Be aware of the geologic time scale (periods of Mesozoic, timing of this era & the periods, major events

Short hand:

Paleozoic Era – 540-250 mya

-Permian Period – 300-250 mya **Permo-Triassic Extinctions**

Mesozoic Era - **age of the reptiles**

-Triassic Pd – 65 mya

-Jurassic Pd – 205-145 mya **Age of the Dinosaurs**

Cretaceous Pd – 145-65 mya * Age of the Dinosaurs*

Cenozoic Era – 65 mya – present

Elaboration/Major events:

Late Permian – 255 mya

-pangea; mountain building (rockies & Appalachians pushed up)

Worldwide glaciation & mass extinctions = Permo-triassic crisis ->

-End of Permian: greatest extinction ever 99% of life died

Early Triassic – 237 mya

-continuation of extinctions & glaciations, BUT entering warming period

-*age of dinosaurs* & life diversifying post permo-triassic extinction

-Breaking up of Pangea

-Low atmospheric oxygen levels

Late Jurassic – 152 mya

-ongoing pangea breakup throughout period

-by late Jurassic Central Atlantic ocean separating africa from E north Am. & E gondwana begun to separate from W gondwana

Late Cretaceous – 94 mya

-South Atlantic fully open

-higher sea level due to – new rifts in ocean basin

-India seperates from Madagascar, moving N toward Eurasia

-N America & EU connected; Australia & antartica connected

-very warm climate

-lots of warm water movement warming the polar regions

-No ice caps

-Dinosaurs & palm trees in far N & far S

K/T Boundary 66 mya

-Extensive mountain building (2nd push up of rockies)

-inland seas drying up
-flowering plant radiation & 2nd insect radiation
-General **blossoming of life** (mammals just taking off) BUT THEN! An asteroid impact!!!
-massive extinctions from – dust cloud darkening of earth

Geologic Time scale – biological evolution

Paleozoic Era – 540-250 mya

-Permian Period – 300-250 mya

**Archosauria originated*

-Carboniferous pd –

**Amniotes 1st appeared*

**Diapsida evolved*

-Devonian pd

******Sarcopterygians first appeared - present*

-Silurian pd

-Ordovician pd –

-Cambrian pd -

Mesozoic Era –

**Archosauria took off*

** Dinosaurs*

-Triassic Pd – 65 mya

**Crocodilia 1st arose*

-Jurassic Pd – 205-145 mya

Cretaceous Pd – 145-65 mya

**dinosaur 2 independent radiations due to continental movements*

**Crocodilia diverse*

**Coelurosaurs*

**dromeosaurs (late)*

**Microraptor gui*

**archaeopteryx*

**jehalornis prima – short round feathers, teeth*

**confuciousornis ***pygostyle toothless (convergent)*

**Iberomesornis ****strut like coracoid, pygostyle & reduced foot claws (bird morphology traits)*

Neognathes: Galliformes & anseriformes evolution began

Cenozoic Era – 65 mya – present

Be aware of major groups of Craniata (craniata, vertebrata, gnathostomata, osteichthyes, sarcopterygii, tetrapoda, amniota, sauropsida, diapsida, archosauria)

Phylogenic tree

1.craniata - Myxinoides (hagfishes) & Vertebrata

2.vertebrata - Petromyzontidea (lampreys) & Gnathostomata

3. gnathostomata - Chondrichthyes (sharks, skates rays) & Osteichthyes

4. osteichthyes – actinopterygii(ray-finned) & sarcopterygii (lobe finned fish)

5. sarcopterygii - Actinistia (coelacanths) & Rhipidistia

6. rhipidistia (non important) - dipnoi & tetrapoda

7. tetrapoda - Lissamphibia & amniota

10. amniota - Sauropsida & synapsida

Sauropsida - Diapsida & Testudinia (turtles)

Diapsida - Lepidosaurs & Archosauria

Archosauria - Crocodilia & Aves

Synapsida (mammals)

Sarcopterygii -

Early devonian to present

-dermal (form of skin) & endochondral (forms in cartilage) bones

-lobed finned fishes (Includes Tetrapods)

Tetrapoda - (within sarcop)

-Pectoral girdle separate from shell