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3	Myths about nature are discussed.	1:1, 1:2, 1:3
3–14	No distinction between operation and historical science.	1:1, 1:2, 3:1
5–6	Hypotheses must be testable. Science can't answer all questions.	1:1, 1:3
6	Scientific knowledge is always advancing our understanding.	1:1, 1:2, 3:1
10	A key assumption of science is that observations should be repeatable.	1:1, 1:2, 1:3
13–14	Pasteur showed that all living things come from other living things.	5:1, 5:6
14	Theories allow scientists to make predictions.	1:1, 1:2, 1:3
15	Marsupials evolved in Australia as plate tectonics split the continents millions of years ago.	9:11
16	Living things changing over time is used as a characteristic of life.	1:3, 3:1, 3:13
17	There are limits to the differences in offspring—flies produce flies, etc.	3:1, 3:10, 3:13, 3:15, 3:16, 3:19, 3:21, 3:22, 3:23, 3:28
20	The order of fossil deposits allows scientists to "know" that fish have evolved.	4:12, 4:15
20	Evolution is change in a group over time. Figure 1-20	1:3, 3:2, 3:4, 3:13, 3:23
36	Geologists use isotopes to determine the age of rocks and fossils.	4:12, 4:15
74	Dinosaurs lived millions of years ago.	9:6

MYA: million years ago

Contents within parentheses are comments from the author, not concepts described in the textbooks.

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140	Figure 6-2, three Stone age people are discussed.	1:2, 10:1
140	Prehistoric people caused extinctions in North America 12,000 years ago.	1:2, 10:1
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144	Fossil fuels formed over hundreds of millions of years.	7:3
170	New cells are produced from existing cells.	5:1, 5:6
171	Endosymbiont theory in a timeline of cell history.	6:6
173	Prokaryotes evolved before eukaryotes.	6:1, 6:2
180	Endosymbiont theory discussed. Chloroplasts and mitochondria evolved from prokaryotic symbiosis.	6:6
211	There was very little oxygen in the atmosphere 3.3 billion years ago until photosynthesis evolved.	5:3, 5:5
253	Stem cells are discussed and students are encouraged to discuss the moral issues involved.	
263–266	Text omits that Mendel was a creationist who rejected Darwin's ideas and showed static nature of inheritance	3:10, 3:13, 3:15, 3:21
291, 293	DNA contains information.	3:2, 5:2, 5:5
297	Histones have changed very little during evolution to protect DNA.	3:6, 3:15, 3:21
302	Introns and exons may have been important in evolution.	3:10, 3:13, 3:16
307–308	Most mutations are harmful or neutral. (Contradicted on T394.)	3:10, 3:13, 3:16
308	Beneficial mutations can help in new environments.	3:10, 3:13, 3:15, 3:22, 3:28
308	Mutations are the source of variability in a species.	3:1, 3:10, 3:13, 3:15, 3:16, 3:19, 3:21, 3:22, 3:23, 3:28

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378–379	Darwin published *On the Origin of Species* after waiting many years.	3:1, 3:3, 3:4, 3:13, 3:24
380	The struggle for existence can be compared to artificial selection and is central to Darwin's theory of evolution.	1:3, 3:1, 3:10, 3:11, 3:12, 3:13, 3:22, 3:23, 3:27
381	Natural selection cannot be seen directly, only in populations over many generations.	1:3, 3:1, 3:13
382	Fossils are a record of life on earth over millions of years, not thousands.	3:24, 3:29, 4:13, 4:14
382	All life on earth shares a common ancestor. Figure 15-13	3:6, 3:7, 3:8, 3:13, 3:19
383	Hundreds of transitional fossils have been found to support evolution.	3:24, 3:29, 3:35, 4:13
383	Convergent evolution happens in similar environments in different geographic areas.	3:6, 3:7, 3:33
383	Gaps in the fossil record do not weaken evolutionary theory; they just don't allow a full understanding of how some species evolved.	3:24, 3:29, 3:35, 4:13
384	Vestigial structures in humans include appendix, tailbone, and ear muscles. Vestigial structures do not serve important functions. Fig 15-16	3:7, 3:8
384	Homologous structures can be used to classify organisms.	3:6, 3:7, 3:29
384–385	Homologous structures develop from the same clumps of cells demonstrating common ancestry. Figure 15-15	3:6, 3:7, 3:33
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386	Evolution is the "grand unifying theory of the life sciences" and is vital to medical science.	3:1, 3:7

