broad and smooth for protection eg skull, sternum etc

**IRREGULAR BONE** - different shapes with special functions eg vertebrae, pelvis

You tube: "[The Skeletal System](#)"  
50 sec mark – 5 minute mark only



My Bones Rap – IT'S AWFUL : "[The skeletal system](#)"

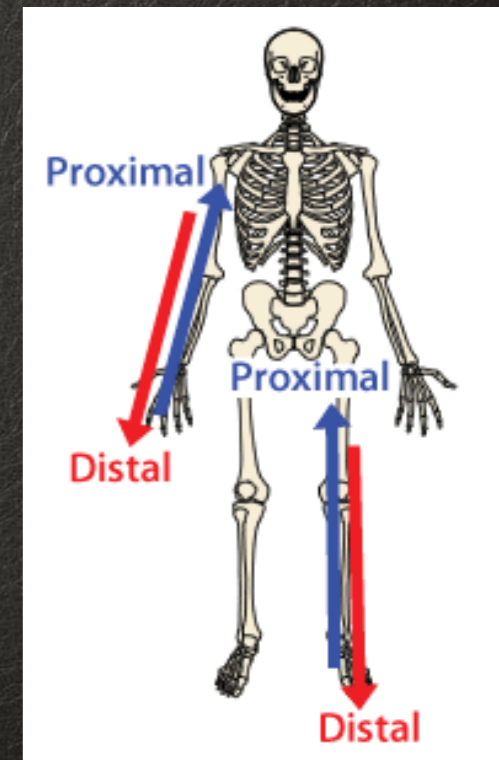
## Anatomical words for the skeleton

SUPERIOR - on top or above something

INFERIOR - at the bottom or below something

PROXIMAL - close to the midsection of the body

DISTAL - away from the midsection of the body





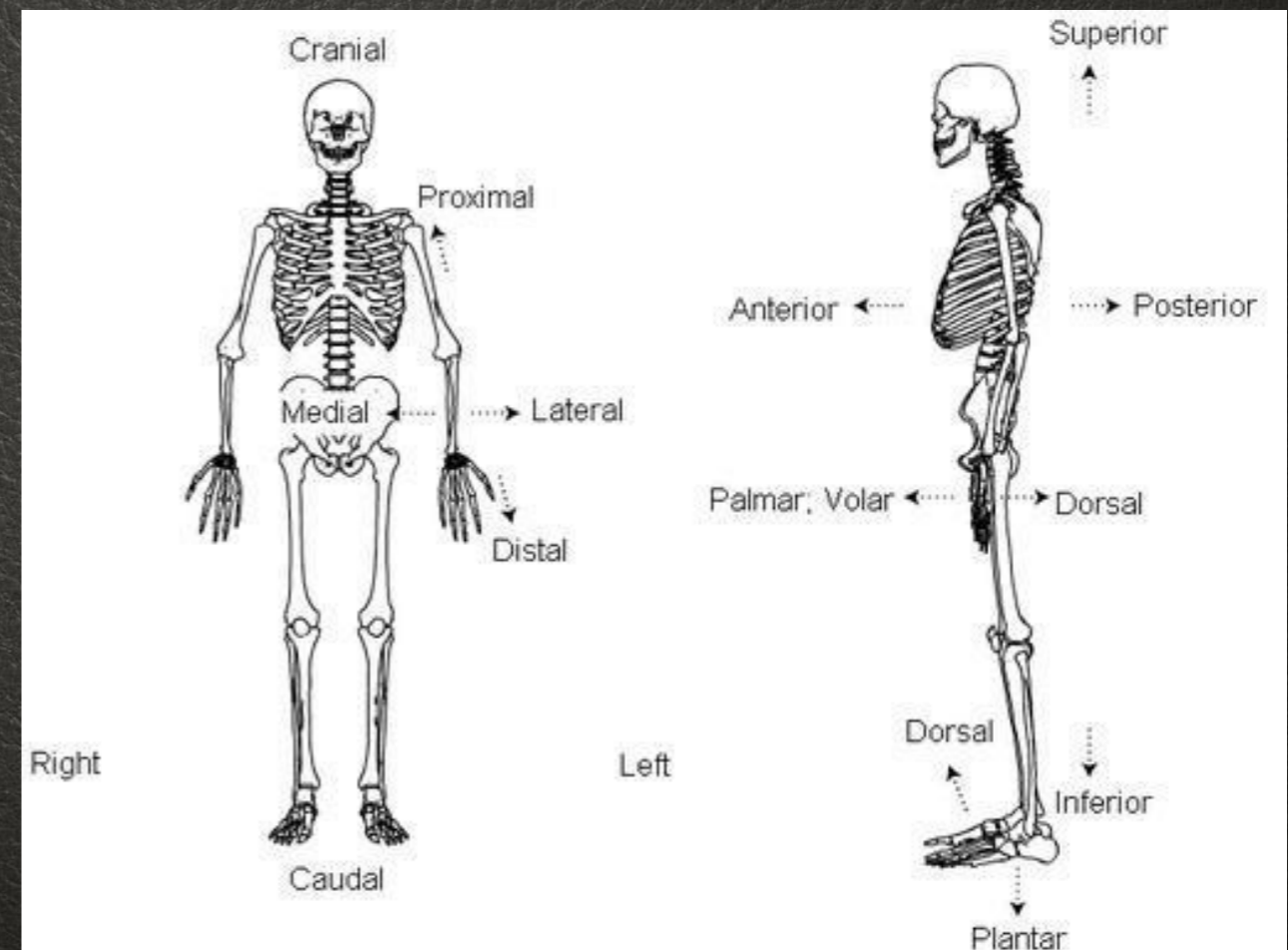
ANTERIOR - front side of body

POSTERIOR - back side of body

LATERAL - outside of body

MEDIAL - close to midline

Worksheet  
Anatomical map of skeleton



Re-cap bones

You tube: "[Spine anatomy](#)" 1:44sec

## Vertebrae and vertebral column

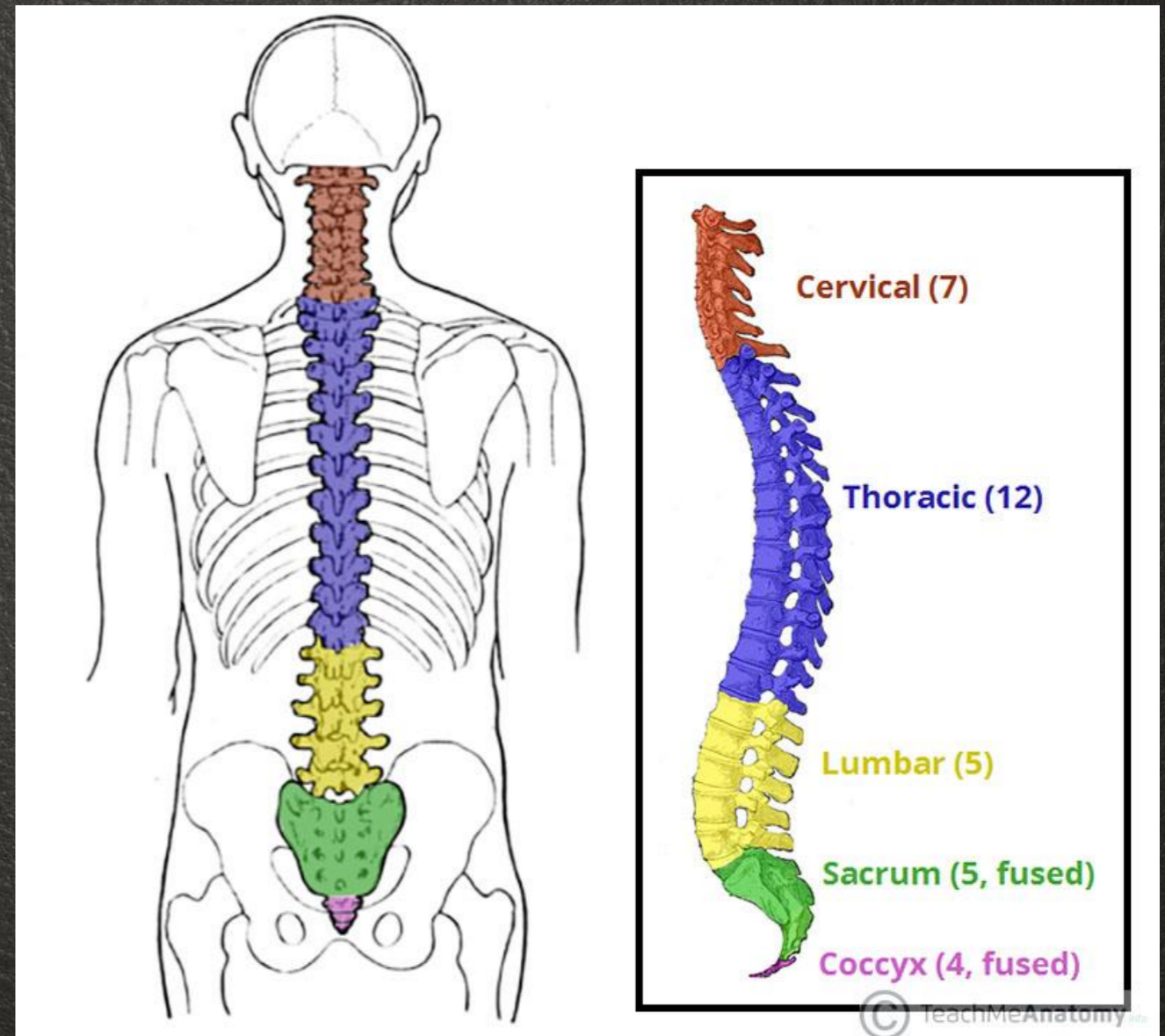
Cervical - 7

Thoracic - 12

Lumbar - 5

Sacrum - 5

Coccyx - 4



