

# Levels of Organisation

1. Use the presentation to complete the boxes with the correct organ system, and examples of a tissue and cell type associated with each organ.

Organ System	Organ	Tissue	Cell
	heart		
	lungs		
	ovaries		
	testes		
	small intestine		
	muscles		
	skin		

2. Write a definition for each of the following terms:

Cell: \_\_\_\_\_  
\_\_\_\_\_

Tissue: \_\_\_\_\_  
\_\_\_\_\_

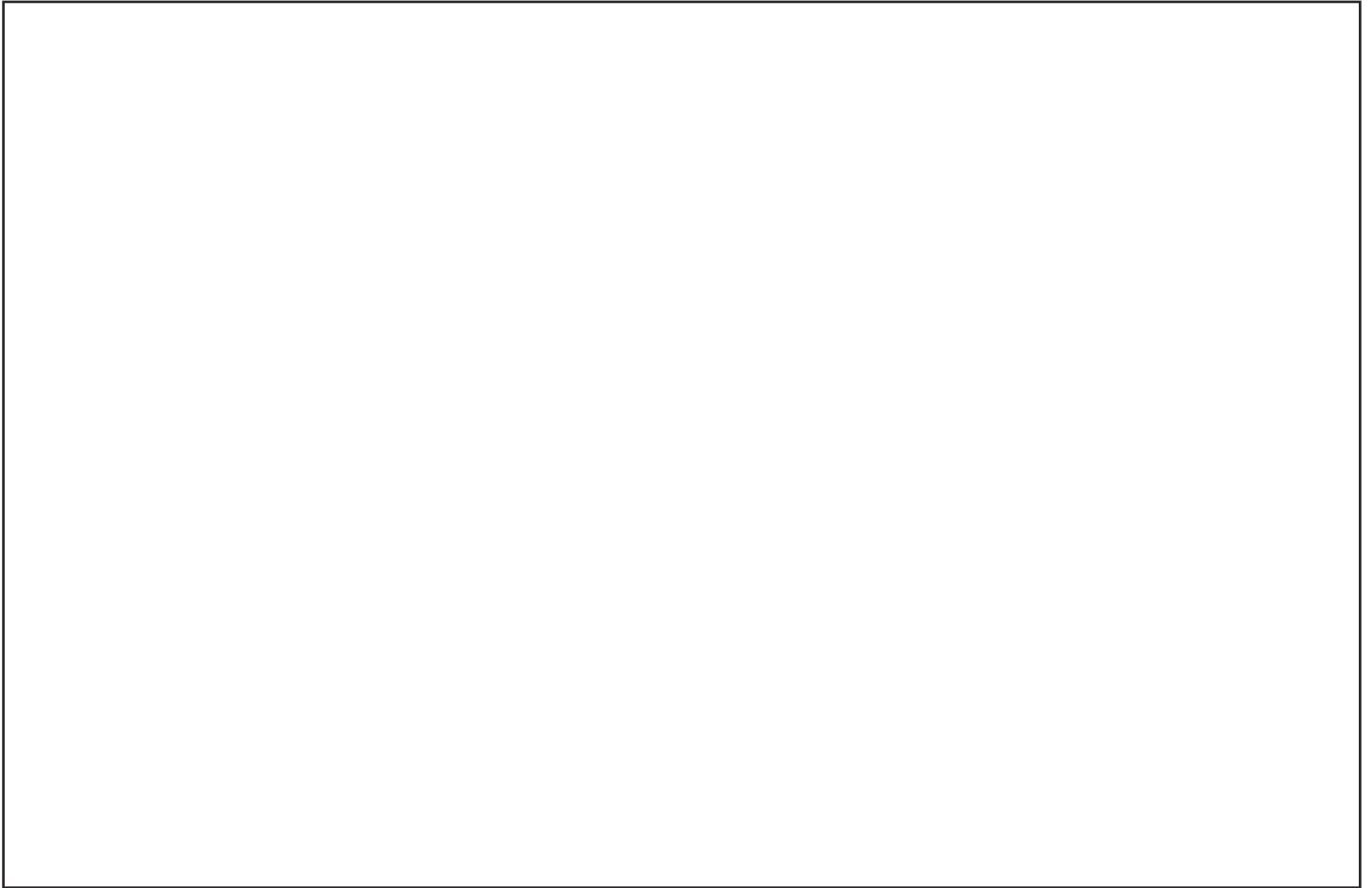
Organ: \_\_\_\_\_  
\_\_\_\_\_

Organ System: \_\_\_\_\_  
\_\_\_\_\_

3. What does each organ system do?

Organ System	Function

4. A hierarchy is a way to arrange things due to their relative importance. Can you produce a diagram that represents the hierarchy of the different levels of organisation?

A large, empty rectangular box with a thin black border, intended for the student to draw a hierarchy diagram. The box is currently blank.

# Levels of Organisation Answers

1. Use the presentation to complete the boxes with the correct organ system, and examples of a tissue and cell type associated with each organ.

Organ System	Organ	Tissue	Cell
circulatory system	heart	blood vessel	red blood cell
respiratory system	lungs	ciliated epithelium	ciliated epithelium cell
reproductive system	ovaries	ovarian follicles	ovum (egg cell)
reproductive system	testes	germinal epithelium	sperm cell
digestive system	small intestine	ciliated epithelium	ciliated epithelium cell
muscular skeletal system	muscles	skeletal muscle tissue	muscle cell
immune system	skin	epidermis	skin cell

2.