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386	Natural selection causes evolution.	1:3, 3:1, 3:10, 3:11, 3:12, 3:13, 3:22, 3:23, 3:27
386	Biology, geology, and physics confirm Darwin's ideas of evolution.	3:7
386	There is uncertainty about how life began.	3:2, 5:1, 5:2, 5:3, 5:5, 5:6
387	Lucy dated 3.2 million years old and Australopithecines evolved 4 MYA to walk upright before large brains evolved. Laetoli footprints confirm this.	10:1, 10:3
389–390	Questions 7, 9, 10, 11, 13, 14, 16, 20, 21, 22, 23, 24, 25, 26, 27, 28, 31, 33, 34, and 35 expect evolutionary ideas as answers.	
391	Questions 4, 5, 7, and 8 expect evolutionary ideas as answers.	
392	Mutations are the source of variability in a species.	3:1, 3:10, 3:13, 3:15, 3:16, 3:19, 3:21, 3:22, 3:23, 3:28
393	Text omits that Mendel was a creationist who rejected Darwin's ideas and showed static nature of inheritance	3:10, 3:13, 3:15, 3:21
393	Evolution is described in genetic terms. DNA models and identifying genes have increased the understanding of evolution.	3:10, 3:11, 3:12, 3:13, 3:15, 3:16, 3:19, 3:22, 3:23, 3:27, 3:28, 3:35
394	Gene pools are important in evolutionary theory as populations change over time.	1:3, 3:13, 3:23, 3:28, 3:35
394–395	Mutations are the source of variability in a species.	3:1, 3:10, 3:13, 3:15, 3:16, 3:19, 3:21, 3:22, 3:23, 3:28
394, 397	Evolution is the change in gene frequency in a population.	1:3, 3:13, 3:23, 3:28, 3:35
397	Natural selection only affects individuals not genes, and only populations can evolve.	1:3, 3:1, 3:10, 3:11, 3:12, 3:13, 3:22, 3:23, 3:27

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400	Genetic drift causes evolution.	3:5, 3:10, 3:11, 3:12, 3:13, 3:15, 3:22
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403	Antibiotic resistance is an example of evolution in action.	3:13, 3:22, 3:28
404–405	New species evolve as populations are separated from one another. Figure 16-2 Kaibab squirrels evolved apart from Albert squirrels.	3:5, 3:10, 3:11, 3:12, 3:13, 3:15, 3:22
406–409	Variation in finch beaks over time is evidence of evolution. Figure 16-13, 14	3:1, 3:10, 3:13, 3:15, 3:16, 3:19, 3:21, 3:22, 3:23, 3:28
406–409	Galapagos species evolved from ancestral South American species.	3:5, 3:10, 3:11, 3:12, 3:13, 3:15, 3:22
410	All life on earth shares a common ancestor. Figure 15-13	3:6, 3:7, 3:8, 3:13, 3:19
410	Fossils show that life evolved over 3 billion years and as more fossils are found evolution will be supported.	3:24, 3:29, 3:35, 4:7, 4:13
410	Antibiotic resistance is an example of evolution in action.	3:13, 3:22, 3:28
410	Evolution unites all of biology and makes useful predictions.	3:1, 3:7
410	Evolution is a well-tested explanation of a broad set of scientific evidences.	1:2, 1:3, 3:4
413–414	Questions 10, 16, 22, 23, 24, 30, and 33 expect evolutionary ideas as answers.	

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416	Rock layers form slowly at the bottom of lakes.	3:24, 4:1, 4:2, 4:3, 4:6, 4:8
416	Scorpion was trapped in amber 25 million years ago.	4:5, 4:9
417	The fossil record shows that life on earth has changed over time and it has a specific order.	3:24, 3:35, 4:4, 4:5
417	99% of species have gone extinct.	4:5
418	The fossil record is incomplete because fossilization is rare. Fossils form as they are gradually covered by sediment in lakes and rivers.	4:6
419	Lower layers are older than higher layers and index fossils can help in determining the relative age of a layer.	3:24, 3:29, 4:13, 4:14
420	Radiometric dating can be used to identify the absolute age of rocks and fossils.	4:12, 4:15
421	The geologic column was constructed by comparing layers while dates were assigned using radiometric dating. Figure 17-5	3:24, 3:29, 3:35, 4:13
422	A clock analogy is used to relate the geologic eras.	4:12, 4:13, 4:14
423	The earth is 4.6 billion years old and evidence shows it was formed from cosmic debris over 100 million years.	4:7, 4:12, 4:13, 4:14
423	Key Concepts: early atmosphere, Miller experiment, oxygen and life, and endosymbiotic theory.	3:2, 5:1, 5:2, 5:3, 5:5, 5:6
423	Hypotheses on the origin of life are based on a small amount of evidence and there are many gaps and uncertainties.	3:2, 5:1, 5:2, 5:3, 5:5, 5:6
423	The early earth had a toxic atmosphere with little or no oxygen. Figure 17-7	5:3, 5:5
424	The earth cooled enough to allow oceans to form 3.8 billion years ago and life appeared.	5:1, 5:5
424	Atoms do not form complex organic molecules today but they could have formed in the early atmosphere.	3:2, 5:1, 5:2, 5:3, 5:5, 5:6
424	Scientists know the Miller/Urey experiment was performed under the wrong conditions but other experiments have produced organic molecules as well.	5:3, 5:5, 5:6
424	The spectacular results of the Miller/Urey experiment suggest how life could have evolved on the primitive earth.	5:3, 5:5, 5:6

