

# Part 4 Human Evolution

## Part 4 Lesson 1 Intro to Human Evolution

Name:

Due:

Please describe why this family portrait is inaccurate according to earth system history



\_\_\_\_\_ : The group consisting of all modern and extinct Great Apes (that is, modern humans, chimpanzees, gorillas and orang-utans plus all their immediate ancestors).

\_\_\_\_\_ : The group consisting of modern humans, extinct human species and all our immediate ancestors (including members of the genera *Homo*, *Australopithecus*, *Paranthropus* and *Ardipithecus*).

Opposable \_\_\_\_\_ – Gripping (most primates have).

Bipedalism: Walking on \_\_\_\_\_ feet (regularly).

Hominins first appeared roughly \_\_\_\_\_ million years ago (A blink in geologic time).

First hominid found in \_\_\_\_\_ Mary and Louis \_\_\_\_\_ at Olduvai Gorge.

What is a hominin? How do Paleoanthropologists know what they know?



## Part 4 Lesson 2

Please record a few names and information about some of the hominins below as described in the slideshow.



Hominin \_\_\_\_\_ is close to us 2:1:2:3

Wisdom teeth: Molars leftover from when early hominids ate mostly \_\_\_\_\_.

Part 4 Lesson 3

Below is a copied page from a science textbook, please read this page about human evolution. Note – It is the only page on the topic. Thank you big textbook companies!

## Evidence of Human Evolution

### SKILLBUILDER

#### Interpreting Data

Scientists studied the chemicals found in four bacteria. The table shows the types of chemicals found in each type of bacteria. Each letter represents a different chemical. Use this data to determine which of the bacteria are closely related. If you need help, refer to the **Skill Handbook** on page 690.

Bacteria 1	A, G, T, C, L, E, S, H
Bacteria 2	A, G, T, C, L, D, K, H
Bacteria 3	A, G, T, C, L, D, P, U, S, R, I, V
Bacteria 4	A, G, T, C, L, D, H

Figure 17-14

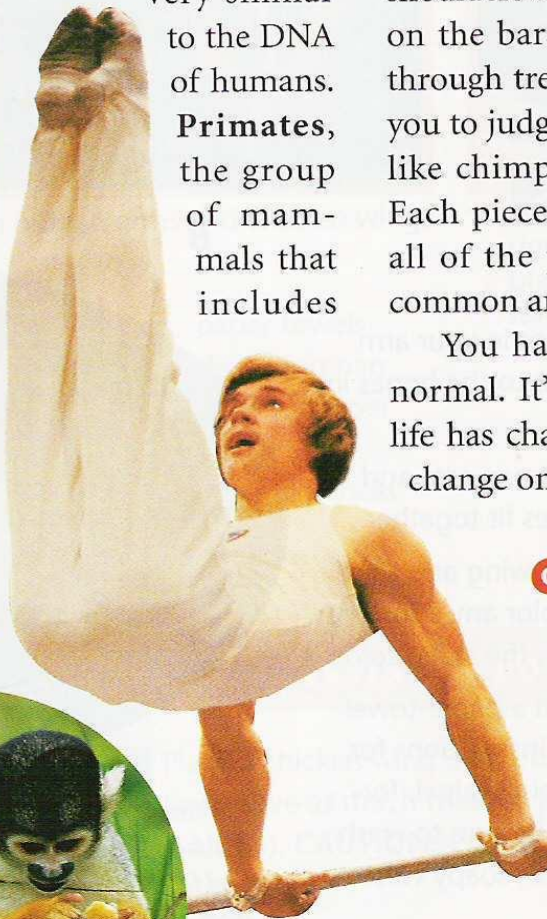
**A** A monkey is able to hold fruit because it has opposable thumbs.



You know that the DNA of chimpanzees and gorillas has been found to be very similar to the DNA of humans. **Primates**, the group of mammals that includes

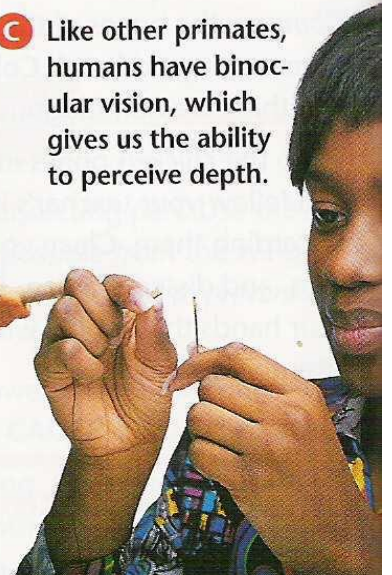
monkeys, apes, and humans, share many characteristics. Opposable thumbs allow you and other primates to grasp and hold objects. Flexible shoulders allow the gymnast to swing on the bars as other primates swing through trees. Binocular vision allows you to judge depth with your eyes just like chimps, monkeys, and lemurs. Each piece of evidence suggests that all of the primates evolved from a common ancestor.

You have learned that change is normal. It's not surprising then that life has changed and is continuing to change on Earth.