# Worksheet - colour in diagram of vertebrae

## The Skeletal System

### Vertebrae and Vertebral Column

**FOLLOW INSTRUCTIONS:**

1. Colour the individual cervical vertebrae in both posterior and lateral views.
2. Do the same for the thoracic and lumbar vertebrae, as well as the sacrum and coccyx. Avoid the intervertebral foramina, seen in the lateral view, and the sacrum (posterior view).
3. Colour in the intervertebral discs.
4. Do not colour the skull.

### 7 CERVICAL

This flexible group of cervical vertebrae supports the skull and neck. Holding the head erect develops and maintains its curvature. The 1st and 2nd vertebrae are unique as is the 7th with its prominent spine. The foramina in the transverse processes of C1-C6 transmit the vertebral arteries to the base of the brain. The series of vertebral foramina form a canal for the spinal cord.

### 12 THORACIC

This rather rigid group of thoracic vertebrae and the 24 ribs with which they articulate support the thorax. Its prominent curvature is developed in fetal life. Thoracic vertebrae are characterized by long, slender spines, heart-shaped bodies and facets for rib articulation.

### 5 LUMBAR

These stubby, quadrilateral lumbar vertebrae, the massive of the column, carry a large share of the bodyweight, balancing the torso on the sacrum. The lumbar curvature results from walking and standing erect. This vertebral group is quite mobile when lifting from the floor by flexing this group, great pressure is often put on their discs, which may induce their rupture. This may injure the spinal nerves which pass from the spinal cord through their intervertebral foramina.

### SACRUM

Five sacral vertebrae fuse to form this single bone. It transmits the body weight to the hip joints via its articulation with the pelvic girdle.

### COCCYX

Consisting of 2-4 fused coccygeal vertebrae, this bone is functionally insignificant.