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425	The leap from nonlife to life is the greatest gap in scientific hypotheses of earth history.	3:2, 5:1, 5:2, 5:3, 5:5, 5:6
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426	Oxygen began to accumulate after photosynthesis evolved 2.2 billion years ago. Figure 17-11	5:3, 5:5
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427	Organisms evolved internal membranes 2.2 billion years ago.	6:1
427	Chloroplasts and mitochondria evolved through an endosymbiotic relationship. Several evidences support this conclusion. Figure 17-12	6:6
428	Multicellular life was able to evolve more rapidly as a result of sexual reproduction.	3:6, 6:7
428	Sexual reproduction evolved and accelerated evolution.	3:6, 6:7
429	The fossil record is missing many pieces but scientists have good evolutionary histories of many groups.	3:6, 3:7, 5:6, 8:1
429	Multicellular life evolved to its present day diversity.	5:6, 8:2
429	During the Precambrian life evolved from simple anaerobes to eukaryotes but few fossils were left behind.	5:6, 8:3
429	Life had evolved to great diversity by the beginning of the Cambrian period though it is not clear how. Figure 17-14	4:16
430	Most animal phyla evolved in the "Cambrian Explosion".	3:24, 4:16
430	Some arthropods became the first animals to live on land during the Ordovician Period.	3:13

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434	*Homo sapiens* was in Africa 200,000 years ago and spread around the world from there.	10:1, 10:3
434	Ice ages during the Quaternary Period lasted for hundreds of thousands of years each and had an impact on species.	9:14
435	99% of species have gone extinct.	4:5
435	Mammals evolved to fill the niches left when dinosaurs went extinct.	9:7
435	Asteroid impacts and other causes were responsible for mass extinctions, though there is no precise cause. Figure 17-21	2:5, 4:18, 4:19
435	A burst of evolution followed mass extinction events.	3:1, 3:5, 3:11, 3:12, 3:13, 3:27
435	Macroevolution is the large-scale evolutionary patterns over a long period of time. Extinction, adaptive radiation, convergent evolution, coevolution, punctuated equilibrium, and developmental genes are important.	3:1, 3:12, 3:13, 3:27
436	Adaptive radiation explains how many species evolve from a common ancestor. Figure 17-22	3:1, 3:5, 3:6, 3:11, 3:12, 3:13, 3:28
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436–437	Unrelated animals with similar structures are a result of convergent evolution working on different "raw material" in similar environments. Figure 17-23	3:6, 3:7, 3:33
437–438	Plants and insects have coevolved relationships in response to one another. Figure 17-24	3:14
439	Islands are prime areas to study evolution. Finches and mockingbirds evolved into different niches in the Galapagos.	3:5, 3:10, 3:11, 3:12, 3:13, 3:15, 3:22
439	A burst of evolution followed mass extinction events.	3:1, 3:5, 3:11, 3:12, 3:13, 3:27
439	Evolution of the horse is used to illustrate different rates of evolution in Figure 17-25.	3:29, 3:30, 3:35
439	Horseshoe crabs have changed little since they first appeared in the fossil record.	3:19, 4:9