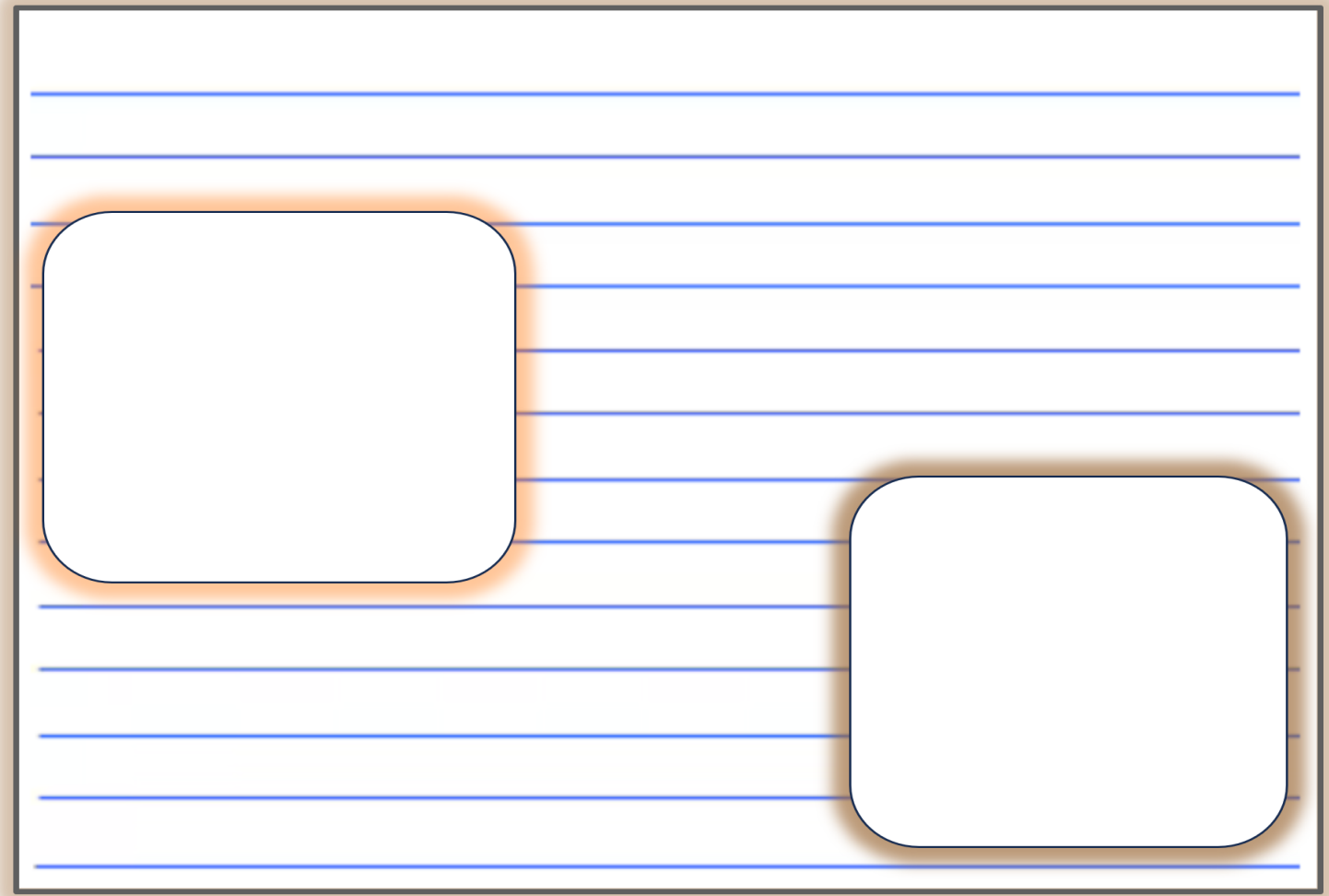
**C** Like other primates, humans have binocular vision, which gives us the ability to perceive depth.

**B** Flexible shoulders enable this gymnast to swing on the bars.



Did this page help you understand human evolution? What did it include, and what did it leave out? Should I teach human evolution from this book?

Please rewrite the textbook in the space below. Provide helpful visuals in the open spaces.



◇ Can you identify any of the hominin skulls below with a name and piece of information about them?

◇ How do they compare? That is, how does brain size, structures on the skull, jaw size, foot, dentition, bones, height / size, change over time?



Part 4 Lesson 4 ((three days with ape genius)

Becoming Human

<http://www.becominghuman.org/>

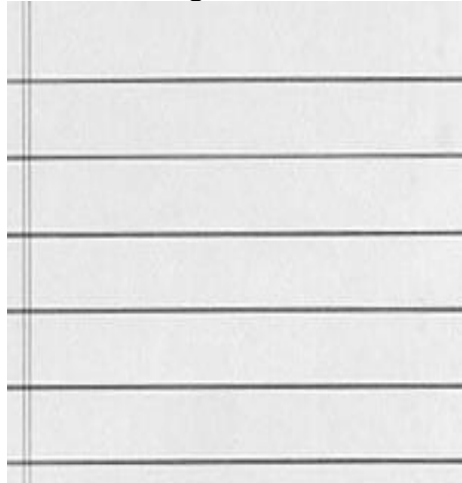
Please describe some of the contents as described in the prologue. Who is making this video? Does it use evidence? What is the message?

Prologue – Who?, What? Where? When?

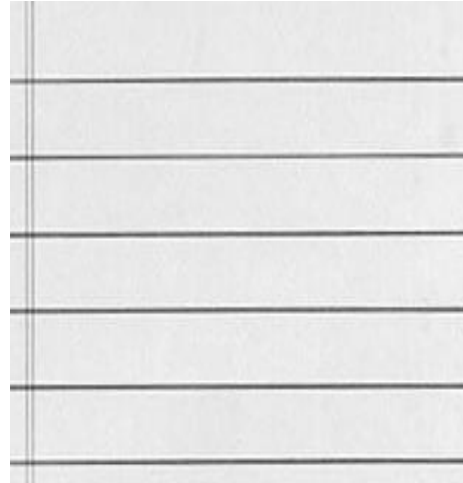

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Please describe three pieces of evidence from "becoming human"

Video Prologue


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Exhibits at the bottom.

