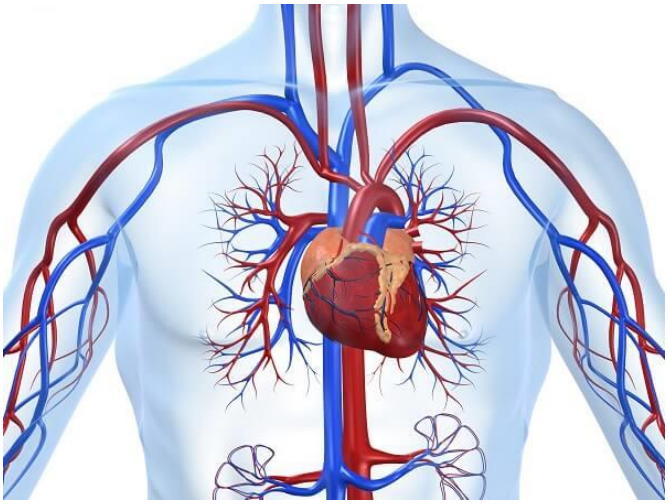
Kirkcaldy High School



BGE Science

Medical Science

Body Systems, Heart & Blood

Name:_____

Class:_____

Teacher:_____

Expectations and Outcomes Learner Evaluation

Topic: Cells, The Heart and Blood

Experience and Outcomes	Date Completed (dd/mm/yy)	Evaluation How happy are you with it? (☺ ? ☹)
I can state the main types of cells in the body		
I can describe the function of different types of cells		
I can draw an animal cell		
I can label an animal cell		
I can state the function of each structure in an animal cell		
I can use a microscope		
I can view my own cheek cells using a microscope		
I can explain what a specialised cell is		
I can select information from a literacy source to develop my knowledge		
I can describe how the body is organised		
I can give examples of the main organs and systems of the body		
I can state the components of blood		
I can describe the function of our blood		
I can describe the role of the heart		
I can label a diagram of the heart		
I can describe the flow of blood through the heart		
I can explain how oxygen travels around the body		
I can take part in a heart dissection		

Date: _____

Cells

Starter

1. Write down 3 things you think we might be learning about in this topic.

   _____

2. What comes to mind when you think of the word ‘cell’?

   _____

Learning Intentions

- I am learning about the Body Systems topic.

Success Criteria

Tick me at the end if ***you can*** …

☐ I can state the main types of cells in the body

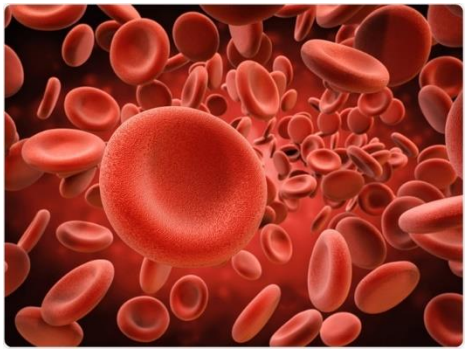
☐ I can describe the function of different types of cells

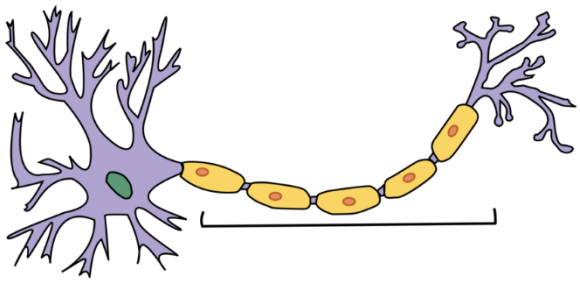
Cells

Cells are the _____ _____ of life.

There are many different types of cell, for example:

1. Red Blood Cells carry _____
2. _____ _____ carry electrical impulses around the body.





Cells Problem Solving

Your teacher will show you the Scale of the Universe.

- Complete the table by writing down the size (in micrometres) of the following cells/structures:

Cell Structure	Size (µm)
Ovum (egg) Cell	
Skin Cell	
White Blood Cell	
Red Blood Cell	
Cell Nucleus	

1. How many human skin cells would we fit in a human ovum?

   _____

2. How many white blood cells could we fit in a human ovum?

   _____

3. How many times bigger than a red blood cell is a skin cell?

   _____

Extension Question: Red Blood Cells DO NOT have a nucleus. Why might this be?

Banta Viewers Activity

Use the banta viewers to look at **three different cells**. In the box below, write down the name and the function of the cell and draw a picture of what you see.