Cell: The unit of a living organism, contains parts to carry out life processes.

Tissue: Group of cells of one type.

Organ: Group of different tissues working together to carry out a job.

Organ System: Group of different organs working together to carry out a job.

3.

Organ System	Function
muscular skeletal system	Muscles and bones working together to cause movement and support the body.
reproductive system	Produces eggs and sperm, and is where the foetus develops.
respiratory system	Replaces oxygen and removes carbon dioxide from blood.
immune system	Protects the body against infections.
digestive system	Breaks down and then absorbs food molecules.
circulatory system	Transports substances around the body.

4. Any diagram that shows the correct arrangement of terms: organism, organ system, organ, tissue, and cell is okay.

# Levels of Organisation

1. Use the presentation to complete the boxes with the correct organ system, and examples of a tissue and cell type associated with each organ.

Organ System	Organ	Tissue	Cell
	heart		
	lungs		
	ovaries		
	testes		
	small intestine		
	muscles		
	skin		

2. Can you put the keywords **cell**, **tissue**, **organ** and **organ system** next to the correct definition in the list below?

The unit of a living organism, contains parts to carry out life processes. \_\_\_\_\_

Group of cells of one type. \_\_\_\_\_

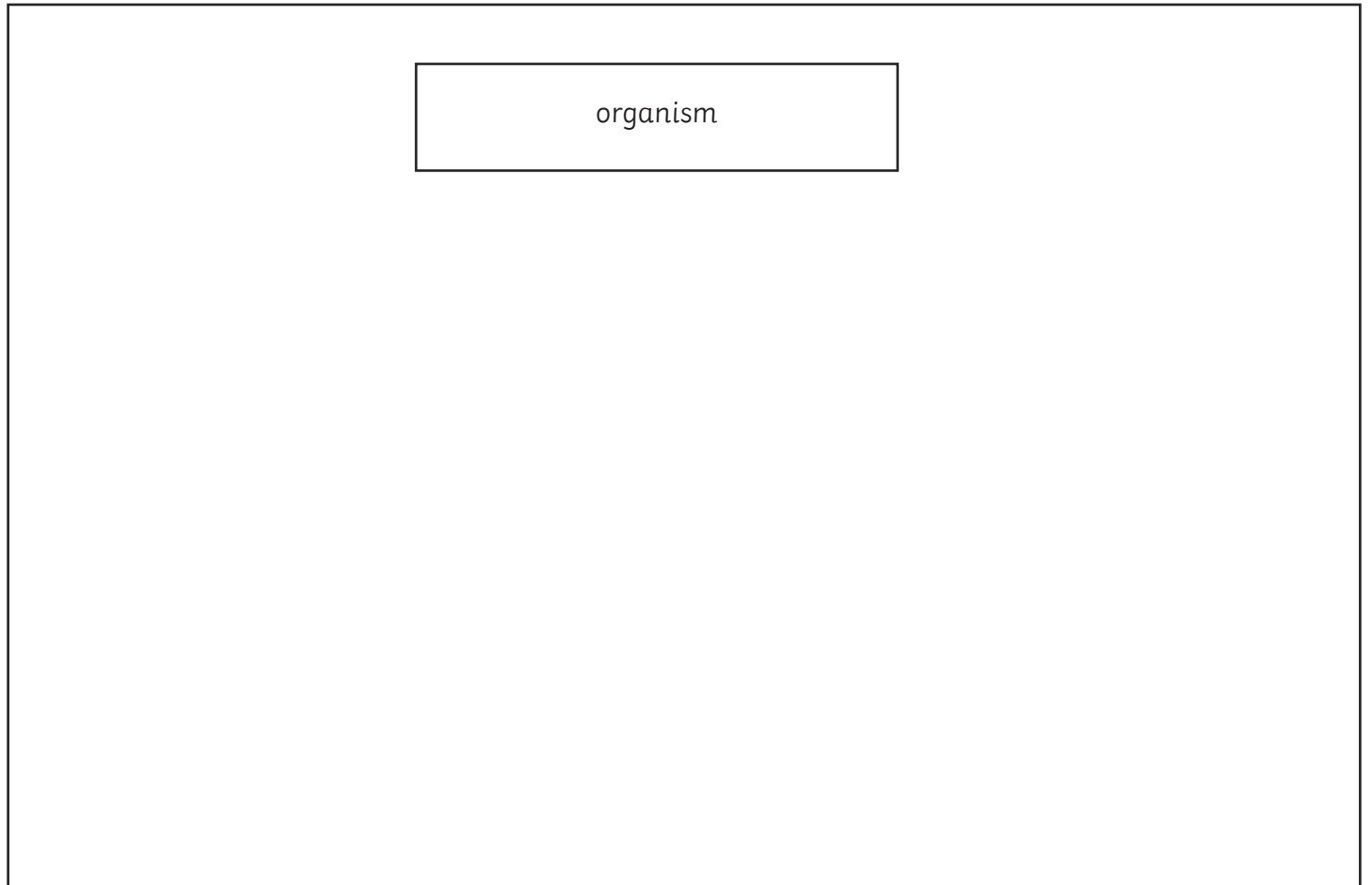
Group of different tissues working together to carry out a job. \_\_\_\_\_

Group of different organs working together to carry our a job. \_\_\_\_\_

3. Can you fill the gaps to describe the function of each organ system?

Organ System	Function
muscular skeletal system	Muscles and _____ working together to cause _____ and support the body.
reproductive system	Produces _____ and _____, and is where the foetus develops.
respiratory system	Replaces _____ and removes _____ _____ from blood.
immune system	Protects the body against _____.
digestive system	_____ down and then _____ food molecules.
circulatory system	_____ substances around the body.