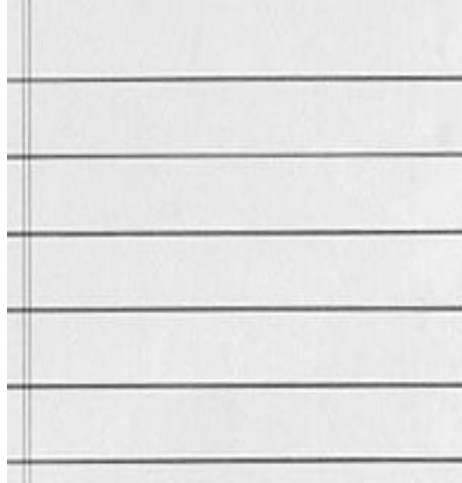

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Exhibits at the bottom.

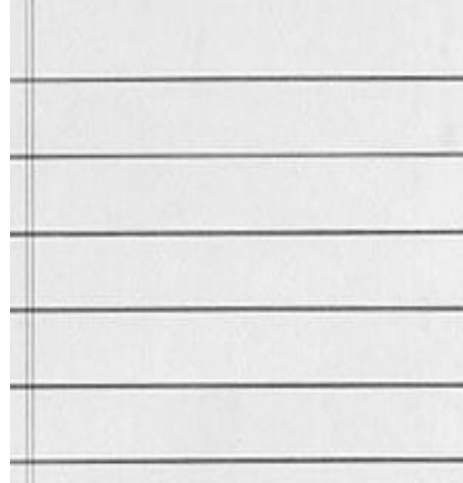

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Please describe how anatomy (bones, skulls, etc.) are important to human evolution. Provide three examples in the boxes below from the anatomy chapter.

Video Prologue Anatomy


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Anatomy Exhibits


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Anatomy Exhibits


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Please describe the lineage of humans. Use information from the documentary, the human family tree, genetics and evolution, the missing link, modern humans, and the Neanderthal etc. from the lineage chapter.

<p>Video Prologue Lineage</p> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>	<p>Exhibits from Lineage</p> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>	<p>Exhibits from Lineage</p> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
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Please describe the Culture of humans from the culture chapter.

<p>Video Prologue Culture</p> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>	<p>Exhibits from Culture</p> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>	<p>Exhibits from Culture</p> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
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Please visit 2 hominin profiles from earlier to later and fill in the correct information.

<p>Name: Age: Diet:</p>     <p>Range:</p> <p>Environment:</p>  <p>Variation:</p> <p>Drawing of Skull:</p>	<p>Name: Age: Diet:</p>     <p>Range:</p> <p>Environment:</p>  <p>Variation:</p> <p>Drawing of Skull:</p>
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What difference can be seen in the skulls as you move from earlier to later? \_\_\_\_\_

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**APE GENIUS**

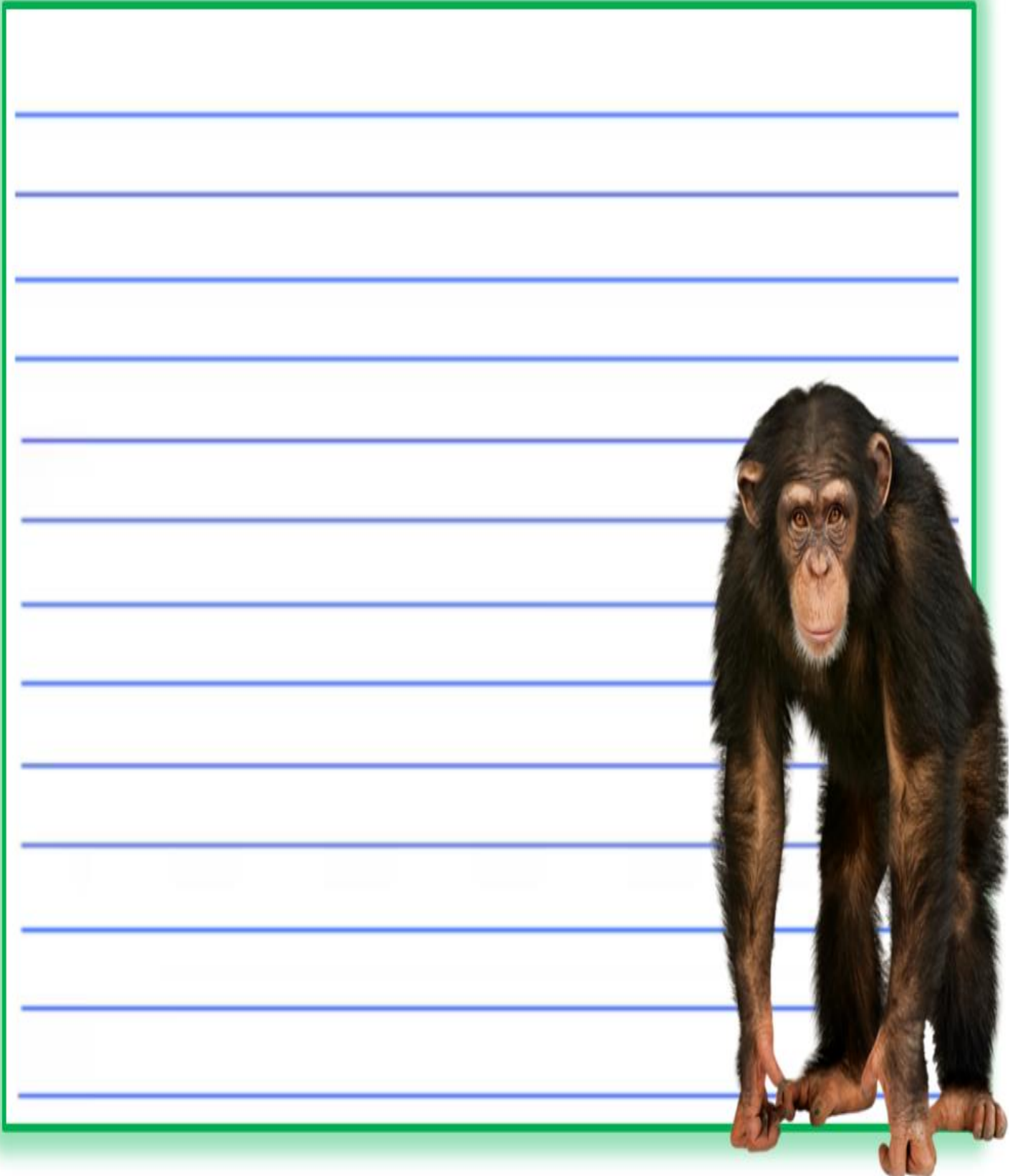
Our DNA is very closely related to that of a chimpanzee. We are in fact genetically closer to apes than horses are to zebras. We both belong to a similar order and phylum in science, and we both make tools. Please view the movie "Ape Genius" and record some notes in the box below. Then write a very detailed summary to this question.