Date: _____

Cell Structure

Starter

1. Write down three different types of cell that we can find in our bodies.

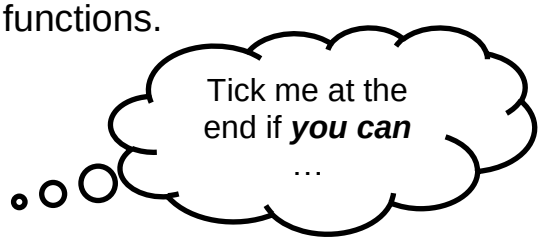
_____

2. Write down the job of one of these cells.

_____

Learning Intentions

- I am learning about animal cell structures and functions.



Success Criteria

☐ I can draw an animal cell

☐ I can label an animal cell

☐ I can state the function of each structure in an animal cell

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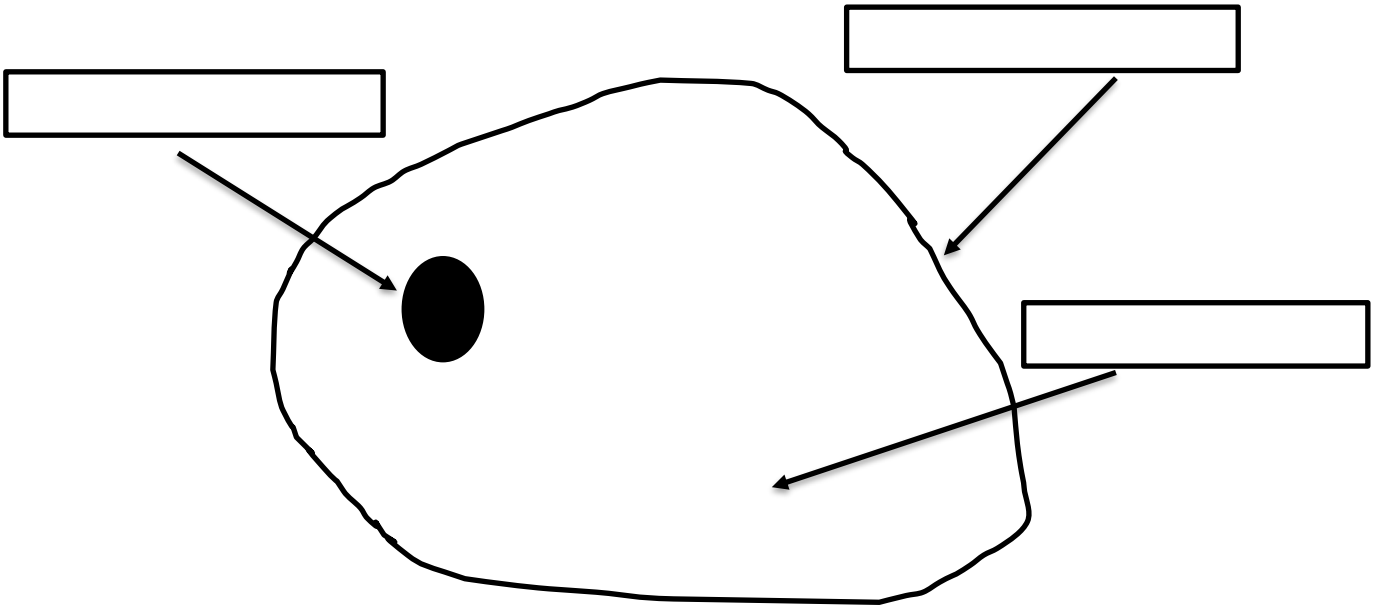
Animal Cell

An animal cell has three main parts, the _____, _____ and _____.