4. A hierarchy is a way to arrange things due to their relative importance. Use the diagram below to arrange cell, organ system, tissue and organ into the correct order.



# Levels of Organisation Answers

1. Use the presentation to complete the boxes with the correct organ system, and examples of a tissue and cell type associated with each organ.

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muscular skeletal system	muscles	skeletal muscle tissue	muscle cell
immune system	skin	epidermis	skin cell

2.

The unit of a living organism, contains parts to carry out life processes. **cell**

Group of different organs working together to carry out a job. **organ system**

Group of cells of one type. **tissue**

Group of different tissues working together to carry out a job. **organ**

3.

Organ System	Function
muscular skeletal system	Muscles and <b>bones</b> working together to cause <b>movement</b> and support the body.
reproductive system	Produces <b>eggs</b> and <b>sperm</b> , and is where the foetus develops.
respiratory system	Replaces <b>oxygen</b> and removes <b>carbon dioxide</b> from blood.
immune system	Protects the body against <b>infections</b> .
digestive system	<b>Breaks</b> down and then <b>absorbs</b> food molecules.
circulatory system	<b>Transports</b> substances around the body.

4. Any diagram that shows the correct arrangement of terms: organism, organ system, organ, tissue, and cell is okay.

# Levels of Organisation

## Teaching Ideas

**Learning Objective:** To explain the hierarchy of organisation in a multicellular organism

- Success Criteria:**
- To define and state examples of cells, tissues, organs and organ systems
  - To classify organs into the correct organ system
  - To produce a diagram to illustrate the hierarchy of organisation

**Context:** This lesson covers the six organ systems that are required at key stage 3, focusing on major organs in those systems, and introducing some tissues and specialised cells. The beginning of the presentation could also be used to put a specialised cells lesson into context.

From key stage 2, students should know that muscles and skeleton provide support and movement, and they should be able to describe the functions of the digestive system and circulatory system.

### Resources

#### Lesson Pack

optional:  
sticky tack

## Starter

### Share What You Know!

The starter slide asks the students to name any organs they are already aware of, and should provide the opportunity for you to assess prior knowledge with questioning. The activity could be done individually on paper, whiteboards, or in books; or in pairs or table groups.

The answer of 79 organs in the human body is one that depends on the way that organs are characterised and provides a good opportunity to link to HSW (How Science Works) and how scientists often challenge each other.

The facts about the largest and smallest organs provide an interesting hook - many students don't yet consider the skin as an organ.

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## Main Activities

### A Closer Look at Organs

Slides 4-17 focus on an organ in each of the six organ systems on the key stage 3 syllabus. Clicking on the organ on slide 4 will take you to the corresponding information slide, which will identify a tissue and cell from that organ as if you were zooming in. Students can record these into the table on the [Levels of Organisation Activity Sheet](#). The following slide asks students to identify the organ system to which that organ belongs, and record it in the tables. Click on the back button to be taken back to the overview to choose a different organ.

If you're presenting this activity as a whole class discussion, then there are lots of opportunities to question students about the largest and smallest of the cell, tissue, organ and organ system. You could also ask whether they can identify any other organs from that system, or tell you what the organ's function in the body is.

Alternatively, this could be an independent learning activity if you have access to a computer room or tablets for students to work through these slides independently.

Teacher note - for the skin (slide 17), you may wish to embellish on this more, explaining that the skin (for key stage 3) is part of the immune system, and that this also includes the lymphatic system - which may also lead to some extensive discussion.

### Key Words

Slides 18 and 19 are differentiated versions of the key words slide. You can delete or hide as appropriate for your class. On slide 18, higher ability students are asked to come up with definitions of the words cell, tissue, organ and organ system individually, given what they've seen on the information slides. There is space to record these on the [Levels of Organisation Activity Sheet](#). This could then provide a good opportunity for peer assessment, if pairs work together to improve these definitions as you bring up the answer on a click.

Slide 19 gives students the definitions and asks them to write the terms cell, tissue, organ and organ system next to the correct one.

### Organ System Functions

Slides 20-22 are differentiated versions of What Do Our Organs Do? You can delete or hide as appropriate for your class. On slide 20, higher ability students are asked to identify the function of each of the six organ systems and record these in the table on the [Levels of Organisation Activity Sheet](#). Some students may benefit from sharing ideas in pairs or small groups to develop concise descriptions for each group. If students need additional support, you could ask them to work in groups initially to come up with some useful key words and share these as a class, before asking students to turn them into full sentences on their sheet.

For lower ability students, slide 21 gives them part of the definition for each organ system and asks them to fill in the blanks on their [Levels of Organisation Activity Sheet](#).



## Where Do These Organs Belong?

Slide 22 shows images of some different organs also mentioned in the syllabus. Students need to identify which organ systems these organs belong to. The [Organ Picture Cards](#) can be used here to help students sort into the correct systems. You could write the systems as headings across the board or sheets of paper around the room and ask students to stick the cards to the system they think is correct. Remind them that some might not be as simple as it seems! This could be done in table groups to reduce printing. Alternatively, you could use the cards as a card sort on the table.

