



# Scientastic

## Sticks and Stones

# Viewing Guide



**DUQUESNE**  
UNIVERSITY

The Partnership in Education

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# Viewing Guide

## INSTRUCTIONS

### **Overview:**

This viewing guide is designed to be used with the television program, *Scientastic- Sticks and Stones*. Students will watch the episode, which deals with the science of bone health as well as the problem of bullying, and complete a worksheet while viewing. No prior knowledge of bone health or anatomy is needed before viewing. Worksheet questions follow the plot and scientific content of the episode and are supplemented with open-ended questions that allow for student creativity and class discussion at the conclusion of the episode.

**Grade Level:** 5th-6th

**Time:** 40 minutes

### **Materials Needed:**

Screen/ Projection Method to view *Scientastic- Sticks and Stones*  
Copies of Student Worksheets (1 per student)

# Viewing Guide

GRADES 5-6

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

Date: \_\_\_\_\_

Please answer the following questions while you watch *Scientastic Sticks and Stones*.

1. When the episode starts, what is Leah looking for? Who has it?
2. Why do some of the girls on the soccer team not like Habiba?
3. Which bone does Habiba break?
4. Are our bones alive? Why or why not?
5. How do our bones change after we were born?
6. What job do bones do in our body?

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7. The paleontologist at the museum talked about two special types of cells in the bone- **osteoblasts** and **osteoclasts**. What do these two types of cells do? How does this help a bone to heal?

8. Why does Leah think birds' bones are not helpful for learning how to help Habiba's arm heal faster?

9. When Leah visited the aviary, she learned about different foods that birds eat. These foods help to keep birds' bones strong. What kind of food should Habiba eat to help her bone heal?

10. Hypothesize about what would happen to Habiba if her osteoblasts weren't working.

11. The bullies tease Habiba that she'll never be able to play soccer again because of her broken arm. Is this true? Why or why not?

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GRADES 5-6

12. Why does Mr. G think Leah shouldn't say "osteoblasts and osteoclasts" to the bullies? If you were Leah, what would you say to the bullies to prove Habiba's bone will heal?

13. How many bones make up your skeleton? Have you always had the same number of bones?

14. Dr. Russell talks about stem cells in the Bone Lab. What are stem cells? What do they do?

15. If your body doesn't have enough stem cells, what special thing can doctors put inside your bone to help it heal?

16. What are some things Habiba can do to make sure her broken arm heals quickly?

17. During this video, you saw Leah doing research to help her friend's arm heal. Think about a problem that you would like to research. What is it? Where might you visit to conduct your research? Who might you interview?



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GRADES 5-6

ANSWER KEY

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

Date: \_\_\_\_\_

Please answer the following questions while you watch *Scientastic Sticks and Stones*.

1. When the episode starts, what is Leah looking for? Who has it?

Leah is looking for her camera.  
Leah's brother, Axel, has it.

2. Why do some of the girls on the soccer team not like Habiba?

Habiba is the star of the soccer team. They know Habiba's soccer skill is better than theirs. They are jealous of Habiba's talent.

3. Which bone does Habiba break?

Habiba breaks her ulna.

4. Are our bones alive? Why or why not?

Yes, they are.  
Because our bones have nerves, blood vessels and cells. When bones break, they can heal themselves.

5. How do our bones change after we were born?

After we were born, our bones become hard and strong to support our weight. Some bones which were once separate, fuse together.

6. What job do bones do in our body?

Bones support the weight of the body and produce red and white blood cells for our body.

7. The paleontologist at the museum talked about two special types of cells in the bone-**osteoblasts** and **osteoclasts**. What do these two types of cells do? How does this help a bone to heal?

Osteoblasts build up bones and osteoclasts break down bones. They are important because they are the key cells that get rid of weak and old bones and build strong and new bones so that the broken bone can heal itself.

8. Why does Leah think birds' bones are not helpful for learning how to help Habiba's arm heal faster?

Because human bones and bird bones are different. Human bones are solid but bird bones are hollow.

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GRADES 5-6

ANSWER KEY

**9. When Leah visited the aviary, she learned about different foods that birds eat. These foods help to keep birds' bones strong. What kind of food should Habiba eat to help her bone heal?**

Foods with calcium and vitamin D will help Habiba's bone heal, foods like milk, beans, and fish are good sources of these nutrients.

**10. Hypothesize about what would happen to Habiba if her osteoblasts weren't working.**

Osteoblasts are the cells that build up new bones. So if Habiba's osteoblasts weren't working, her broken bone may not heal by self.

**11. The bullies tease Habiba that she'll never be able to play soccer again because of her broken arm. Is this true? Why or why not?**

It's not true.

Our bones are alive, Habiba's osteoblasts and osteoclasts help her broken bones heal. After Habiba's arm has healed, it will be as good as new.

**12. Why does Mr. G think Leah shouldn't say "osteoblasts and osteoclasts" to the bullies? If you were Leah, what would you say to the bullies to prove Habiba's bone will heal?**

Because Mr. G doesn't think the bullies can understand what "osteoblasts and osteoclasts" mean. If I was Leah, I will avoid scientific terms. I'd like to say "there are two types of cells in Habiba's body that help Habiba's bone to heal. Our bones are alive, just like our skin. You know our skin can heal by itself, right? So Habiba's bone will also heal by itself."

**13. How many bones make up your skeleton? Have you always had the same number of bones?**

There are 206 bones make up our skeleton.

No, when you were born, you had 300 bones. Some bones fuse together as you grow.

**14. Dr. Russell talks about stem cells in the Bone Lab. What are stem cells? What do they do?**

Stem cells are cells that haven't decided what kind of cells they will be when they grow up. When they get a specific signal from body, they will become the specific kind of cells that our body needs.

Stem cells can fix damaged bones and damaged muscles when they need it.

**15. If your body doesn't have enough stem cells, what special thing can doctors put inside your bone to help it heal?**

Doctor can put stem cells inside a scaffold and put the scaffold in the damaged bone to help the broken bone heal.



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GRADES 5-6

ANSWER KEY

**16. What are some things Habiba can do to make sure her broken arm heals quickly?**

Eat foods with vitamin D and calcium.

Feel confident that her arm will heal and she can play soccer again.

**17. During this video, you saw Leah doing research to help her friend's arm heal. Think about a problem that you would like to research. What is it? Where might you visit to conduct your research? Who might you interview?**

Student answers may vary. For example:

Problem: Does sleeping more improve my memory?

First, look on the Internet for some basic information on sleep and memory.

Second, do further research in the library and find some books about sleep and memory.

Third, try to email or interview biology professor in the university.

Fourth, go to science museum and try to interview staff who works in the museum.