<https://www.pbs.org/wgbh/nova/apegenius/program.html>

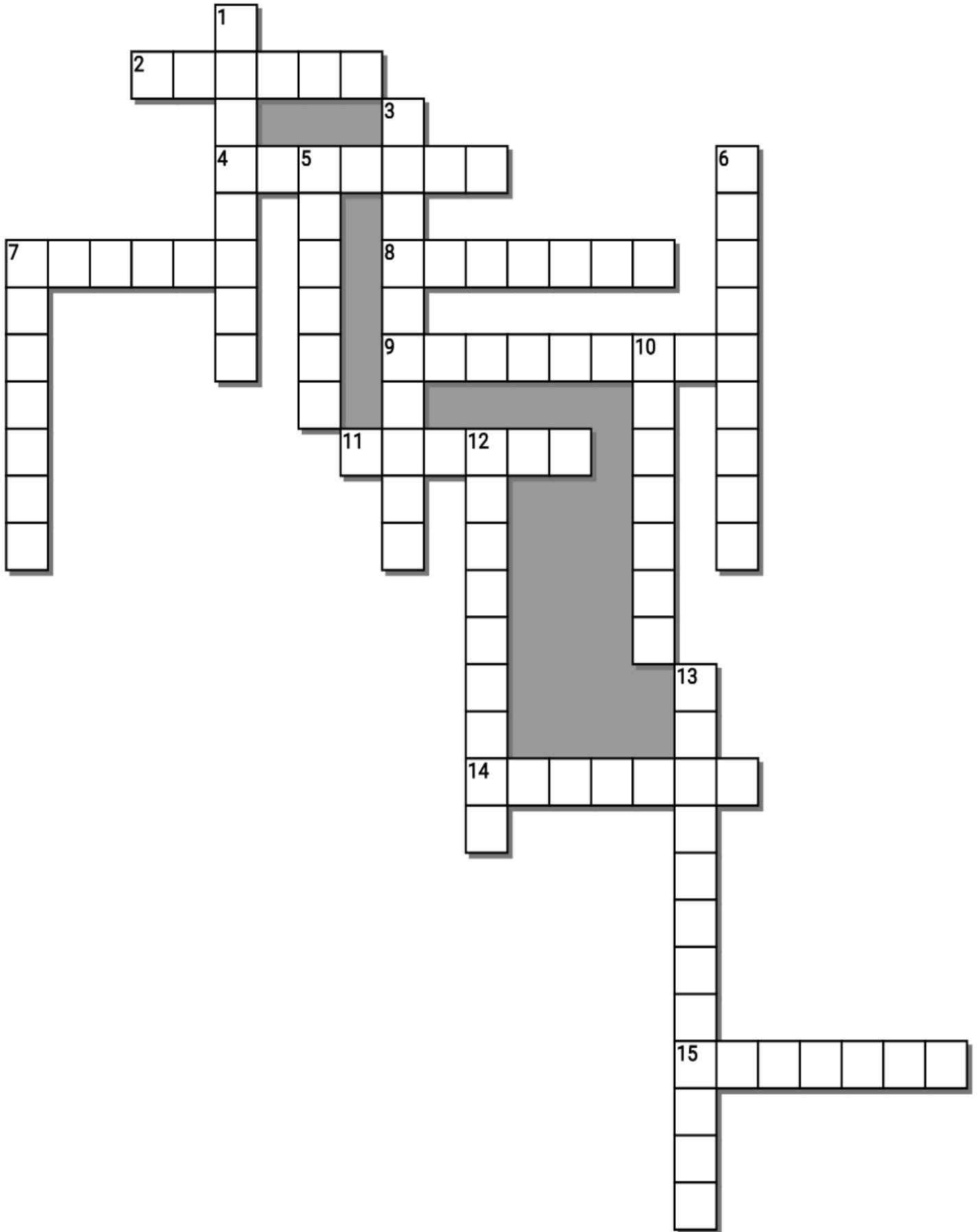
What makes our species so different from all other's? That is, What makes us human?

Movie Notes here

- What does it mean to be human? What are the little differences that make the big difference between humans and apes.







**Across**

2. Homo Erectus left this continent
4. Hominids first appeared roughly 7 \_\_\_\_\_ years ago (A blink in geologic time).
7. Homo floresiensis ("Flores Man"; nicknamed " \_\_\_\_\_"[2]) is a species of small archaic human that inhabited the island of Flores, Indonesia, until the arrival of modern humans about 50,000 years ago.
8. Homo \_\_\_\_\_ - Left Africa (1.8 million and 300,000 years ago).
9. Australopithecus \_\_\_\_\_ (3.0 to 3.9 million years ago.)
11. \_\_\_\_\_ teeth: Molars leftover from when early hominids ate mostly tough plants.
14. First hominid found in 1924 at \_\_\_\_\_ Gorge.
15. Any of a family (Hominidae) of erect bipedal primate mammals comprising recent humans.