Cell Structures

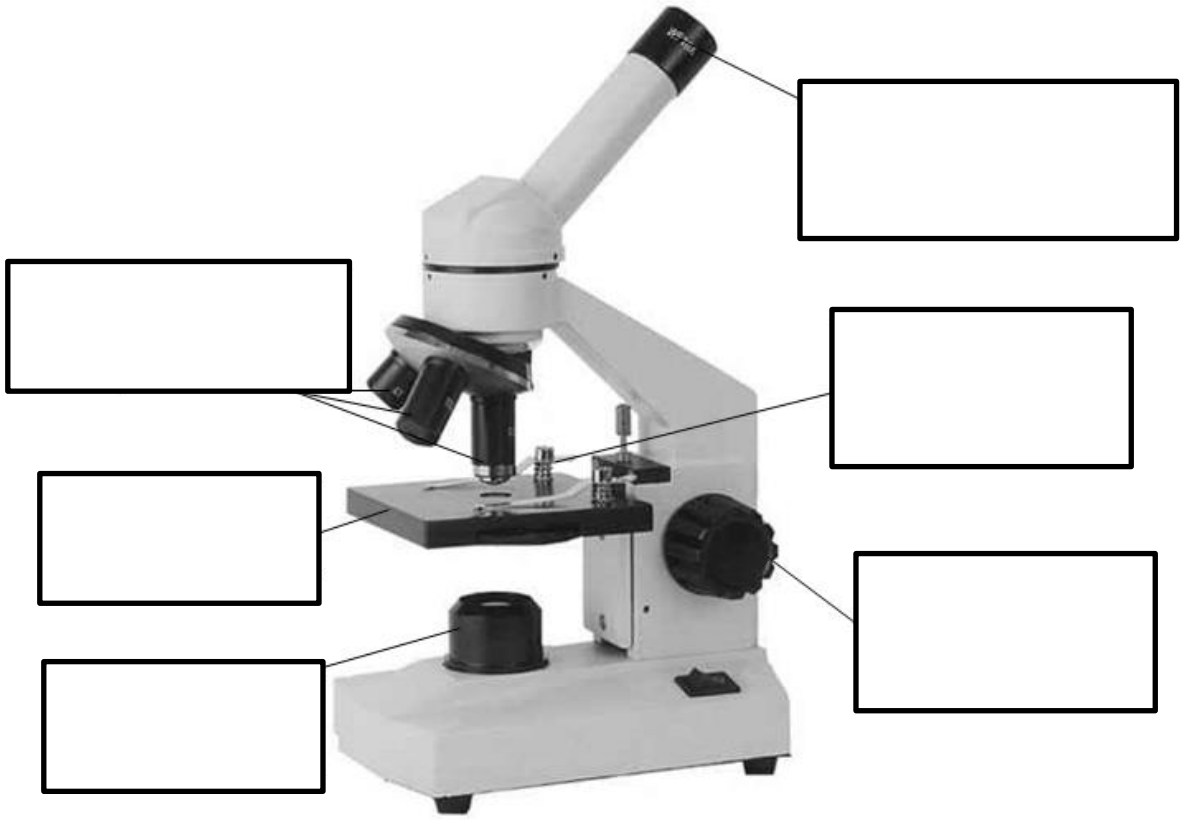
Your cells can be compared to little factories.

They contain lots of smaller structures, and each of them has a specific job.

Structure	Function	Factory Role
Nucleus		
Membrane		
Cytoplasm		

Microscopes

Label the microscope diagram below.



Estimating Cell Size

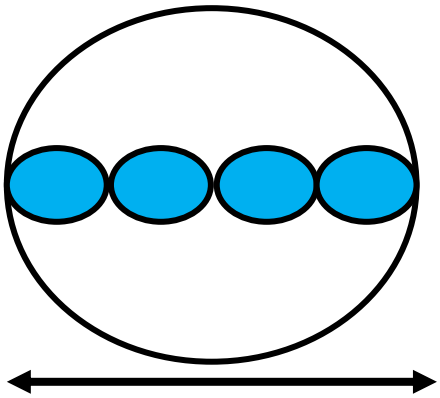
To calculate the length of one cell in our field of view down a microscope we can work out the diameter and divide it by the number of cells.

Length of one cell = diameter / number of cells

Can you use this formula to work out the length of one cell in this example?

Example:

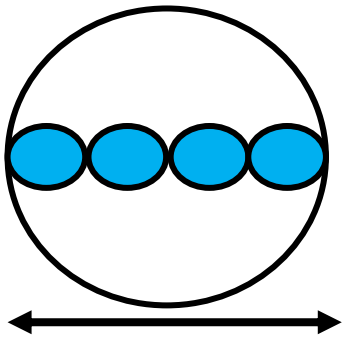
Space for working.



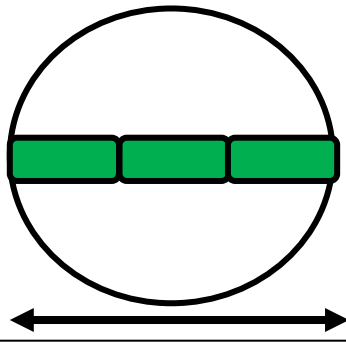
Field of view = 8mm

Answer _____

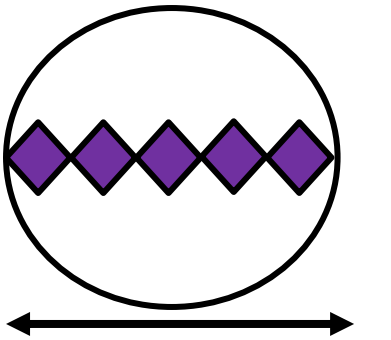
Can you use this formula to work out the **length of one cell** in these examples?



