Toilet Paper Geologic Time Scale
K-6
from Elizabeth E. Roettger

Key Point:

* To demonstration of the enormous extent of geologic time compared to recent time.

Materials:

* One roll of toilet paper, 231 sheets or more.
* Felt-tip marker(s) or fluid writing utensil(s), preferably several colors.
* Clear tape for repairs.

Preparation:

1. On a flat, protected surface, unroll the first sheet or so of the roll. Test the marker(s) for clarity and make sure they are not bleeding through. Discard the test sheet(s).
2. Using the perforations between sheets as a ruler (the first is zero), mark the dates and names of items as listed in the table below.
3. Re-roll the toilet paper. If it tears, repair with tape.

SPACING

Sheets

Event

Geological time (Number of years before present)

Comments

0.00 Present 0

0.0005 Modern man 10,000

0.01 Neanderthal man 100,000

0.03 First use of fire 500,000

0.06 Worldwide glaciation 1,100,000

0.07 Homo erectus 1,300,000

0.08 Linking of North and South America 1,500,000

0.08 Oldest stone tools 1,600,000

1.15 Beginning of Quaternary period (end Tertiary/Neogene) 23,000,000

0.15 Australopithecus 3,000,000

0.50 Beginning of Antarctic ice caps 10,000,000

0.50 Opening of Red Sea 10,000,000

0.75 Formation of Himalayan Mountains 15,000,000

1.15 Beginning of Tertiary/Neogene period (end Paleogene) 23,000,000

1.25 First evidence of ice at the poles 25,000,000

2.00 Collision of India with Asia 40,000,000

2.50 Early horses 50,000,000

2.50 Separation of Australia and Antarctica 50,000,000

3.00 Early primates 60,000,000

3.00 Opening of Norwegian Sea and Baffin Bay 60,000,000

3.00 Alps form 60,000,000

3.25 Beginning of Tertiary/Paleogene period 65,000,000

3.25 Beginning of Cenozoic Era 65,000,000
"recent life"

3.25 Cretaceous Period, Mesozoic Era end 65,000,000

3.25 Dinosaurs became extinct 65,000,000

4.00 Rocky Mountains form 80,000,000

7.00 Cretaceous Period begins (Jurassic ends) 140,000,000

7.50 Early flowering plants 150,000,000

9.00 Early birds and mammals 180,000,000

10.40 Jurassic Period begins (end Triassic) 208,000,000

11.00 Opening of Atlantic Ocean 220,000,000

12.25 Triassic Period begins 245,000,000

12.25 Beginning of Mesozoic Era (end Paleozoic) 245,000,000
"middle life"

14.00 Final assembly of Pangaea 280,000,000

14.50 Beginning of Permian period 290,000,000

16.25 First reptiles 325,000,000

16.15 Beginning of Carboniferous/Pennsylvanian period 323,000,000

18.15 Early trees, formation of coal deposits 363,000,000

18.15 Beginning of Carboniferous/Mississippian period 363,000,000

20.45 Beginning of Devonian period (end Silurian) 409,000,000

21.50 Early land plants 430,000,000

21.95 Beginning of Silurian period (end Ordovician) 439,000,000

24.50 Early fish 490,000,000

25.50 Beginning of Ordovician period (end Cambrian) 510,000,000

28.50 Early shelled organisms 570,000,000

28.50 Beginning of Cambrian period 570,000,000
rise of multicellular animals

28.50 Beginning of Paleozoic Era 570,000,000
"ancient life"

28.50 Beginning of Phanerozoic Eon (end Proterozoic) 570,000,000
"visible life" (or 544 million years ago)

35 Early multicelled organisms 700,000,000

40 Breakup of early supercontinent 800,000,000

70 Formation of early supercontinent 1,400,000,000

60 First known animals 1,200,000,000

125 Beginning of Proterozoic Eon (end Archeon) 2,500,000,000
"earlier life"

135 Buildup of free oxygen in atmosphere 2,700,000,000

170 Early bacteria & algae 3,400,000,000

190 Oldest known Earth rocks 3,800,000,000

200 Beginning of Archeon Eon 4,000,000,000

230 Precambrian time begins 4,600,000,000

230 Origin of earth 4,600,000,000

Note: I've set the scale to use 230 sheets rather than the usual 250 because it makes the conversion more obvious -- 20 million years per sheet.

Credits:

The time scale is a combination of actual numbers (for the eons and such) and approximate dates from a time scale (for events, such as "early horses"), both from:

Press, F., and Siever, R. Understanding Earth. W. H. Freeman and Company, New York, 1998. ISBN 0-7167-2836-2.

Please note that various sources will give different specific dates, but the overall scale is the important part of this activity. Many events cannot be pinpointed (the geologic record is not perfect or complete), and in any case, most of the "dividing lines" are probably gradual changes, occurring over many thousands or even millions of years.

Last updated: 14 Jul 1998. URL: http://www.nthelp.com/eer/HOATPtime.htm