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458	Domains are based on how long they have been evolving independently.	2:3, 2:4
460–461	Figure 18-13 shows a tree of life with a ? as the original ancestor.	3:6, 3:7, 3:8, 3:13, 3:19
464–466	Questions 6, 7, 12, 15, 16, 17, 18, 19, 20, 21, 27, 32, 33, and 34 expect evolutionary ideas as answers.	
467	Questions 2, 5, and 8 expect evolutionary ideas as answers.	
472	Archaebacteria may be the ancestors of eukaryotes.	5:5, 6:4
483	Viruses evolved after the first cells and have been evolving since.	3:38
487	Bacteria evolve resistance as antibacterial compounds are used.	3:13, 3:22, 3:28
498	Different groups of protists likely evolved independently from archaebacteria.	6:3
498	Protists were the first eukaryotes to evolve 1.5 billion years ago from the symbiosis of many cells. Figure 20-2	3:6, 3:7
498	Common classification of protists does not reflect evolutionary relationships.	3:6, 3:7
500	The Cliffs of Dover were raised up by geologic processes.	3:24, 4:1, 4:2, 4:3, 4:6, 4:8
506	Algae evolved different forms of chlorophyll as adaptations to ocean life.	3:7
511	Plants likely evolved from an algalike ancestor millions of years ago.	7:2, 7:3, 7:4
536	Penicillium likely evolved from an ascomycete.	3:6, 3:7
537	Fungi evolved along with the first land plants 460 MYA. Figure 21-11	3:6
541	Mycorrhizal associations were a critical adaptation in the evolution of land plants.	3:6
542	Plants and fungi are evolving together in partnership.	3:14
545–546	Questions 21, 25, 30, and 32 expect evolutionary ideas as answers.	
551	Oldest fossil plants at 470 MYA.	7:1, 7:3

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624	Evidence suggests that agriculture developed 10–12,000 years ago.	4:12, 4:13, 4:14
624–625	Timeline of agriculture from 8,000 BC.	4:12, 4:13, 4:14
625	Corn was grown by Native Americans 8,000 years ago.	4:12, 4:13, 4:14
630	Question 34 expects an evolutionary idea as an answer.	
643	Plants have evolved adaptations to environments through natural selection.	7:4
644	Desert plants have evolved adaptations to dry conditions.	7:4
651–652	Questions 20 and 26 expect evolutionary ideas as answers.	
658	Animals have evolved over millions of years to perform the functions they do.	3:6
659	Sexual reproduction allows animals to evolve as the environment changes.	3:6
660	All animals evolved from a common ancestor by natural selection as cells became specialized. Figure 26-3	5:6, 8:1
661	Embryo's suggest vertebrates are closely related to echinoderms.	3:7
663	Eyes and nerves evolved in the head of animals as an advantage. Figure 26-6	3:6
664	Sponges evolved 540 MYA.	8:1
664	Sponges may have evolved independently from other animals or may have a common ancestor.	8:1
684	Parasitic worms evolved to lose organs.	8:2
694	Annelids are closely related to clams and snails based on their larval stage.	3:7
701	Mollusks and annelids share a common ancestor 550 MYA.	3:7
702	Figure 27-21 Mollusks evolved into different body plans.	3:7
703	Mollusks have evolved different shells.	3:7
704	Figure 27-24 Mollusks have evolved a variety of responses to danger.	3:7
706	Ancestors of the nautilus dominated the seas 500 MYA.	3:7
711	Question 26 expects an evolutionary idea as an answer.	

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715	Arthropods are the most successful animals in evolutionary terms.	3:13
716	First arthropods in the sea 600 MYA.	3:13
716	Many structures including mouthparts have been gradually modified from the basic body plan over time, much like cars have changed but have the same basic parts.	3:28
723	Horseshoe crabs have changed little in 500 million years.	3:19, 4:9
726	Insects evolved characteristics that have made them successful including flight and metamorphosis.	8:3
728	The evolution of flight allowed insects to colonize vast areas. Figure 28-17	8:3
734	Echinoderms are more closely related to humans than invertebrates based on deuterostome development.	3:7, 3:13
738	Crinoids were present in the ancient seas and dominated the Paleozoic Era. Figure 28-26	3:7, 3:13
741	Question 20 expects an evolutionary idea as an answer.	
745	Multicellular animals are present in rocks dating from 610 to 543 MYA though they are not similar to any groups seen today.	4:16
745	Molecular and DNA studies show how different invertebrate body plans evolved.	3:7
746	The fossils from 544 MYA show a dramatic change and variety of body plans known as the Cambrian Explosion.	3:24, 4:16
747	Important features evolved in the Cambrian Period and the evolutionary relationships can be determined as seen in Figure 29-4.	4:16
748–749	Cephalization and segmentation were among many evolutionary advantages.	3:6
748–749	Major trends in the evolution of invertebrates are described and included in Figure 29-5.	3:6
751	Invertebrates evolved different ways of obtaining and digesting food.	3:6
751	Different animal phyla represent evolutionary experiments that were successful.	3:6