Field of view = 2mm



Field of view = 9mm



Field of view = 10mm

Answer _____ Answer _____ Answer _____

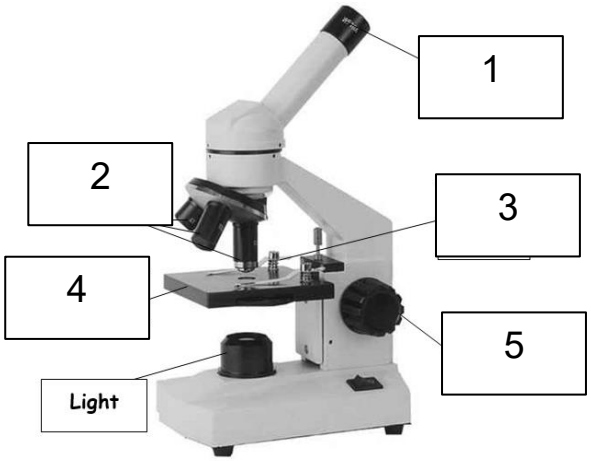
Date: _____

Microscopes

Starter

Label the parts of the microscope below.

1. _____
2. _____
3. _____
4. _____
5. _____



Learning Intentions

- I am learning how to use a microscope.

Tick me at the end if ***you can*** …

Success Criteria

☐ I can use a microscope

☐ I can view my own cheek cells using a microscope

Cheek Cells

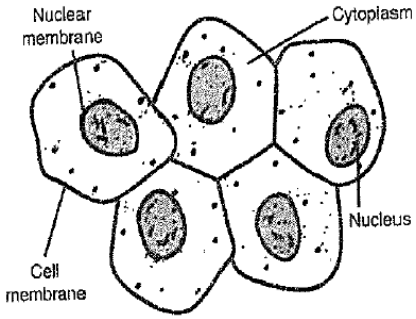
Use the microscopes to look at your **cheek cells** under the microscope.

You will need:

- A microscope
- A cotton bud
- A slide
- A cover slip
- Some methylene blue dye

Method:

1. Rub the cotton bud on the inside of your mouth for about **5 seconds**.
2. Now roll the cotton bud onto the middle section of your **microscope slide** for about 5 seconds.
3. Add 1 drop of **methylene blue** dye.
4. Place a cover slip on top of your cells.
5. Blot with a paper towel.
6. Now you can view the cells under the **microscope**.
7. Draw what you can see into the space below (include the sample name and the magnification)



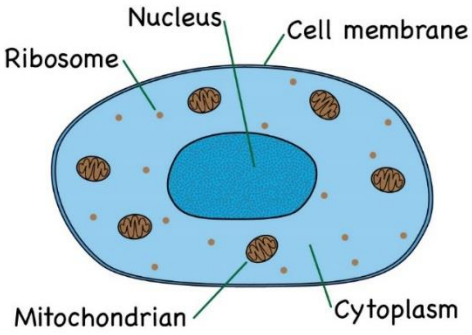
- Now try to label the picture that you have drawn to include the nucleus, membrane and cytoplasm.

Date: _____

Specialised Cells

Starter

- What are the two cells below and how are they different to each other?



_____

_____

Learning Intentions

- I am learning about Specialised Cells.

Tick me at the end if ***you can*** …

Success Criteria

☐ I can explain what a specialised cell is.

☐ I can select information from a literacy source to develop my knowledge.

Cell Specialisation

Cell _____ is the process of a cell taking on a specific structure to help it carry out its specific function**.**

Thinking point:

Other than sperm, can you think of any other examples of specialised cells?

_____

_____

Task

Use the information cards to complete a **Cell Passport**. There are lots of different specialised cells and it is your choice which one you do for your passport. You must fill out the cells name, address (origin), job description and draw a passport photo of the cell.

Date: _____

Cell Organisation

Starter

How many body systems do you know of? List as many as you can.

_____

_____

Learning Intentions

- I am learning about Cell Organisation.

Tick me at the end if ***you can*** …

Success Criteria

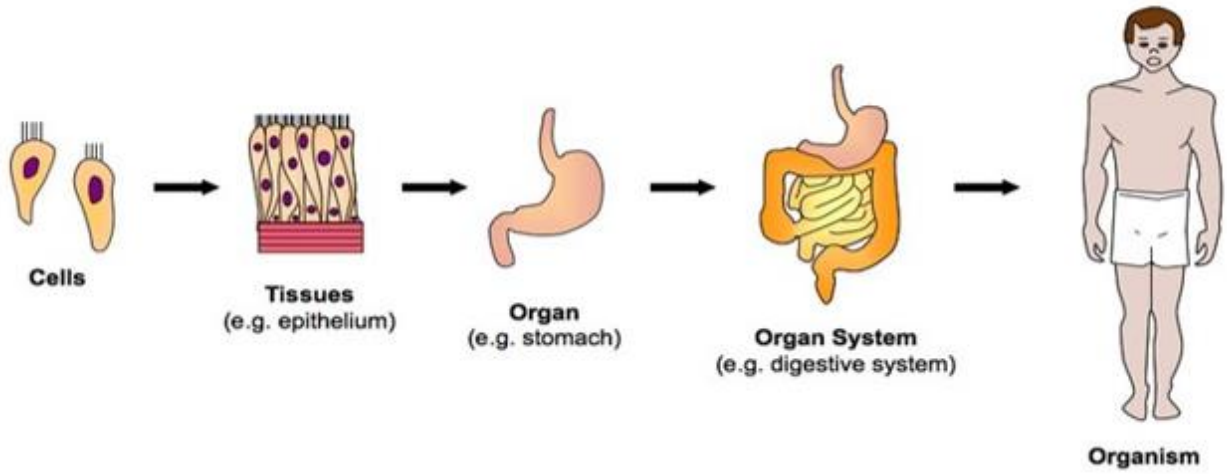
☐ I can describe how the body is organised