**Down**

1. The Hominidae, whose members are known as great apes or hominids, are a taxonomic family of \_\_\_\_\_ that includes eight extant species in four genera:
3. Walking on two feet (regularly).
5. First hominid found in 1924 Mary and Louis \_\_\_\_\_ at Olduvai Gorge.
6. \_\_\_\_\_ Thumb: Appendage that can be placed opposite the fingers of the same hand. Opposable thumbs allow the digits to grasp and handle objects and are characteristic of primates.
7. Homo \_\_\_\_\_ (Handyman / tool maker) (2.4 to 1.5 million years ago.)
10. All people today are classified as Homo s\_\_\_\_\_
12. Hominid \_\_\_\_\_ is very close to us 2:1:2:3
13. An extinct species or subspecies of archaic humans who lived in Eurasia until about 40,000 years ago. They most likely went extinct due to assimilation into the modern human genome, great climatic change, disease, or a combination of these factors.

-----teacher can remove this word bank to make crossword more challenging-----

**Possible Answers**

ERECTUS , HABILIS, AFRICA, BIPEDALISM, HOMINID, LEAKEY, NEANDERTHALS, OLDUVAI , OPPOSABLE, WISDOM, AFARENSIS, DENTITION , HOBBIT, MILLION, PRIMATES, SAPIENS

# Part 4 Review Game Lesson 5

Name: \_\_\_\_\_

1-10 = 10 pts                      \* = Bonus + 1 pt,  
 (Secretly write owl in correct space +1 pt)  
 Final Question = 5 pt wager

Due: Today  
 Score \_\_\_\_ / 100

FROM THE TREES	THE TWO STEP	SKULL ISLAND	BIGGER BRAINS	APE FLIX Bonus round 1 pt each
1)	6)	11)	16)	*21)
2)	7)	12)	17)	*22)
3)	8)	13)	18)	*23)
4)	9)	14)	19)	*24)
5)	10)	15)	20)	*25)

Final Question Wager \_\_\_\_ /5 Answer: \_\_\_\_\_

# Part 4 Human Evolution

## Part 4 Lesson 1 Intro to Human Evolution

Name:

Due:

Please describe why this family portrait is inaccurate according to earth system history



Dinosaurs and people did not coexist. They are separated by 65 million years of evolution.

**Homonid:** The group consisting of all modern and extinct Great Apes (that is, modern humans, chimpanzees, gorillas and orang-utans plus all their immediate ancestors).

**Hominin:** The group consisting of modern humans, extinct human species and all our immediate ancestors (including members of the genera *Homo*, *Australopithecus*, *Paranthropus* and *Ardipithecus*).

Opposable **Thumb**– Gripping (most primates have).

**Bipedalism:** Walking on **two** feet (regularly).

**Hominins** first appeared roughly **4.4** million years ago (A blink in geologic time).

First hominid found in **Africa** Mary and Louis **Leakey** at Olduvai Gorge.

What is a hominid? How do Paleoanthropologists know what they know?







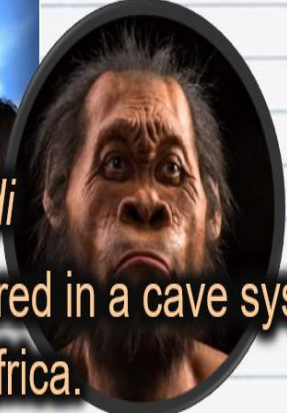



Hominin' is a term given to humans and all of our extinct bipedal ancestors – those ancestors who walked upright on two feet.

'Hominid' is the term given to all modern and extinct great apes, including humans, chimpanzees, gorillas, orangutans and all their immediate ancestors.


Some characteristics that have distinguished hominins from other primates, living and extinct, are their erect posture, bipedal locomotion, larger brains, and behavioral characteristics such as specialized tool use and, in some cases, communication through language.

Part 4 Lesson 2

Please record a few names and information about some of the hominins below as described in the slideshow.

- 
  - **Sahelanthropus tchadensis** Oldest member of our family tree (6-7 million years ago.)
- **Australopithecus anamensis** – (4.2 to 3.9 million years ago)
- 
  - **Australopithecus boisei (Paranthropus)** – (2.6 to .6 million years ago)
- 
  - **"LUCY" Australopithecus afarensis** – (3.0 to 3.9 million years ago.)
- 
  - **Homo habilis (Handyman)** – (2.4 to 1.5 million years ago.)
- 
  - **Homo naledi**
    - Discovered in a cave system in South Africa.
    - Might be 3 million years ago.
- 
  - **Homo neanderthalensis** – (200,000 - 28,000 years ago)
- 
  - **Homo erectus** – (1.8 million and 300,000 years ago).
- 
  - **Australopithecus robustus** – (1.8 to 1.5 million years ago)

Homo floresiensis was a species of small archaic human that inhabited the island of Flores, Indonesia, until the arrival of modern humans about 50,000 years ago.



Hominin \_\_\_\_\_ is close to us 2:1:2:3

Wisdom teeth: Molars leftover from when early hominids ate mostly **plants**.

