

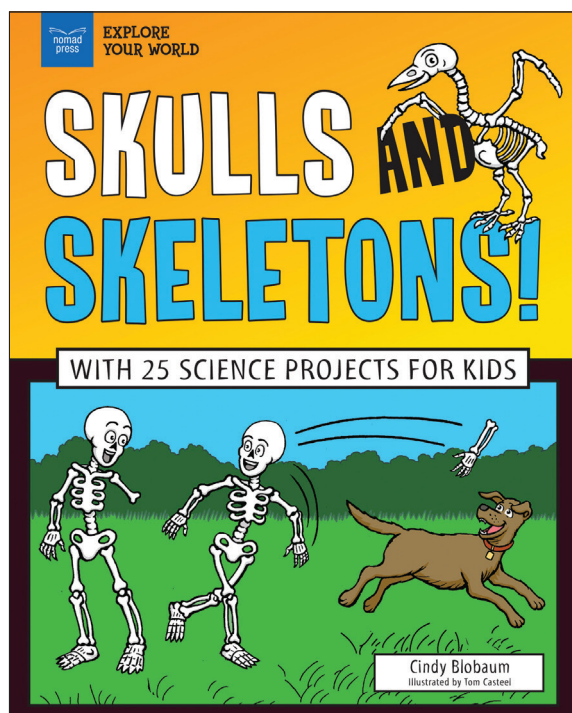


## CLASSROOM GUIDE

### Skulls and Skeletons! With 25 Science Projects for Kids

Nomad Press offers concise classroom guides to help educators explore content-related topics with students and encourage them to develop ideas in meaningful ways. Includes Essential Questions and Common Core Connections.

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**Age:** 7–10

**Grade:** 3–4

**Softcover:** 9781619308091, \$14.95

**Hardcover:** 9781619308060, \$19.95

**eBook:** all formats available, \$12.99

**Specs:** 8 x 10, 96 pages, color interior

**Focus:** Biology

**GRL:** W

What would happen if you had no bones? You might fall over flat on the floor!

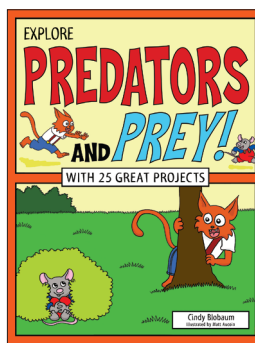
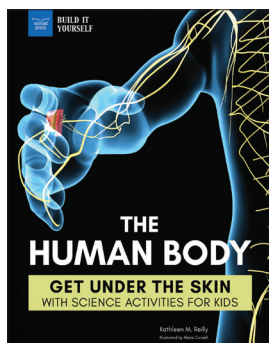
In *Skulls and Skeletons! With 25 Science Projects for Kids*, readers learn about the bones in their bodies and why we can't live without them. And bones aren't just good for humans—many animals can't live without them! But do all animals have bones? No, they don't! And why do fish look so much different from birds, even though both have bones? Organisms use their bodies in different ways to successfully live in different habitats.

*Skulls and Skeletons* includes hands-on STEM activities and critical thinking exercises related to anatomy and biology. Fun facts, links to online primary sources and other supplemental material, and essential questions encourage readers to take a deep dive inside their own bodies!

**Learn more about *Skulls and Skeletons* at [nomadpress.net/nomadpress-books/skulls-and-skeletons](http://nomadpress.net/nomadpress-books/skulls-and-skeletons)**



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**Age:** 7–10

## ESSENTIAL QUESTIONS TO ASK

### BEFORE READING

#### 1 Establish Background Knowledge

- a What would your body be like without bones?
- b How do you think we know what's inside our bodies?
- c How might learning about our skeletons help us stay healthy??

#### 2 Skill Introduction

- a What do you do when you come to a word or phrase you do not know?
- b How do photographs and videos help someone learn about a topic?

**CCC: CCSS.ELA-Literacy.L.6.4d** Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).

## KEY VOCABULARY

adaptation, bone, cranium, exoskeleton, invertebrate, marrow, primate, spine, X-ray

### DURING READING

#### 1 Check for Understanding

- a How does having an upright body change a skeleton?
- b Which are longer and stronger, your arms or your legs? How can you tell?
- c How many ways do you use your hands and feet?
- d What do you wish your body could do that it can't right now?
- e What is the difference between an internal skeleton and an exoskeleton?

**CCC: CCSS.ELA-Literacy.RST.6-8.9** Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.



**The world's smallest vertebrate is a tiny frog.** It is so small that three or four of them could fit on a dime! Take a look!  
[news.nationalgeographic.com/news/2012/01/120111-smallest-frogs-vertebrates-new-species-science-animals/](https://news.nationalgeographic.com/news/2012/01/120111-smallest-frogs-vertebrates-new-species-science-animals/)



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## ESSENTIAL QUESTIONS TO ASK

### AFTER READING

#### 1 Summary and Expansion

- a What are some adaptations you can find on your own body? What about the body of a pet or an organism that you find in your home?
- b What else do bones do besides forming a skeleton? What purposed do they serve?
- c What happens when someone breaks one of their bones?
- d What can you do to help your bones stay healthy?
- e Name three ways a dog's skeleton is different from a fish skeleton. Why might they have these differences?
- f What are the different types of joints and what do they do?
- g Why are there differently shaped bones in your body?
- h What are some uses of tails? Horns? Flippers?
- i What are some similarities between wings and arms?