The diagram illustrates the human vertebral column in both anterior and lateral views. The cervical vertebrae (neck) are colored green, thoracic (chest) are blue, and lumbar (lower back) are yellow. The sacrum is shown as a large triangular block at the base, and the coccyx is a small tail-like structure. Labels include 'atlas' and 'axis' at the top, 'intervertebral foramina' and 'sacral foramina' along the spine, and a detailed view of an 'INTERVERTEBRAL DISC' showing the 'transverse process', 'spinous process', 'lamina', 'vertebral foramen', 'articular process and facet', and 'body'.

You tube: "[Cervical spine anatomy](#)"

3:10sec

You tube: "[Cervical spine](#)" 1:43sec

## **Spinal Discs**     (*Intervertebral discs*)

The intervertebral disc in the spine is an interesting and unique structure. Its primary purpose is to act as a shock absorber between adjacent vertebrae.

Spinal discs also act as ligaments that hold the vertebrae of the spine together and as cartilaginous joints that allow for slight mobility in the spine.

There are a total of twenty-three vertebral discs in the spinal column

## **Components of Intervertebral discs**

Discs are composed of two parts including a tough outer portion called (Nucleus Pulposus) and soft inner core called (Annulus Fibrosus)

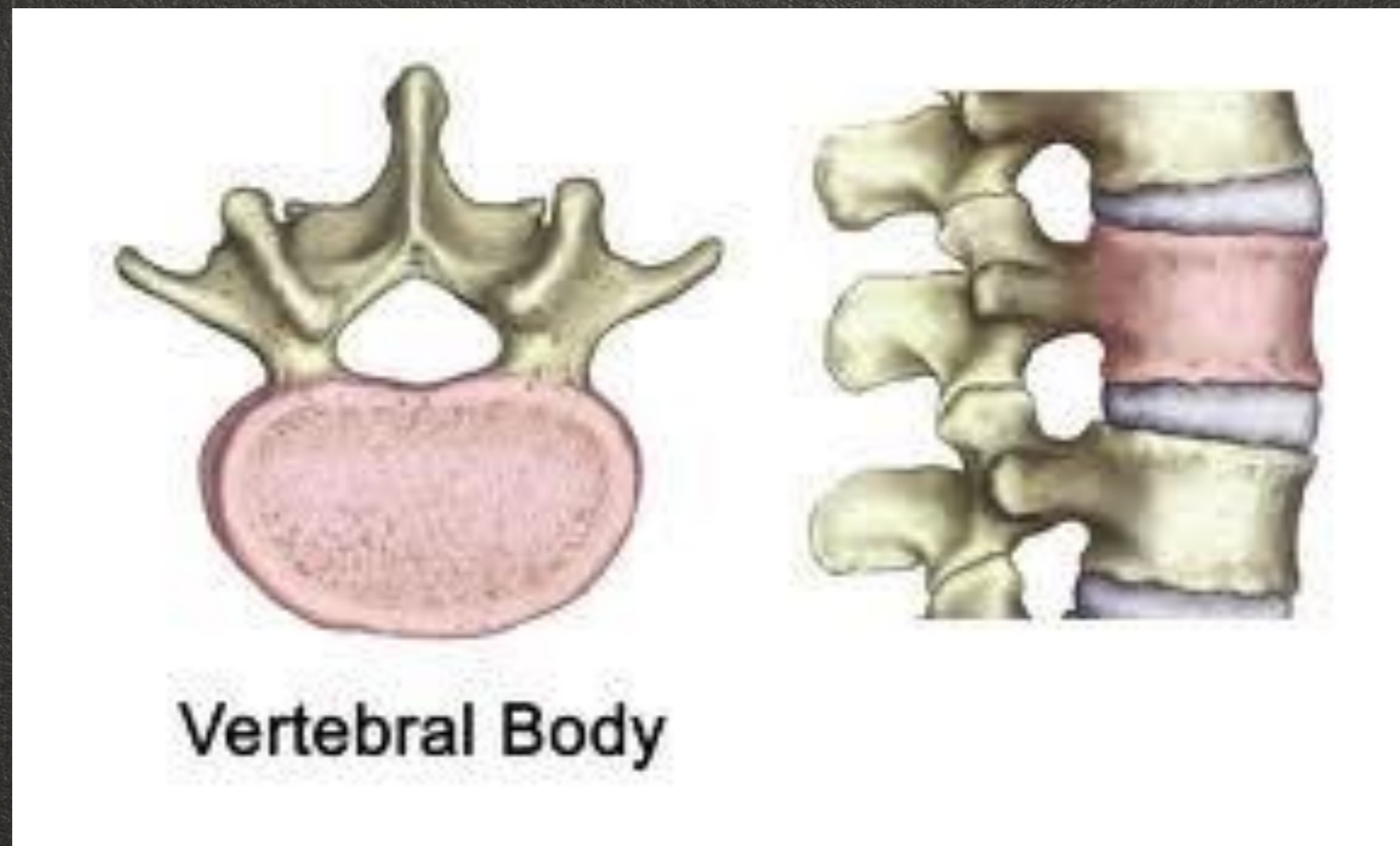
### **Disc Degeneration**

Over time, spinal discs dehydrate and become stiffer, causing the disc to be less able to adjust to compression. While this is a natural aging process, as the disc degenerates in some individuals, it can become painful. Sometimes a twisting injury damages the disc and starts a cascade of events that leads to degeneration.

The spinal disc itself has very few nerve endings and no blood supply. Without a blood supply the disc does not have a way to repair itself, and pain created by the damaged disc can last for years.

You tube: "[Spine or vertebral column](#)" start from 2:50sec

## Crossword worksheet - Bones of your body



## Spinal Cord Injury

A spinal cord injury (SCI) is generally defined as damage or trauma to the spinal cord that results in a loss or impaired function.