The activity could be done without the [Organ Picture Cards](#) by asking students to write their answers on whiteboards to lift for you to assess the full class at once, or as a class discussion.

Questioning around this activity will allow you to assess if students have understood the function of each organ system. Ask students to justify their decision to assign each organ to that system; why it wouldn't belong in a different system; or if they think it might belong in any other systems, too. You may need to explain that the rings on the trachea picture are made of cartilage and not bone.

## Hierarchy of Organisation

Slide 24 asks students to produce a diagram to represent the hierarchy of organisation for the key words in this lesson. They can complete this on the [Levels of Organisation Sheet](#).

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## Plenary

### Think, Pair, Share

Ask the students to decide independently which of the organs they've looked at today is the most important. After a minute, ask them to share this with their partner, and justify to each other why they think this is the best organ. Tell them that you will want to hear them talking about the role it plays in the body, the organ system it belongs to and why it is a better choice than their partner's organ.

Pick some students to share their arguments with the whole class, or ask people to volunteer their partners who had a good argument. Use questioning to push students to defend their decision based on what they know about the role of the organ and organ system, why we couldn't live without it, and what might happen if it stopped working. Ask other students to offer arguments against that organ, or to help to defend its role as the most important.

## Homework

The lesson covers the six organ systems that are on the key stage 3 syllabus. Students could find out about one of the other five major systems in the body to extend their learning. You could take five minutes at the start of the next lesson to have some students share their research with the class, or alternatively ask them to represent what they have found out in a method of their choice.

# Levels of Organisation



## Learning Objective

- To explain the hierarchy of organisation in a multicellular organism.

## Success Criteria

- To define and state examples of cells, tissues, organs and organ systems.
- To classify organs into the correct organ system.
- To produce a diagram to illustrate the hierarchy of organisation.

# Share What You Know



How many organs in the human body can you name?

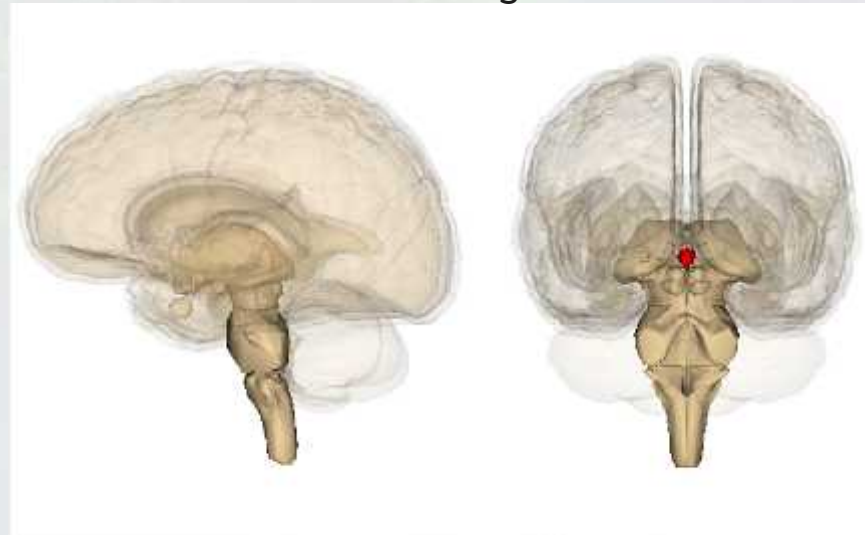
There are approximately 79 organs in the human body, but it's something that is debated - not all scientists agree on what counts as an organ!

Can you guess which is the largest? Or the smallest?

Skin

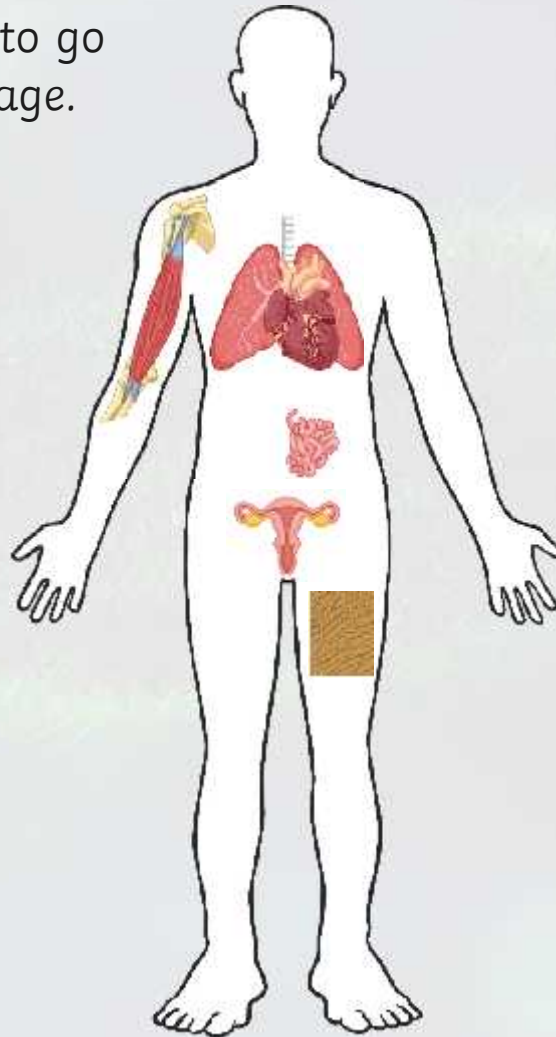


Pineal gland



# A Closer Look at Organs

Please click on an organ to go directly to the relevant page.