**CCC: CCSS.ELA-Literacy.SL.6.1c** Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.

**CCC: CCSS.ELA-Literacy.WHST.6-8.7** Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.

**CCC: CCSS.ELA-Literacy.RST.6-8.9** Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.

### COMMON CORE CONNECTIONS

**Grade: 6 Language:** CCSS.ELA-Literacy.L.6.3,4,4a,4b,4c,4d,5,5b,5c,6

**Grade: 6-8 Science & Technical Subjects:** CCSS.ELA-Literacy.RST.6-8.1,2,3,4,5,6,7,8,9,10

**Grade: 6 Speaking & Listening:** CCSS.ELA-Literacy.SL.6.1,1a,1c,1d,2,3,4,5,6

**Grade: 6-8 Writing HST:** CCSS.ELA-Literacy.WHST.6-8.2,4,6,7,8,9,10



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## COMMON CORE CONNECTIONS

**Grade: 6 Language:** CCSS.ELA-Literacy.L.6.3,4,4a,4b,4c,4d,5,5b,5c,6

- 3 Use knowledge of language and its conventions when writing, speaking, reading, or listening.
- 4 Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 6 reading and content, choosing flexibly from a range of strategies.
  - 4a Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.
  - 4b Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., audience, auditory, audible).
  - 4c Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech.
  - 4d Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).
- 5 Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.
  - 5b Use the relationship between particular words (e.g., cause/effect, part/whole, item/category) to better understand each of the words.
  - 5c Distinguish among the connotations (associations) of words with similar denotations (definitions) (e.g., stingy, scrimping, economical, un wasteful, thrifty).
- 6 Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.

**Grade: 6-8 Science & Technical Subjects:** CCSS.ELA-Literacy.RST.6-8.1,2,3,4,5,6,7,8,9,10

- 1 Cite specific textual evidence to support analysis of science and technical texts.
- 2 Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
- 3 Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
- 4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6–8 texts and topics.
- 5 Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.
- 6 Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.
- 7 Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
- 8 Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.
- 9 Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
- 10 By the end of grade 8, read and comprehend science/technical texts in the grades 6–8 text complexity band independently and proficiently.



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## COMMON CORE CONNECTIONS

### Grade: 6 Speaking & Listening: CCSS.ELA-Literacy.SL.6.1,1a,1c,1d,2,3,4,5,6

- 1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.
- 1a Come to discussions prepared, having read or studied required material; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.
- 1c Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.
- 1d Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.
- 2 Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.
- 3 Delineate a speaker's argument and specific claims, distinguishing claims that are supported by reasons and evidence from claims that are not.
- 4 Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.
- 5 Include multimedia components (e.g., graphics, images, music, sound) and visual displays in presentations to clarify information.
- 6 Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grade 6 Language standards 1 and 3 here for specific expectations.)

### Grade: 6-8 Writing HST: CCSS.ELA-Literacy.WHST.6-8.2,4,6,7,8,9,10

- 2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.
- 4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- 6 Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.
- 7 Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.
- 8 Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.
- 9 Draw evidence from informational texts to support analysis, reflection, and research.
- 10 Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.



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## ACTIVITY!

## PROJECT!

## BONE BUILDING

Bones and muscles work together. If you use a muscle a lot, it gets bigger and stronger. It also pulls more on the attached bones. The bone reacts by becoming thicker and stronger, too. Many people put most of their effort into getting big arm muscles. But some of the most important muscles to keep strong and healthy are the core muscles in your torso. If you do these exercises three or four times a week, your torso bones and muscles will get bigger and stronger!

**1** Lay on your back. Bend your knees so that your feet are under them. Push your bottom up off the floor to make a bridge. Keep your head and shoulders on the ground. Count to 10, then slowly move your bottom down. Repeat this five times.

**2** Lay on your belly with your arms stretched out in front of your head. Lift your arms and legs off the ground so that you look like a superhero flying through the air. Count to 10, then slowly lower your arms and legs. Repeat this five times.

**3** Lay on your belly with the palms of your hands near your shoulders. Push up with your arms and feet so that your body makes a curved line from your head to your toes. Count to 10, then slowly lower your body to the ground. Repeat this five times.

**TRY THIS!** Put a stuffed animal or small ball between your knees during each exercise. How does this change how your body moves?

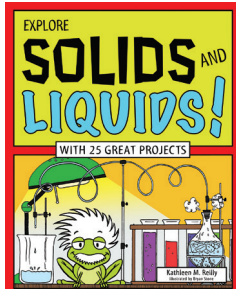
## DID YOU KNOW? . . . . .

Professional archers and baseball and softball players use one arm a lot more than the other. Their bodies react by making the muscles and bones in their dominant arms much bigger and stronger. Sometimes, they joke that they look like fiddler crabs!

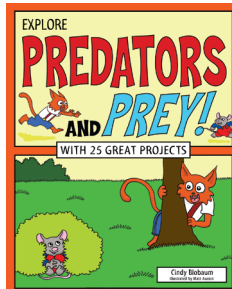




# More Books About Science!



Author: Kathleen M. Reilly



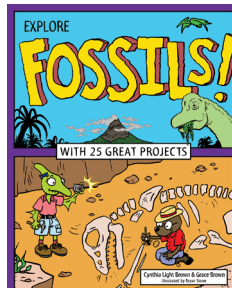
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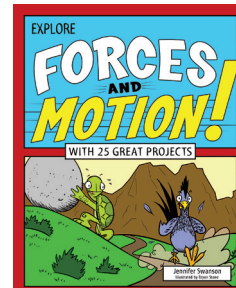
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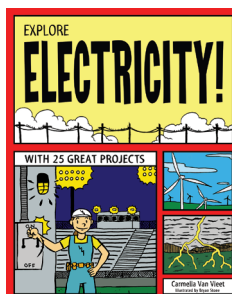
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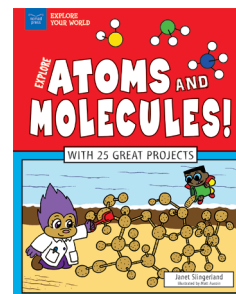
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