Part 4 Lesson 3

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### SKILLBUILDER

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Bacteria 2	A, G, T, C, L, D, K, H
Bacteria 3	A, G, T, C, L, D, P, U, S, R, I, V
Bacteria 4	A, G, T, C, L, D, H

You know that the DNA of chimpanzees and gorillas has been found to be very similar to the DNA of humans. **Primates**, the group of mammals that includes

monkeys, apes, and humans, share many characteristics. Opposable thumbs allow you and other primates to grasp and hold objects. Flexible shoulders allow the gymnast to swing on the bars as other primates swing through trees. Binocular vision allows you to judge depth with your eyes just like chimps, monkeys, and lemurs. Each piece of evidence suggests that all of the primates evolved from a common ancestor.

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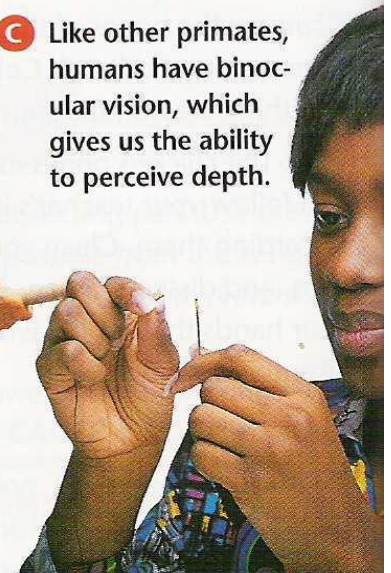
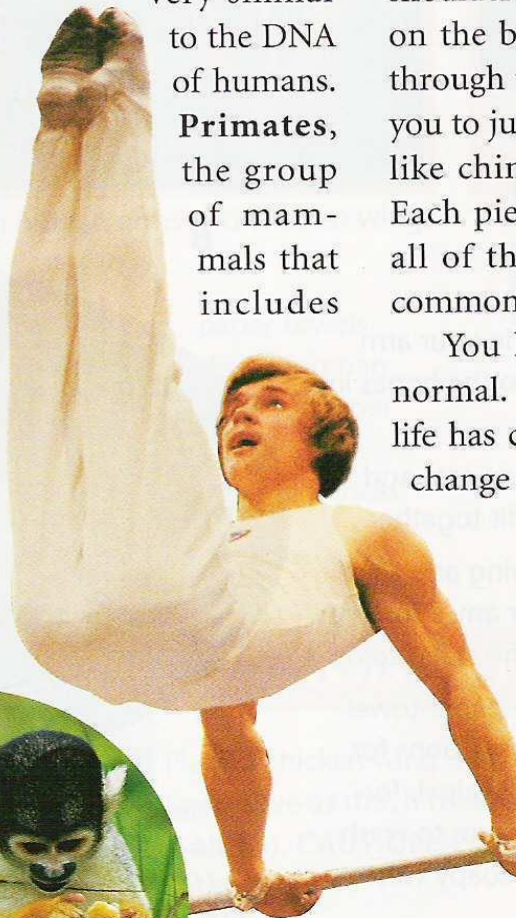
**C** Like other primates, humans have binocular vision, which gives us the ability to perceive depth.

Figure 17-14

**A** A monkey is able to hold fruit because it has opposable thumbs.



**B** Flexible shoulders enable this gymnast to swing on the bars.



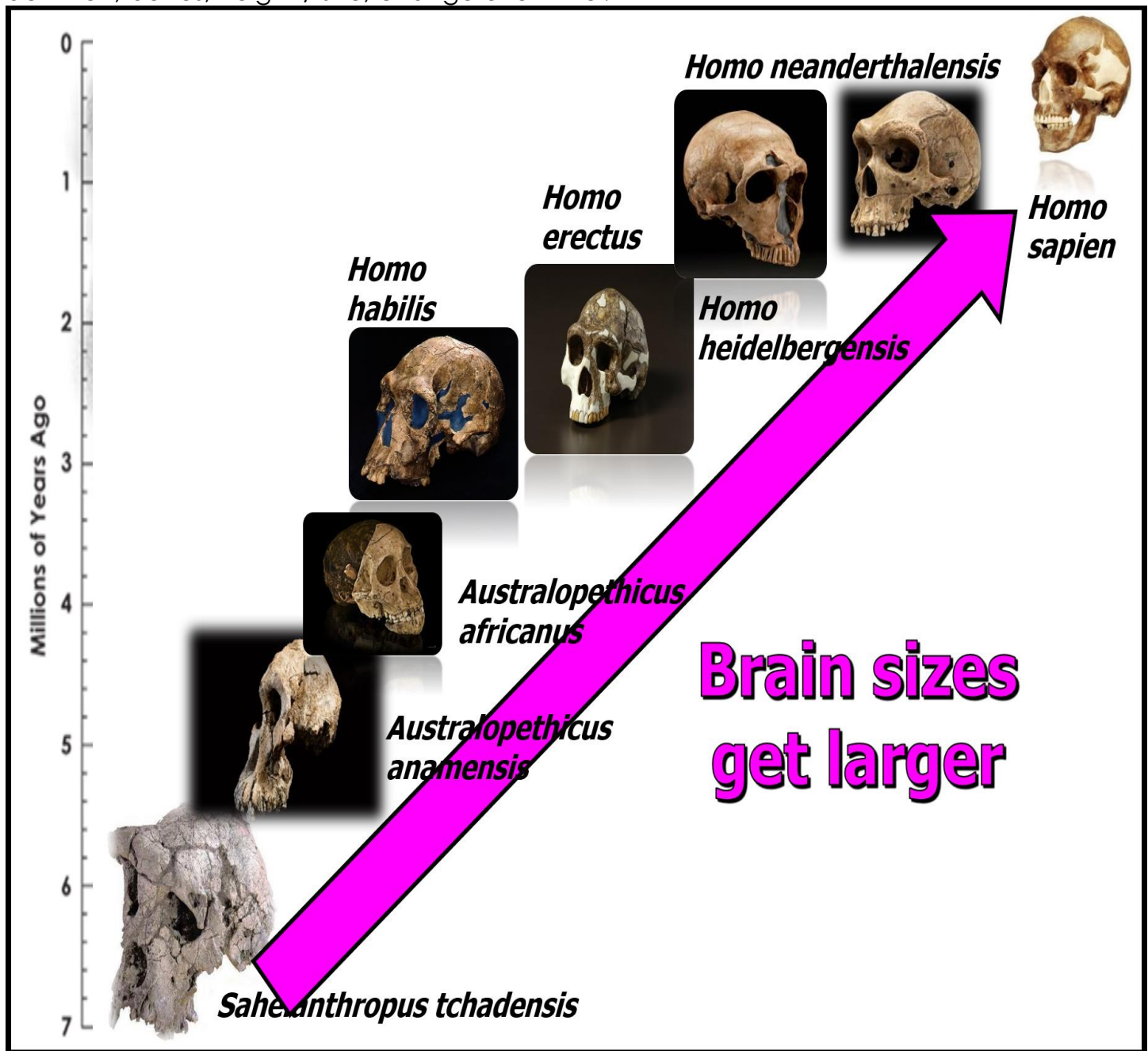
Did this page help you understand human evolution? What did it include, and what did it leave out? Should I teach human evolution from this book?

