**WS 1.1 Instructor Version of Geologic Time Warm Up Activity**

**Objectives:**

* Create a timeline of the history of the Earth without consulting any outside resources
* Assess student prior knowledge and misconceptions

**Time Needed:** ~15 minutes. Note: This activity can take as long as you want it to. Students can, and will, drag this out for a long time. You can request that they do it as quickly as possible, perhaps with a timer set, taking no longer than 10 minutes for the student portion.

**Materials:**

* A 4.6m (460cm) long piece of adding machine paper per group
* Masking tape to tape down ends of paper on desks or floor
* A pack of colored pencils per group
* Worksheets for students
* A meter stick or measuring tape and ruler for making measurements

**To do before class:**

* pre-measure adding machine paper for student groups
* pre-label adding machine papers with “origin of earth” and “today” on either end
* make your own accurate version of the timeline to scale following the directions below

**To make the instructor timeline:**

* You may want to watch [this video](https://www.youtube.com/watch?v=mq4YStqyQqk&ab_channel=ScienceGonnaGetYou) to get an idea of how to do it before you get started.
* Take a 4.6m length of adding machine paper
* Label “Origin of the Earth” and “Today” on either end
* Measuring backwards from the “today” side of the paper, place the following events on the time scale
	+ Oldest rocks on earth- 4.1 billion years (410cm before “today”)
	+ Oldest fossils- 3.5 billion years (350cm before “today”)
	+ First fish ~525 million years (52.5cm before “today”)—*note there is a BIG gap from oldest fossils to this point, and that is normal. Most of earth history does not have much going on in the fossil record.*
	+ First plants on land- 460 million years ago (46cm before “today”)
	+ First amphibians 375 million years ago (37.5cm before “today”)
	+ First reptile 315 million years ago (31.5 cm before “today”)
	+ First dinosaur 228 million years ago (22.8cm before "today”)
	+ First mammals 210 million years ago (21cm before "today”)
	+ First birds 150 million years ago (15 cm before "today”)
	+ First flowers 130 million years ago (13cm before "today”)
	+ Time of extinction of the dinosaurs 66 million years ago (6.6cm before “today”)
	+ First horses 50 million years ago (5cm before “today”)
	+ First hominins (human ancestors that walked on two legs) 7 million years ago (7mm before “today”)
	+ First modern humans—300,000 years ago. 0.3mm—Won’t be possible to put on time scale at this resolution, pretty much coincident with “today” on timeline

**Instructions for lesson:**

Have students break into groups of 3-4 and give them their worksheets, colored pencils and adding machine paper.

Instruct students that without any expectations of prior knowledge and without looking anything up, for them to do their best to put a list of the major events in the history of Life on a timeline using the list of events on worksheet 1. Their timelines will very likely turn out incorrect. They will not be measuring anything in this simplified activity.

Note: instead of using the list on the handout, you could make labeled arrows or images that could be taped on the timeline which could speed up the process.

After all groups are finished with their timeline, show the students your accurate version that you made before class and ask students to compare and write their reactions to how their timeline relates to yours in the reflection questions on the worksheet. This could be displayed by attaching with magnets or taping to the wall.

**Student Instructions:** Examine the long piece of paper. This paper represents a timeline of the age of the earth. Note that one end is labeled with the origin of the earth, and the other is labeled as today.

Your task in the next 10-15 minutes is to take the events listed below and write them on this piece of paper where you think they go.

Note that you are not supposed to consult any outside resources or necessarily know where they fall on the timeline or in what order. You WILL get some of this wrong. The idea is to determine what you know and what you don’t know about the history of our planet.

At the end of this exercise, you will compare your timeline to the correct version!

Items to place on the timeline (these are not listed in order):

* Oldest rocks on earth
* First reptile
* First modern humans
* First birds
* First mammals
* First dinosaur
* First amphibians
* First plants on land
* First fish
* First flowers
* First horses
* First hominins (human ancestors that walked on two legs)
* Oldest fossils
* Time of extinction of the dinosaurs

Reflection questions:

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| What aspects of your timeline were correct?  |

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| --- |
| What aspects of your timeline were incorrect?  |

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| --- |
| What surprised you about this activity?  |