☐ I can give examples of the main organs and systems of the body

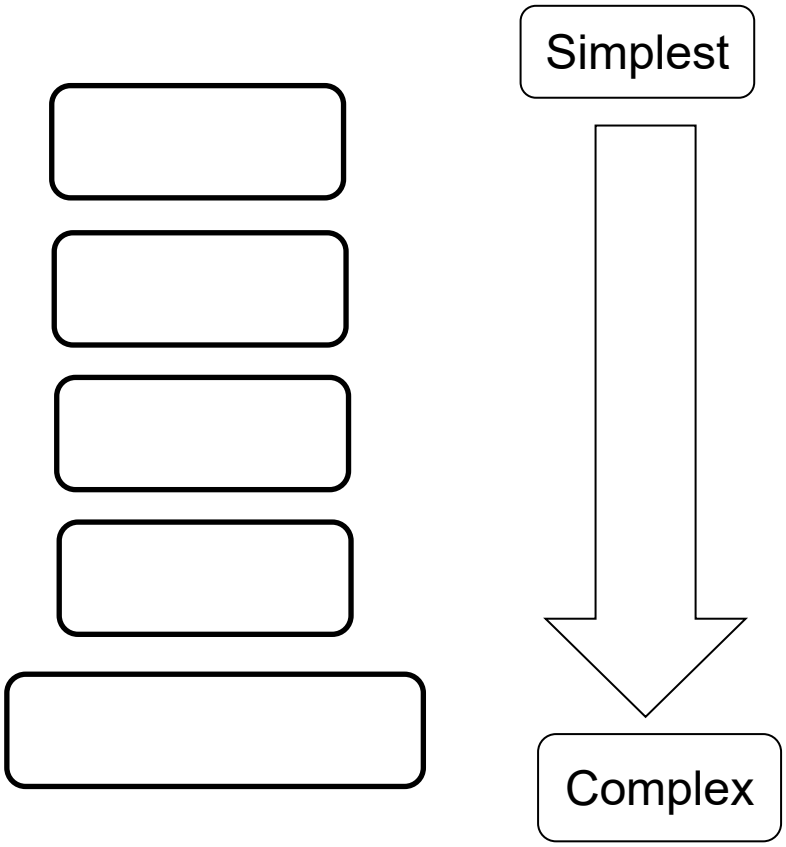
---

Cell Organisation

Cells which carry out similar roles join together to make _____ which build up into _____. Groups of organs work together to form _____ _____.



Cell Organisation



Build a Body Game

- Arrange yourselves into teams of 4.
- Collect a **Pupil Game Sheet** per player, a **dice** and a team set of **Build a Body Game Cards**.

Date: _____

Blood

Starter

Write down three different cell types and describe their structure.

_____

_____

Learning Intentions

- I am learning about Blood.

Tick me at the end if ***you can*** …

Success Criteria

☐ I can state the components of blood

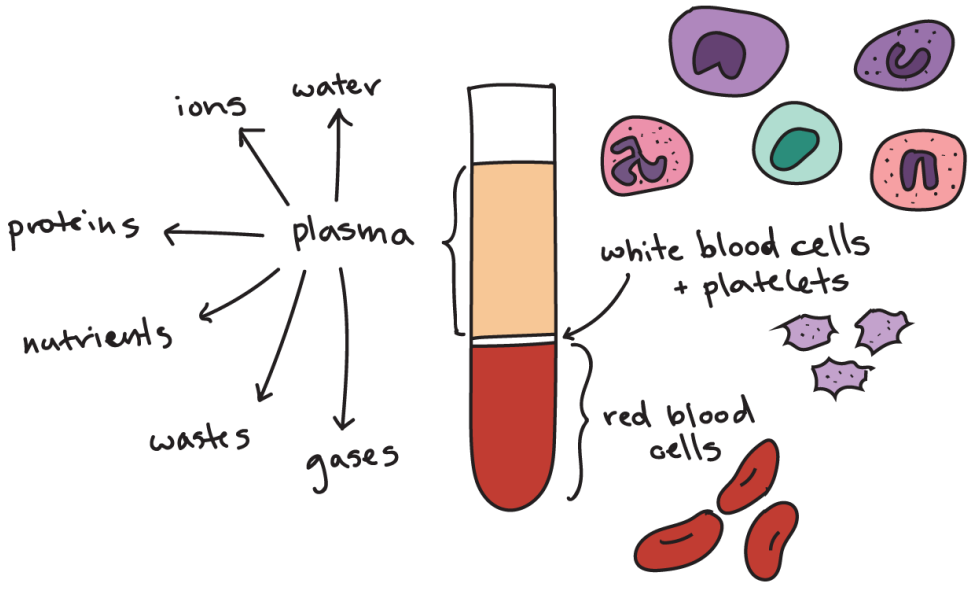
☐ I can describe the function of our blood

Blood

Red blood cells carry _____ around the body.