# The Heart



Organ  
heart



Example of a Tissue  
blood vessel



Cell  
red blood cell

Go to the next slide for  
more information

# Which Organ System?

muscular  
skeletal system



reproductive  
system



respiratory  
system



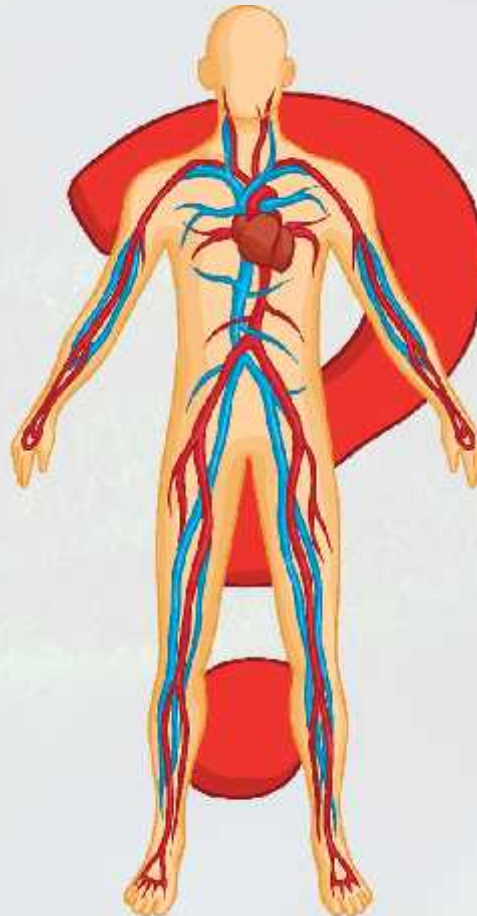
immune  
system



digestive  
system



circulatory  
system

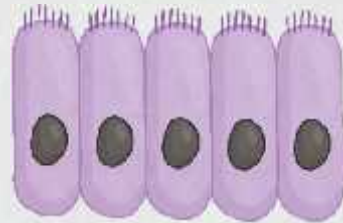


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# The Lungs



Organ  
lungs



Example of a Tissue  
ciliated epithelium



Cell  
ciliated epithelium cell

Go to the next slide for  
more information



# Which Organ System?

muscular  
skeletal system



reproductive  
system



respiratory  
system



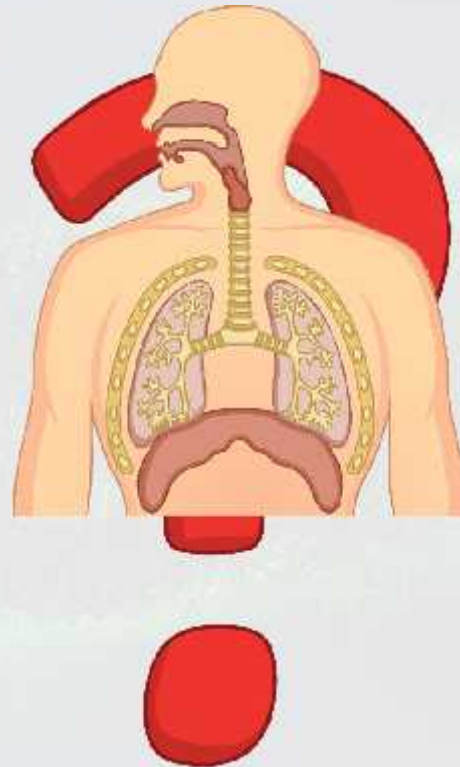
immune  
system



digestive  
system

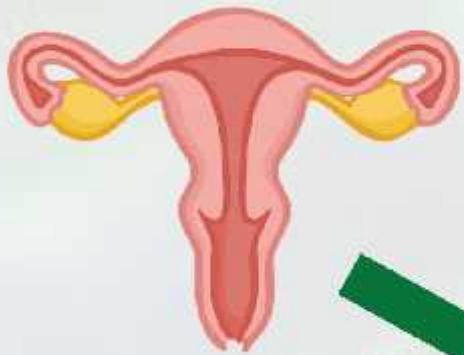


circulatory  
system

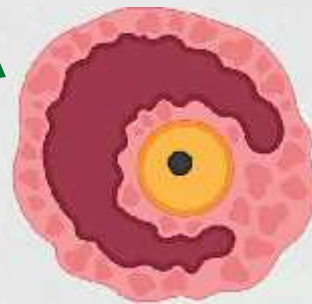
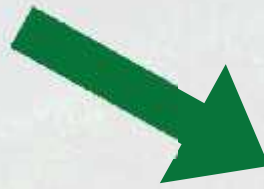


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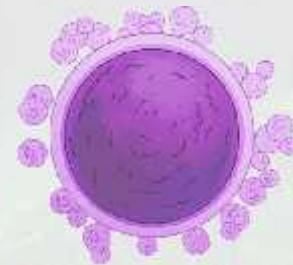
# The Ovaries



Organ  
ovaries



Example of a Tissue  
ovarian follicle



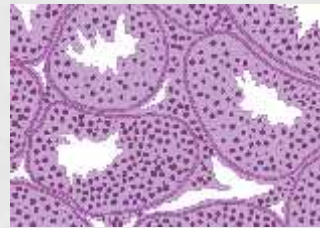
Cell  
ovum

Go to the next slide for  
more information

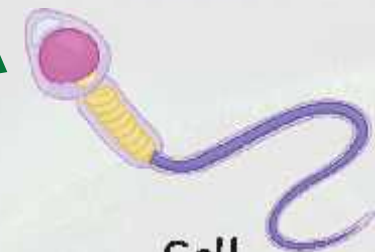
# What About Males?