This was a terrible textbook page about human evolution. It left out so much. Or... It was a perfect textbook page as it covered a tiny bit but gave the illusion that it was covered. It would just be nice if the textbook world didn't have to tip toe around important conversations in evolution.

Please rewrite the textbook in the space below. Provide helpful visuals in the open spaces.

◇ Can you identify any of the hominin skulls below with a name and piece of information about them?

◇ How do they compare? That is, how does brain size, structures on the skull, jaw size, foot, dentition, bones, height / size, change over time?



Part 4 Lesson 4 ((three days with ape genius)

Becoming Human

<http://www.becominghuman.org/>

Please describe some of the contents as described in the prologue. Who is making this video? Does it use evidence? What is the message?

Prologue – Who?, What? Where? When?

Answers will vary for the becoming human .ORG Next few Pages

Please describe three pieces of evidence from "becoming human"

<p>Video Prologue</p> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>	<p>Exhibits</p> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>	<p>Exhibits</p> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
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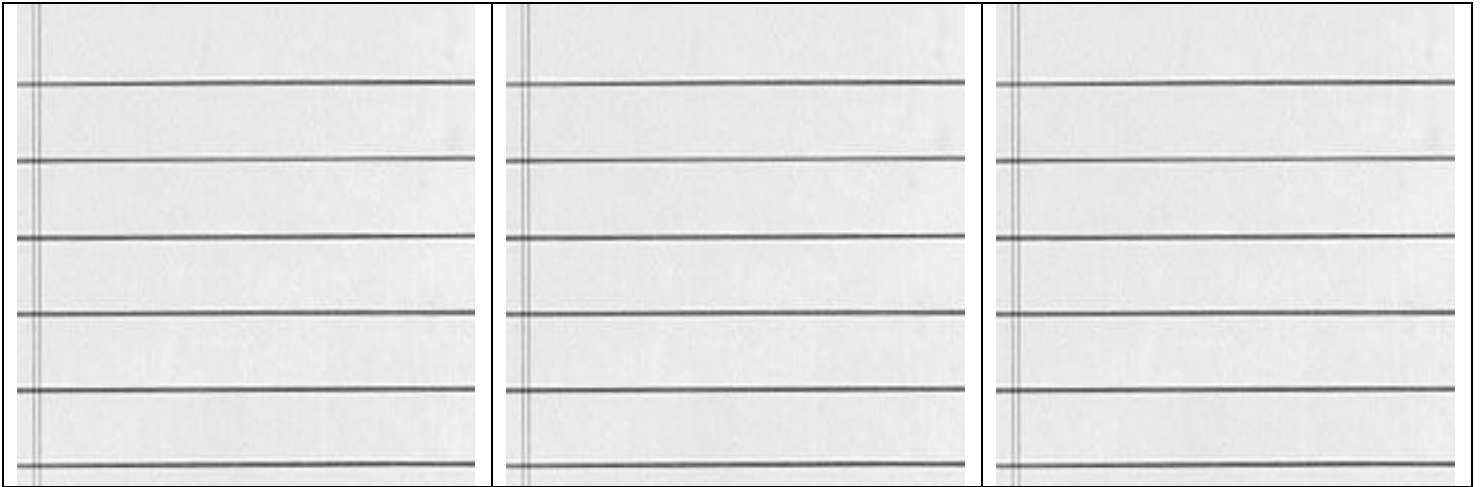
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Please describe the Culture of humans from the culture chapter.

<p>Video Prologue</p>	<p>Exhibits</p>	<p>Exhibits</p>
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Please visit 4 hominin profiles from earlier to later and fill in the correct information.

<p>Name: Age: Diet:</p>  <p>Range:</p> <p>Environment:</p> <p>Variation:</p> <p>Drawing of Skull:</p>	<p>Name: Age: Diet:</p>  <p>Range:</p> <p>Environment:</p> <p>Variation:</p> <p>Drawing of Skull:</p>
<p>Name: Age: Diet:</p>  <p>Range:</p> <p>Environment:</p> <p>Variation:</p> <p>Drawing of Skull:</p>	<p>Name: Age: Diet:</p>  <p>Range:</p> <p>Environment:</p> <p>Variation:</p> <p>Drawing of Skull:</p>

What difference can be seen in the skulls as you move from earlier to later? The brain size gets larger, teeth get smaller / not eating just plants, the jaw doesn't protrude out as much.