Plasma is mainly _____ with food and waste materials dissolved in it.

White blood cells play a key role in the _____ system.

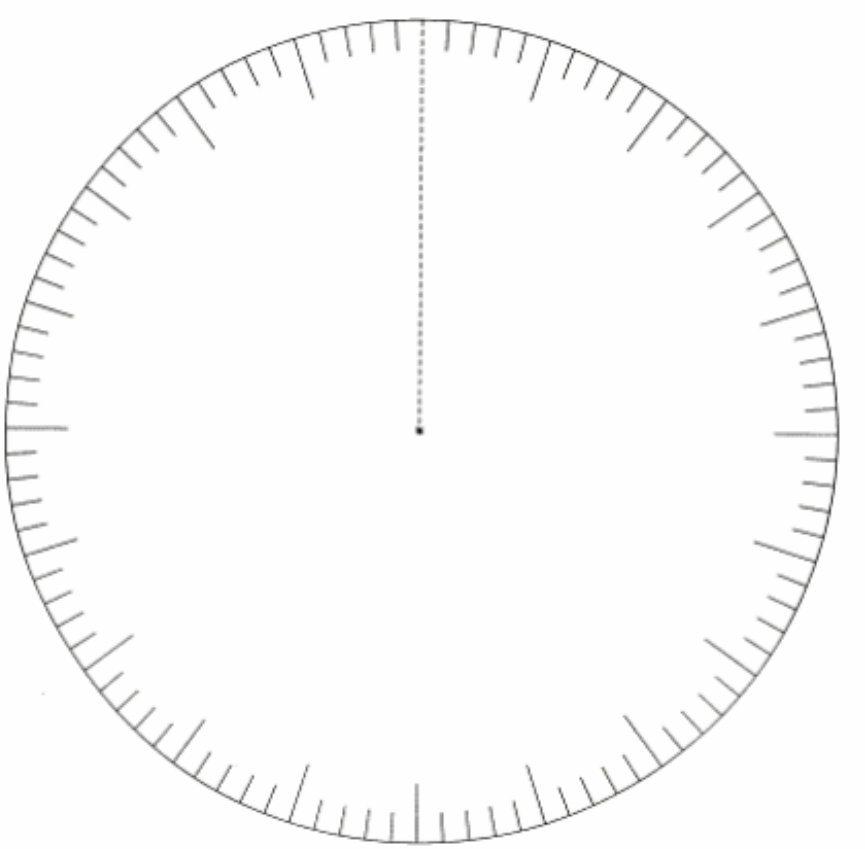


Blood Cell Basics – Activity

Remember that blood is made up of four different components:

- Plasma – 55%
- Red Blood Cells – 43%
- White Blood Cells – 1%
- Platelets – 1%

Using this information, complete the pie chart below.



Extension:

Write down three things you have learned about blood today.

_____

_____

Write down one question you now have.

_____

_____

Date: _____

The Heart

Starter

Rearrange the following anagrams and write down the definitions. (hint: they all relate to the blood and heart!)

1. Corbel Dolled	2. Decibel Howl Lot	3. A Lamps

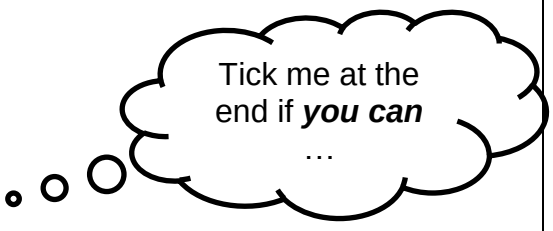
_____

_____

_____

Learning Intentions

- I am learning about the heart.



Success Criteria

☐ I can describe the role of the heart

☐ I can label a diagram of the heart

The heart

Think-Pair-Share

Can you think which components of the body make up the circulatory system?

_____

Video

Write down three things that you have learned from the Circulatory System video.