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752	Figure 29-8, digestive organs have become more specialized in invertebrates.	3:6
756	Three trends in the evolution of invertebrate nervous systems include: cephalization, centralization, and specialization.	3:6
760–762	Questions 1, 2, 12, 18, 22, 28, 31, 33, and 35 expect evolutionary ideas as answers.	
763	Question 2 expects an evolutionary idea as an answer.	
767	All chordates have a postanal tail, pharyngeal pouches, and a notochord at some point in development.	3:31
768	Figure 30-2 shows the evolutionary relationship of chordates.	3:31
769	Vertebrates share embryological similarities with nonvertebrate chordates and diverged 550 MYA.	3:31
771	Evolution has resulted in a great diversity of fishes.	3:6, 9:2
772	Fishes were the first vertebrates to evolve from an invertebrate ancestor, not lancets or tunicates.	9:1
772	The first fishes were jawless and bony-plated at 510 MYA.	9:1
772	Fishes evolved to dominate the seas in the Devonian and Silurian Periods and some became the ancestors of lampreys while others became extinct. Figure 30-7	3:6, 9:2
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773	Sharks evolved from ancient fish that eventually became extinct.	3:6, 9:2
773	Lobe-finned fishes later evolved fins.	9:2, 9:3
774	Fishes have evolved to survive in diverse environments.	3:6, 9:2
777	Some fishes have evolved electric generation and detection.	3:6, 9:2
780	Lobe-finned fishes have jointed bones like the arms and legs of land vertebrates.	9:2, 9:3
782	Early amphibians resembled coelacanths.	9:2, 9:3
782	Amphibians are descendants of an ancient group that gave rise to all land vertebrates hundreds of millions of years ago.	9:2, 9:3
782–783	Amphibians evolved many adaptations about 360 MYA and then mostly disappeared about 245 MYA. Figure 30-21	9:2, 9:3

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792–794	Questions 3, 13, 21, 30, 32, and 33 expect evolutionary ideas as answers.	
798	Reptile fossils are present 350 MYA and these animals evolved from amphibians.	9:4
798	Reptiles and mammal-like reptiles roamed the earth 245 MYA.	9:4
798–799	Dinosaurs appeared 215 MYA and dominated the earth until 65 MYA.	9:6
799	New organisms evolved after the Creataceous Period extinction.	9:4
799	Saurischian dinosaurs evolved into modern birds.	2:5, 3:35, 4:17
799, T799	Volcanoes and a meteor impact may have caused a mass extinction 65 MYA.	2:5, 4:18, 4:19
800	Reptiles adapted to life on land by gaining structures.	9:4
802	Mammals evolved 220 MYA and were the size of tree shrews. Figure 32-1	9:7
802–803	Amniotic egg is an important adaptation to life on land. Figure 31-8	9:4
803	Snakes lost their legs through evolution.	9:8
806	Birds are defined as reptilelike animals with feathers.	2:5, 3:35, 4:17
807	Some fossil evidence suggests birds and reptiles evolved from an earlier common ancestor.	2:5, 3:35, 4:17
807	Paleontologists agree that birds evolved from extinct reptiles, probably dinosaurs. Many evidences support this. Figure 31-12	2:5, 2:6, 2:7, 3:35
807	Archaeopteryx is a transitional form that would have been classified as a dinosaur if it had no feathers.	2:5, 3:35, 4:17
808–809	Birds have evolved many adaptations that allow them to fly. Figure 31-14	2:5, 3:35
816–818	Questions 2, 12, 13, 15, 16, 22, 24, and 35 expect evolutionary ideas as answers.	
819	Question 2 expects an evolutionary idea as an answer.	
821	Dinosaurs ruled the earth from 145–65 MYA.	9:6
821	Hair and mammary glands are not preserved in the fossil record.	9:9