## APE GENIUS

Our DNA is very closely related to that of a chimpanzee. We are in fact genetically closer to apes than horses are to zebras. We both belong to a similar order and phylum in science, and we both make tools. Please view the movie "Ape Genius" and record some notes in the box below. Then write a very detailed summary to this question.

<https://www.pbs.org/wgbh/nova/apegenius/program.html>

What makes our species so different from all other's? That is, What makes us human?

Movie Notes here

Apes can copy but don't teach, they are impulsive and don't have great control over their emotions. Humans are better teachers, and children look at adults as teachers.

While apes can master words and numbers, other research shows that something else is limiting their cooperation: apes have emotional issues—rivalry, violence—and most of all, they're impulsive.

**BRIAN HARE:** Maybe one of the first things that happened during our species evolution is we became much less emotionally reactive. And maybe that's one of the big differences that may explain why we solve problems so differently. We sort of got control of our emotions

Symbols can make you free. They can help distance an ape from its impulses. But outside of the lab, apes don't seem to use symbols. Still, ape minds seem to share many of the amazing features of the human mind. They have sophisticated social emotions. They can cooperate. They have culture.

**VICTORIA HORNER:** We found something quite surprising. The children were pre-disposed to copy, even when it meant that they were doing something that was really rather silly. So this seems a little like the chimps are outsmarting the kids in this particular study.

**NARRATOR:** That children expect to be taught is a vital difference. While apes can copy, most researchers believe they don't teach each other. Learning from someone else is the fastest way to get a new idea: faster than learning by imitation, faster than inventing a new technology in the first place.

**BRIAN HARE:** It's possible that, like dogs, there may have been selection against aggression in humans, and selection for tolerant behavior, pro-social behavior, that actually then allowed us to use these cooperative communicative cues in a very different way than other species, even our closest relatives.

**MICHAEL TOMASELLO:** What you'll see with the human mother and baby is that the mother is constantly trying to show the baby what to do, and the baby is trying to tune into what the mother wants. And so you have a full triangle of mother and baby and the thing in the environment that they are trying to work on.

**REBECCA SAXE:** It's a special cognitive achievement. For some reason kids do this naturally, almost immediately. And curiously, apes can't get into that.

**MICHAEL TOMASELLO:** At the moment we have no evidence that apes have shared goals based on shared commitments. They do things together, they coordinate their actions together, but they don't have a shared commitment to a shared goal.

**NARRATOR:** The triangle is the core skill that makes teaching possible. Humans have it; apes seem to lack it. But apes are also missing one more thing. It's a key emotional driver: the passion to cheer each other on.

**MICHAEL TOMASELLO:** Human culture traditions have a cumulative quality that each generation builds on the things of the previous generation. So if you looked at the history of any interesting technology, it started out simple, and the children of that generation learned the simple version. But then some genius made an improvement to it, and everyone follows right away, and we get this ratcheting up in complexity.



**Across**

2. Homo Erectus left this continent
4. Hominids first appeared roughly 7 \_\_\_\_\_ years ago (A blink in geologic time).
7. Homo floresiensis ("Flores Man"; nicknamed " \_\_\_\_\_"[2]) is a species of small archaic human that inhabited the island of Flores, Indonesia, until the arrival of modern humans about 50,000 years ago.
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9. Australopithecus \_\_\_\_\_ (3.0 to 3.9 million years ago.)
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14. First hominid found in 1924 at \_\_\_\_\_ Gorge.
15. Any of a family (Hominidae) of erect bipedal primate mammals comprising recent humans.

**Down**

1. The Hominidae, whose members are known as great apes or hominids, are a taxonomic family of \_\_\_\_\_ that includes eight extant species in four genera:
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12. Hominid \_\_\_\_\_ is very close to us 2:1:2:3
13. An extinct species or subspecies of archaic humans who lived in Eurasia until about 40,000 years ago. They most likely went extinct due to assimilation into the modern human genome, great climatic change, disease, or a combination of these factors.

-----teacher can remove this word bank to make crossword more challenging-----

**Possible Answers**

ERECTUS , HABILIS, AFRICA, BIPEDALISM, HOMINID, LEAKEY, NEANDERTHALS, OLDUVAI , OPPOSABLE, WISDOM, AFARENSIS, DENTITION , HOBBIT, MILLION, PRIMATES, SAPIENS

# Part 4 Review Game Lesson 5

Name: \_\_\_\_\_

1-10 = 10 pts                      \* = Bonus + 1 pt,  
 (Secretly write owl in correct space +1 pt)  
 Final Question = 5 pt wager

Due: Today  
 Score \_\_\_\_ / 100

FROM THE TREES	THE TWO STEP	SKULL ISLAND	BIGGER BRAINS	APE FLIX Bonus round 1 pt each
1) Humans and the large dinosaurs never coexisted. The large dinosaurs went extinct about 65 million years ago. The earliest hominids date back about 4.4 million years	6) Laetoli Footprints Tanzania	11) Homo Habilis	16) Homo neander- -thalensis	*21) King Kong
2) Primates	7) Africa Letter C 4.4 mya	12) A.) Australo- -pithecus	17) Homo heidelbergensis or Homo sapiens (archaic)	*22) Curious George
3) Hominin	8) TRUE	13) E.) Homo naledi	18) Homo floresiensis aka "Flores Hobbit"	*23) RAMPAGE
4) Opposable Thumb	9) Leakey	14) Homo erectus	19) Wisdom Teeth	*24) Night at the Museum
5) Power Grip Precision Grip	10) B.) Australo- -pithecus afarensis	15) Which is not True? C.) Still unable to use tools	20) Mitochondrial DNA	*25) TOY STORY 3

Final Question Wager \_\_\_\_ /5 Answer: Bipedalism

