

California Content Standards — Grade 7

Structure and Function in Living Systems

5.0 The anatomy and physiology of plants and animals illustrate the complementary nature of structure and function. As a basis for understanding this concept:

5.a Students know plants and animals have levels of organization for structure and function, including cells, tissues, organs, organ systems, and the whole organism.

Write a sentence to define each of the five levels of organisation within a human body.

1. Chemical

This is the simplest level of organisation within the human body. Atoms of different elements combine to form molecules, which then go on to form cellular organelles responsible for specific cell functions

2. Cellular

Cells are the structural and functional components of life as all organisms are comprised of cells

3. Tissue

Cells which are similar in structure and function join together to form tissue within the human body

4. Organ

When numerous tissues with the same structure and function join together they form an organ, for example the heart or kidneys

5. Organ System

When single organs work in coordination with other organs with a similar purpose they form an organ system

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Questions

1. What are the four main types of tissue within the human body called?

Epithelial tissue, Connective tissue, Muscular tissue, Neural tissue

2. How many organs are there in the human body?

23

3. Is skin an organ?

Yes

4. What is physiology?

A science that concentrates on the functioning of organisms

5. What is anatomy?

The stem of biology that studies the internal structure of living organisms

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Literacy Link

Choose one organ within the human body and write an explanation about it.

Example:

The heart is actually a very powerful muscle about the size of a fist. The heart muscle is a specialised muscle as it sends blood around the body, providing the body with the oxygen and nutrients it needs to stay alive.

The right side of the heart receives blood from the body, pumping it to the lungs. The left side of the heart receives blood from the lungs and pumps it out to the body.

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Andrew, a science student in Grade 7, was reviewing his work. He recalled that he had learned that humans have a variety of systems due to the complexity of the species' organism. He thought he may like to continue his study of this area. These specific systems are widely studied in Human anatomy. He thought his teacher had told him there were over 10 "Human" systems also present in many animals.

Andrew wrote on a piece of paper those he could immediately recall: Circulatory system, digestive system, muscular system, nervous system, reproductive system, respiratory system.

He knew 6.

He asked his class at school and below is a table of those named, and by how many students, and the total includes those Andrew knew.

Endocrine system	4
Skeletal system	21
Urinary system	19
Integumentary system	8
Lymphatic system.	7
Circulatory system,	28
Digestive system,	29
Muscular system,	22
Nervous system,	20
Reproductive system,	25
Respiratory system.	15

He had found 11 systems in total. He now wanted to find the information on the next page but he needs your help, so please calculate and fill in the answers and show your calculations. Create a box and whisker plot to show results.

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What is the median?

Answer: 4, 7, 8, 15, 19, **20**, 21, 22, 25, 28, 29

What is the lower quartile?

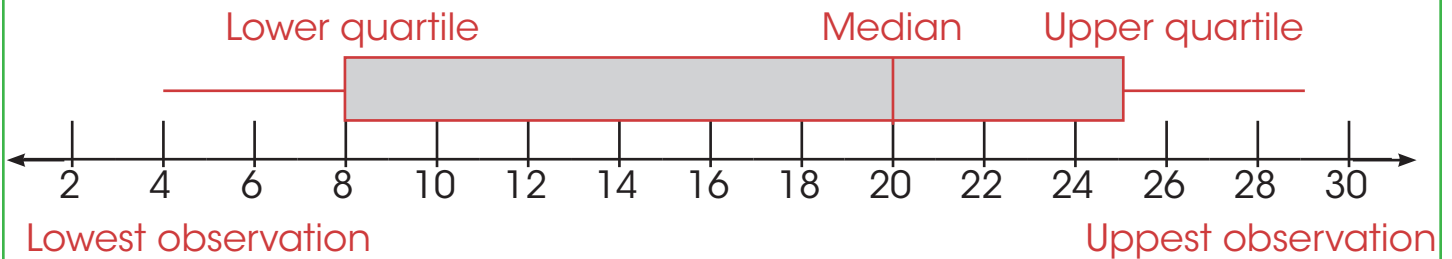
Answer: 4, 7, **8**, 15, 19

What is the upper quartile?

Answer: 21, 22, **25**, 28, 29

What is the interquartile range?

Answer: **$25 - 8 = 17$**



Check student graph for accuracy.