_____

_____

The Heart

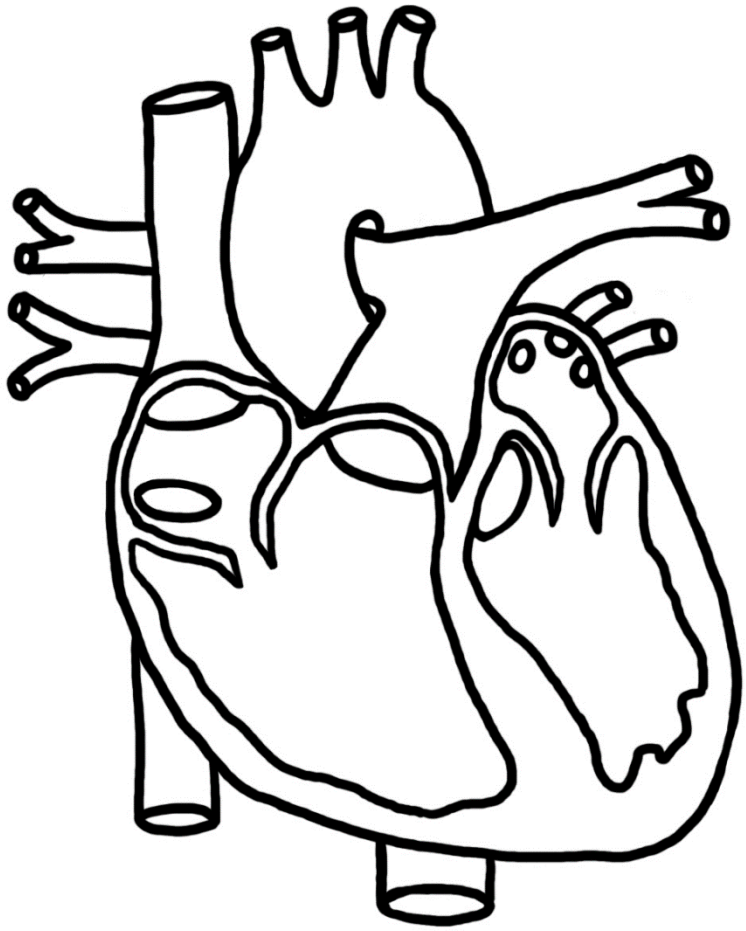
The heart is a muscular organ that _____ _____ around the body to _____ _____.

It contains _____ chambers and is connected to the rest of the body via blood vessels called _____ and _____.

The Heart Diagram

On the diagram below, your teacher will help you to:

1. Draw arrows and label the chambers
2. Colour in the chambers red and blue to show areas of high oxygen and low oxygen
3. Add a key



Extension task: Add labels to show the direction of blood flow.

Date: _____

The Flow of Blood

Starter

1. Name the four chambers of the heart.

_____

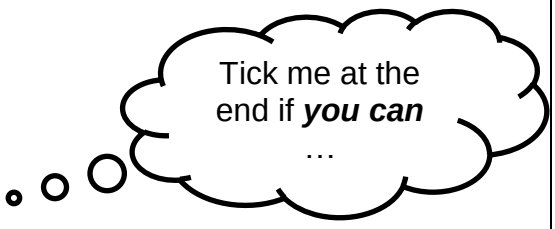
2. Explain why we coloured in the right side of the right side of the heart blue and the left side of the heart red.

_____

_____

Learning Intentions

- I am learning about the flow of blood



Success Criteria

- ☐ I can describe the flow of blood through the heart
- ☐ I can explain how oxygen travels around the body
- ☐ I can take part in a heart dissection

Flow of Blood Through the Body

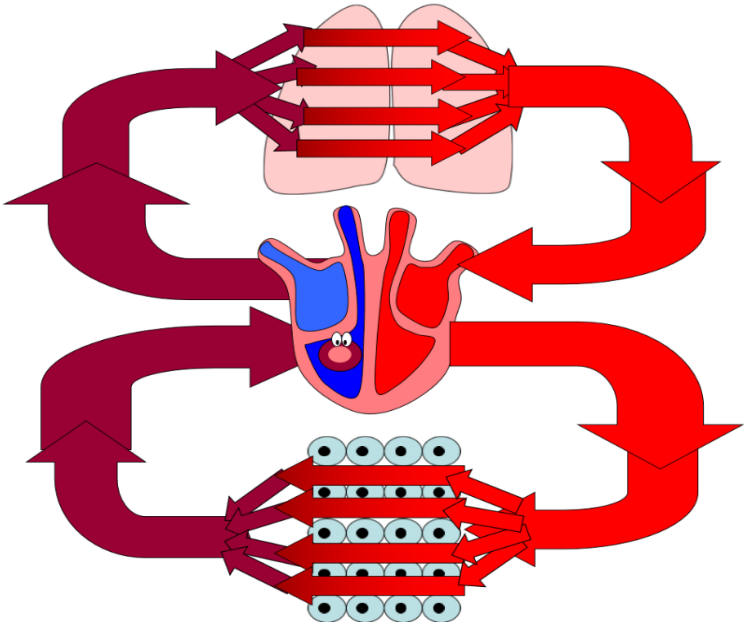
The blood flows into the lungs from the _____ side of the heart and collects _____ (from the air we breathe).