Organ  
testes



Example of a Tissue  
germinal epithelium



Cell  
sperm cell

Go to the next slide for  
more information

# Which Organ System?

muscular  
skeletal system



reproductive  
system



respiratory  
system



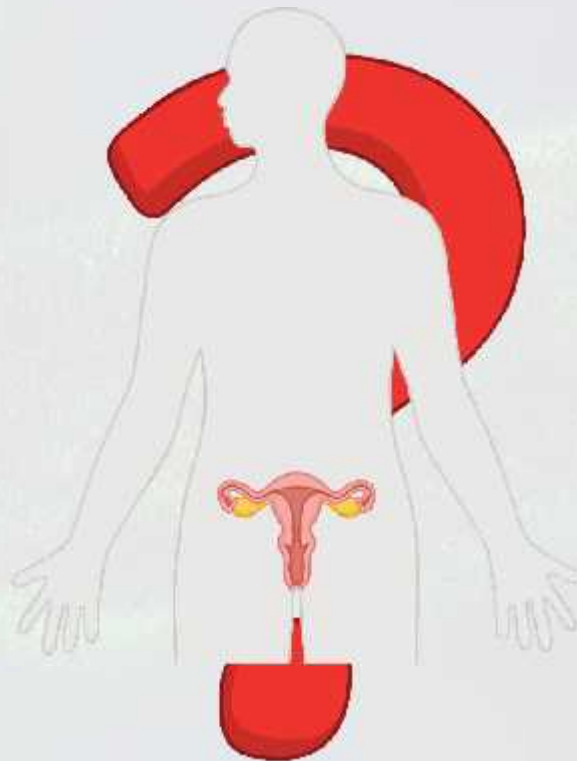
immune  
system



digestive  
system



circulatory  
system

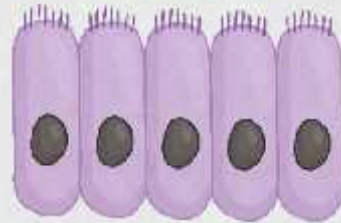


[Click here to return  
to previous page](#)

# The Small Intestines



Organ  
small intestine



Example of a Tissue  
ciliated epithelium



Cell  
ciliated epithelium cell

Go to the next slide for  
more information

# Which Organ System?

muscular  
skeletal system



reproductive  
system



respiratory  
system



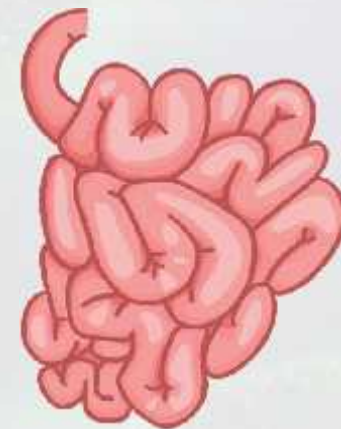
immune  
system



digestive  
system

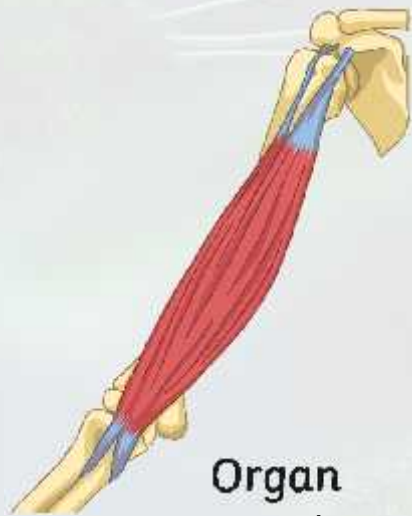


circulatory  
system

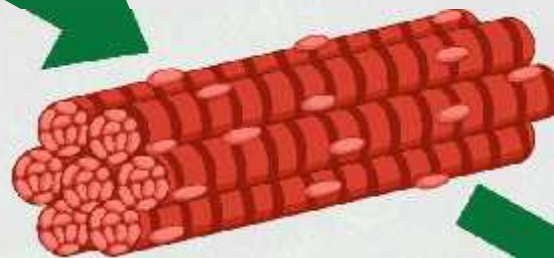


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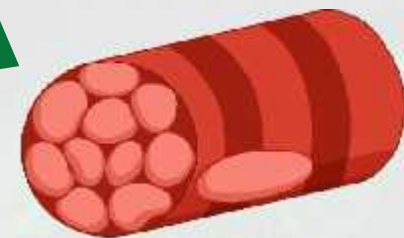
# Muscles