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821	Mammals were small and nocturnal during the age of dinosaurs and evolved rapidly into 3 lines when dinosaurs disappeared.	9:7
822	Mammals evolved many adaptations to occupy new habitats.	3:6, 3:7
822–823	Jaws in mammals evolved adaptations to different diets including filter feeding in whales. Figure 32-3, 32-4	9:7
826	Mammals evolved many adaptations for movement. Figure 32-8	3:6, 3:7
828	Key Concept: Convergent evolution produced similar mammals on different continents.	3:6, 3:7, 3:33
832	Continental drift caused convergent evolution in mammals.	4:20
832	Convergent evolution happened as continents split apart and mammals occupied similar niches in different environments.	3:6, 3:7, 3:33
833	Humans are classified as primates with lemurs, monkeys, and apes.	3:6, 3:7, 10:1, 10:3
833	Primates evolved binocular vision, well developed brains, long fingers, and rotating shoulders.	3:6, 3:7, 10:1, 10:3
834	Humans and other primates evolved from a common ancestor more than 65 MYA. Figure 32-15	3:6, 3:7, 10:1, 10:3
835	New world and old world monkeys diverged as the continents drifted apart.	3:6, 3:7, 10:1, 10:3
835	Old world monkeys evolved in Africa and evolved into apes, chimps, and humans.	3:6, 3:7, 10:1, 10:3
835	Humans and chimps share an astonishing 98% of their DNA!	3:6, 10:4, 10:5
835	Molecular studies confirm chimps are closest human relatives.	3:6, 10:4, 10:5
835	Figure 32-16 compares gorilla and human skeletons.	3:6, 3:7, 10:1, 10:3
835	Hominids evolved 6–7 MYA and eventually led to humans. Bipedalism, large brains, and opposable thumbs were important evolutionary adaptations.	3:6, 3:7, 10:1, 10:3
836	Laetoli footprints were made by Australopithecines betwenn 3.6 and 3.8 MYA	10:1, 10:3
836	Hominid origins are confusing and many questions remain.	10:1, 10:3

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836–837	Timeline of human fossil discoveries is presented.	10:1, 10:3
837	Students construct a timeline of hominid evolution.	3:6, 3:7, 10:1, 10:3
837	Paranthropus was an evolutionary dead end.	3:6, 3:7, 10:1, 10:3
838	Students use Figure 32-18 to understand hominid evolution.	10:1, 10:3
838–839	Hominid evolution, from 7 MYA, is not understood and no one can answer how hominids evolved at the present time.	10:1, 10:3
839	*Homo habilis* appeared 2.5 MYA.	10:1, 10:3
839	Figure 32-19 shows evolutionary timeline of hominid groups with no relationships indicated.	10:1, 10:3
839–840	Homo species migrated out of Africa as it evolved. Figure 32-20	10:1, 10:3
840	*Homo erectus* fossils at 1.75 MYA.	10:1, 10:3
840	Scientists debate whether humans evolved out of Africa or in many regions independently.	0:1, 10:3
840	Studying the development of living chordates helps us understand the evolution of chordates from simple animals like Pikaia. Figure 33-1	9:1
841	Cro magnons made cave paintings and appeared 40,000 years ago as Neanderthals were becoming extinct. Figure 32-21	10:1, 10:3, 10:6
841	Neanderthals were in Europe 200,000 years ago and lived alongside *Homo sapiens* who migrated out of Africa 100,000 years ago.	10:1, 10:3, 10:6
844–846	Questions 2, 11, 14, 18, 21, 23, 25, 26, 27, 30, 33, 36, and 37 expect evolutionary ideas as answers.	
847	Questions 3, 8, 9, and 10 expect evolutionary ideas as answers.	
849	Chordate evolution over 500 million years has produced adaptations that were shaped and tested by natural selection.	9:1
850–851	Figure 33-2 shows the evolution of chordates in a cladogram.	9:1
851	Flight evolved independently in chordates through convergent evolution.	2:5, 3:35

Page	Evolutionary Concept	Article Reference
851	Adaptive radiation led to the evolution of many chordate adaptations. Figure 33-3	9:1
856	Endothermy evolved several times and some dinosaurs may have been endotherms, but the first land animals were ectotherms.	9:6
860–861	Evolution created more complex circulatory systems in chordates.	3:6, 9:2
864	Vertebrate evolution shows a trend from external to internal fertilization.	9:7
865	Student activity on constructing a chordate family tree from cytochrome c protein sequence.	3:6, 3:7
866–868	Questions 12, 14, and 29 expect evolutionary ideas as answers.	
869	Questions 8, 9, and 10 expect evolutionary ideas as answers.	
872, 878	Behaviors have evolved in animals through natural selection.	1:3, 3:1, 3:10, 3:11, 3:12, 3:13, 3:22, 3:23, 3:27
878–882	Various social behaviors create an evolutionary advantage in fitness.	1:3, 3:13, 3:23, 3:28, 3:35
889–1059	Adaptations that have evolved are mentioned periodically in the unit on the human body.	3:10, 3:13, 3:15, 3:22, 3:28