Common causes of damage to the spinal cord include trauma such as (car/motorcycle accidents, gunshot, falls, sports injuries), or disease (e.g. Spina Bifida). The resulting damage to the spinal cord is known as a lesion, and the paralysis is known as **quadriplegia** if the injury is in the **cervical** (neck) region, or as **paraplegia** if the injury is in the **thoracic**, lumbar or sacral region.

It is possible for someone to suffer a broken neck, or a broken back without becoming paralysed. This occurs when there is a fracture or dislocation of the vertebrae, but the spinal cord has not been damaged. Sometimes minor swelling of the spinal cord will result in temporary paralysis, which can be recovered from after several weeks or months.

# FRACTURES

## FRACTURES

A broken bone or bone fracture occurs when a force exerted against a bone is stronger than the bone can bear. This disturbs the structure and strength of the bone, and leads to pain, loss of function and sometimes bleeding and injury around the site.

There are different types of bone fractures. Some are more severe than others, depending on the strength and direction of the force, the particular bone involved, and the person's age and general health. Common bone fractures include the wrist, ankle and hip. Hip fractures occur most often in older people. Broken bones take around four to eight weeks to heal, depending on the age and health of the person and the type of break

### **Most common types of fractures include;**

**A Simple** fracture – the broken bone has not pierced the skin

**Open (compound)** fracture – the broken bone juts out through the skin, or a wound leads to the fracture site. Infection and external bleeding are more likely

**Greenstick** fracture – a small, slender crack in the bone. This can occur in children, because their bones are more flexible than an adult's bones

**Hairline** fracture – the most common form is a stress fracture, often occurring in the foot or lower leg as a result of repeated stress from activities such as jogging or running

You tube: "[Bone fractures](#)" 1:56sec



# WEEK 7 REVISION FOR TEST

C+ sound knowledge

All bones

How many bones in 'normal' adult skeleton

Functions of bones

Types of bones

Anatomical words

Vertebrae sections

A's and B's

More in depth questions of above

Spinal discs

Fractures

