

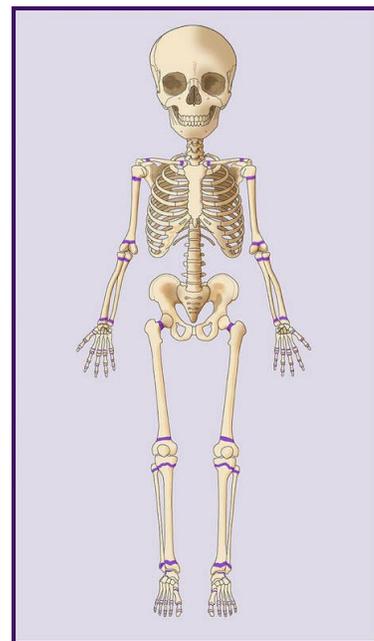
Scoring Guidance: Growth Summative Assessment

Part 1: What happens to the structures of the bone at the growth plate as a child grows into an adult?

As we discussed together, children's bones are different from adults' bones. Children's bones have growth plates, as shown in the image to the right.



- a. On this assessment, you will explain what happens to the structures of the bone at the growth plate as a child grows into an adult. On the image to the right, circle one part of the body where there is a growth plate that you will focus on in your explanation.



- b. What happens to the structures of the bone at the growth plate as a child grows into an adult? Use words or pictures (or a combination) to explain your answer to this question. Think about what you have figured out about how the different parts and systems of the body work together. Use your model of healing, science notebooks, the posters we have created together, and evidence from the growth plate images.

Student responses should include:

- + The bone cells are making more bone cells because we see there is a gap in the baby's bone and this gap is gone in the adult bone.
- + Bone is made of specialized bone cells which are structured so that the bone can do its functions/jobs (to provide structure and strength for the body).
- + Bone cells are making more bone cells at the growth plate.
- + To do this, cells need blood to bring stuff, and nerves need to send signals to grow.

- c. Using words or pictures (or a combination), explain what happens in the body parts (subsystems) around the growing bone you selected, as the bone grows.

Student responses should include:

- + After/As the body makes the bigger/longer bone, each of the surrounding body parts (such as skin, muscle, and nerves) needs to grow, too, so that each subsystem can function.
- + In order for these parts to grow, the body needs to make more nerve, skin, and muscle cells because each of these cells has a particular structure that serves a specific function needed to make up the body part (subsystem).

- d. Explain using words or pictures (or a combination) how what you know about living things allows you to answer the Part 1 question above with confidence.

Possible student responses might include:

- + The human body is a living system.
- + The different parts of a human are made of cells which are living too.
- + Cells (that make up the human body) can grow and change on their own.
- + Cells can take in what they need and get rid of what they don't.



Composite image of plant growth over five days time.

Part 2: What is happening in this plant?

We saw earlier in our unit that plants are also made of cells. Analyze the images above taken of a small plant over the course of 5 days.

a. What changes do you notice in the structures of the plant?

Student responses should include:

- + There is a part of the plant getting bigger outside of one of the seeds in the second picture.
- + By day 4, there are parts that are getting bigger and growing outside of the seed.
- + By day 5 one of the growths is beginning to look like a plant.

b. State a claim for what you think is happening inside the plant between day 1 and day 5 to result in these changes in its structures.

Possible student responses might include:

- + Plants are made of cells and when they grow, they make more cells like humans do.
- + As plants grow, they make more and more cells.
- + Growth in plants is similar to growth in humans because they are made of cells, too.

c. What would you want to investigate in order to find evidence that supports your claim? How would you investigate that?

Student responses should include:

- + Anything that the student has figured out about the structures and systems of humans that they would need to know about how the plant executes a similar task with plant structures and systems.
- + How they would investigate.

Possible student responses might include:

- + I would want to investigate whether plant cells look different in different parts of the plant. I could look at different parts of the plant under the microscope to see the structures of its cells.
- + I would want to investigate whether plant cells make more of themselves like human cells do. I could compare the cells of baby plants like this with larger plants of the same kind. Or I could try to watch plant cells grow and split on a video or in real life.
- + I would want to investigate how plants move the nutrients they need to make more cells around the whole plant. I could try cutting plant parts and looking for something like blood.