Organ muscle



Example of a Tissue  
skeletal muscle tissue



Cell  
muscle cell

Go to the next slide for  
more information

# Which Organ System?

muscular  
skeletal system



reproductive  
system



respiratory  
system



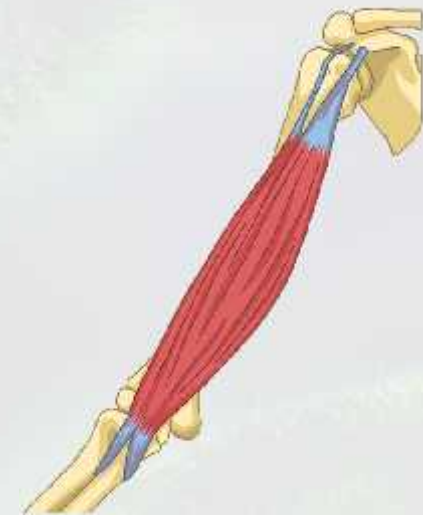
immune  
system



digestive  
system



circulatory  
system



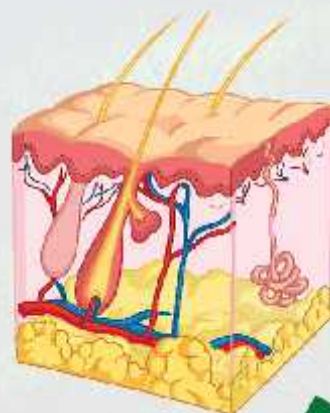
[Click here to return to previous page](#)



# Skin



Organ  
skin



Tissues



Cells

Go to the next slide for  
more information

# Which Organ System?

muscular  
skeletal system



reproductive  
system



respiratory  
system



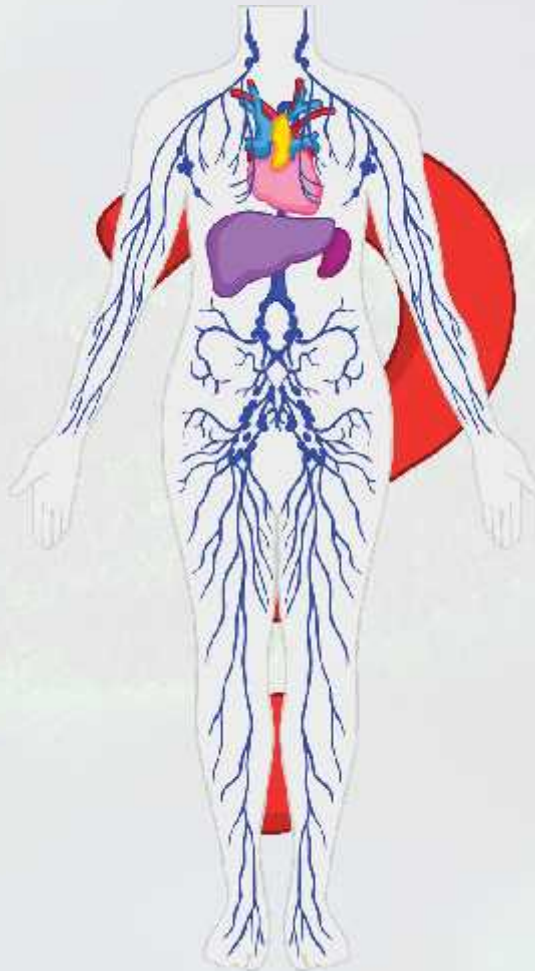
immune  
system



digestive  
system



circulatory  
system



[Click here to return to previous page](#)

# Key Words



Using what you have learnt, can you write a definition for each of the key words below?

cell

The unit of a living organism, contains parts to carry out life processes.

organ  
system

Group of different organs working together to carry out a job.

tissue

Group of cells of one type.

organ

Group of different tissues working together to carry out a job.

# Key Words



Using what you have learnt, can you write the correct key word next to each definition below?

The unit of a living organism, contains parts to carry out life processes.

cell

Group of different organs working together to carry out a job.

organ  
system

Group of cells of one type.

tissue

Group of different tissues working together to carry out a job.

organ

# Organ System Functions

Can you identify the function of each of the six organ systems?

muscular  
skeletal system

Muscles and bones working together to cause movement and support the body.

reproductive  
system

Produces sperm and eggs, and is where the foetus develops.

respiratory  
system

Replaces oxygen and removes carbon dioxide from blood.

immune  
system

Protects the body against infections.

digestive  
system

Breaks down and then absorbs food molecules.

circulatory  
system

Transports substances around the body.

# Organ System Functions

Can you fill in the missing words, using the box of key words, to describe the function of each of the six organ systems?

<b>bones</b>	<b>movement</b>	<b>sperm</b>	<b>eggs</b>	<b>oxygen</b>
carbon dioxide	infections	breaks	absorbs	transports

muscular skeletal system

Muscles and bones working together to cause movement and support the body.

reproductive system

Produces sperm and eggs , and is where the foetus develops.

respiratory system

Replaces oxygen and removes carbon dioxide from blood.

immune system

Protects the body against infections.

digestive system

Breaks down and then absorbs food molecules.

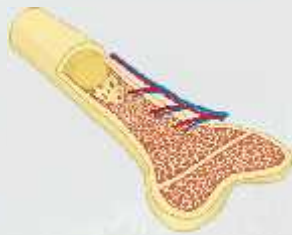
circulatory system

Transports substances around the body.

# Where Do These Organs Belong?



mouth



bone  
marrow



skull



trachea



stomach



large  
intestine

respiratory  
system

immune  
system

muscular  
skeletal system

respiratory  
system

digestive  
system

digestive  
system

# Hierarchy of Organisation

A hierarchy is a way to arrange things due to their relative importance.



Can you produce a diagram that represents the hierarchy of the different levels of organisation?



# Hierarchy of Organisation

A hierarchy is a way to arrange things due to their relative importance.



Use the diagram to the right to arrange **cell**, **organ system**, **tissue**, **organism** and **organ** into the correct order.

organism

organ system

organs

tissues

cells

# Hierarchy of Organisation

A hierarchy is a way to arrange things due to their relative importance.



Use the diagram to the right to arrange **cell**, **organ system**, **tissue** and **organ** into the correct order.

What is the missing word we need to complete the diagram?

organism

organ system

organs

tissues

cells

# Think, Pair, Share



Which is the most important organ?

You need to be able to justify why you think this is the best, what does the system do and which organs does it need? Why couldn't you live without it?

Share your ideas with your table, then as a group, decide which you will share with the class. Be prepared to defend your choice!



# Homework

We've covered six organ systems today but there are actually eleven in your body.

Can you find out about one of them?

Next lesson be prepared to share its name, its function in the body, and at least one major organ that you think we'll have heard of before. Happy researching!



Organ Picture Cards



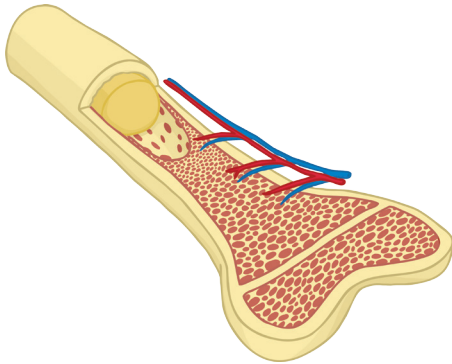
stomach

Organ Picture Cards



mouth

Organ Picture Cards



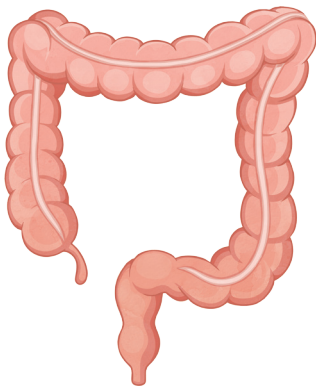
bone marrow

Organ Picture Cards



skull

Organ Picture Cards



large intestine

Organ Picture Cards



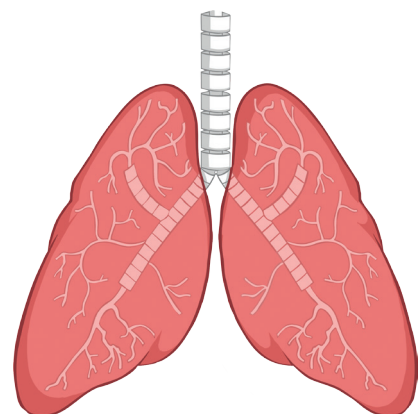
trachea

Organ Picture Cards



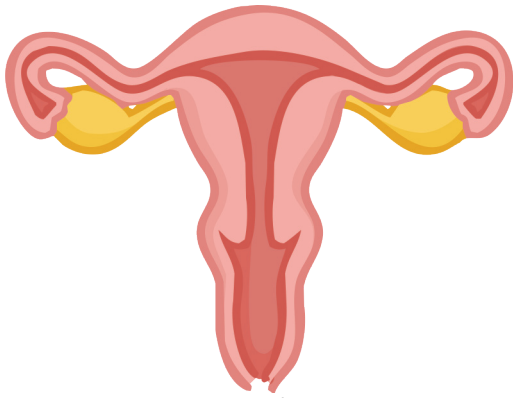
heart

Organ Picture Cards



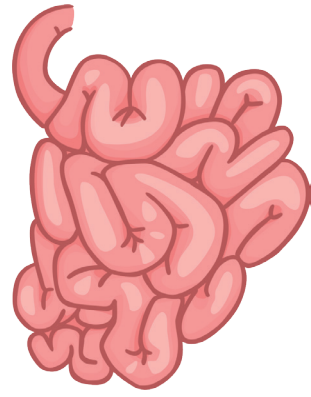
lungs

Organ Picture Cards



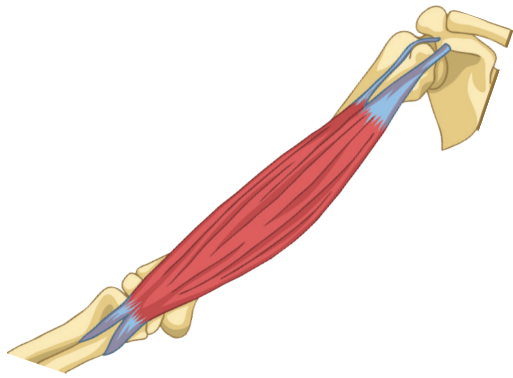
ovaries

Organ Picture Cards



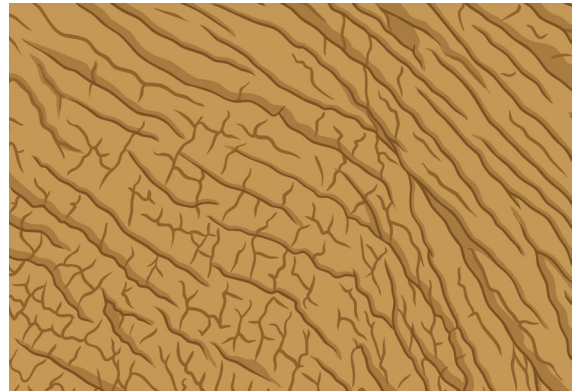
small intestine

Organ Picture Cards



muscles

Organ Picture Cards



skin