It then flows back into the _____ side of the heart where it is pumped out again to the _____ _____ _____ _____.

The blood delivers _____ to the body tissues to allow them to have _____.

Flow of Blood

Label the lungs, heart and body tissues on the diagram below.



Heart Dissection

Date: _____

Blood Vessels

Starter

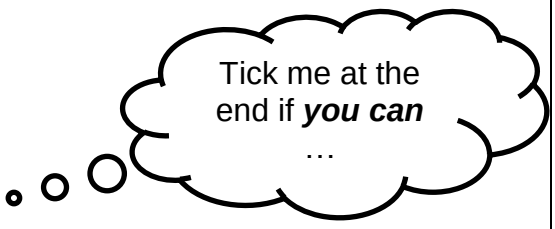
Use the word bank to complete the sentences below.

Word bank: blood, lower, upper, contracts

Blood enters the _____ chambers of the heart. The muscle tissue in the upper chambers _____ and pushes the blood into the _____ chambers. The lower chambers then contract and push the _____ out of the heart.

Learning Intentions

- I am learning about the structure and function of blood vessels.



Success Criteria

- ☐ I can describe the structure of blood vessels
- ☐ I can describe the function of blood vessels

Blood Vessels

Arteries carry blood **a**way from the heart.
Veins carry blood to (**in** to) the heart.
Capillaries connect veins to arteries. They are also very thin which allows materials to pass between the blood into tissues.

Blood Vessel Table

Blood Vessel	Function	Example
Artery		
Vein		
Capillary		

Heart Rate Investigation

Aim (What do you hope to find out?):

_____

_____

Materials & method:

- What will you do?

_____

_____

_____

- What equipment will you need?

_____

_____

- What is the independent variable? (The variable you are changing)

_____

- What is the dependent variable? (The variable you are measuring)

_____

- What variables will you keep the same?

_____

Hypothesis (What do you predict will happen?):

_____

_____

Results:

Type of Exercise	Heart Rate (Beats in 20 seconds)	Heart Rate (Beats per minute)

Conclusion:

_____

_____

Evaluation (If you were to do the investigation again, how could you improve your results?):

_____

_____

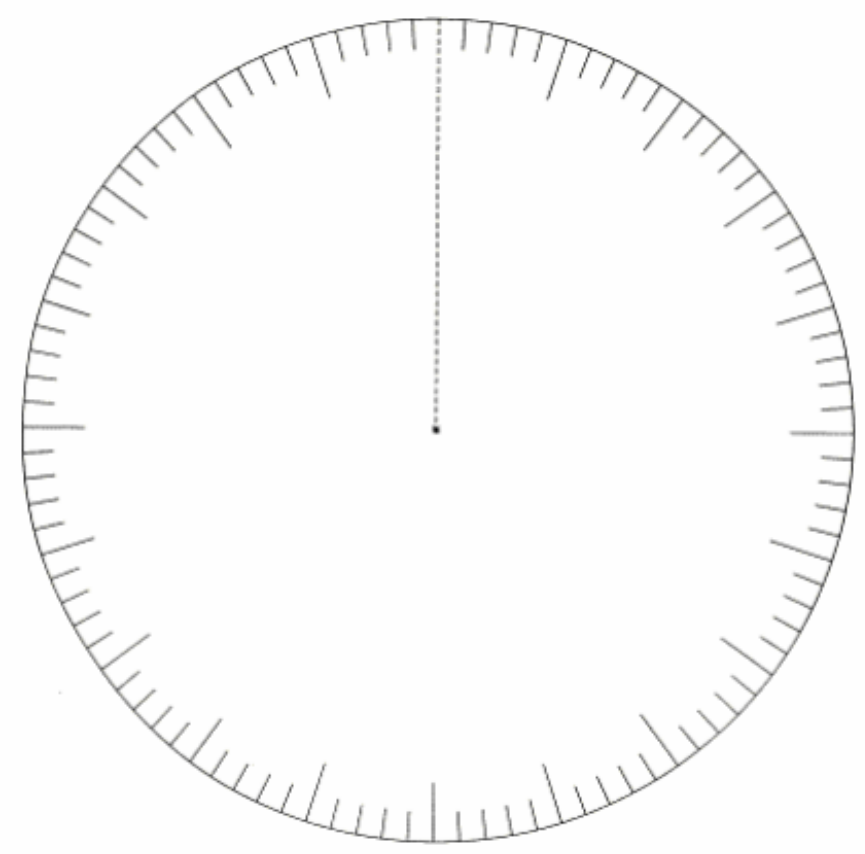
Extension Questions:

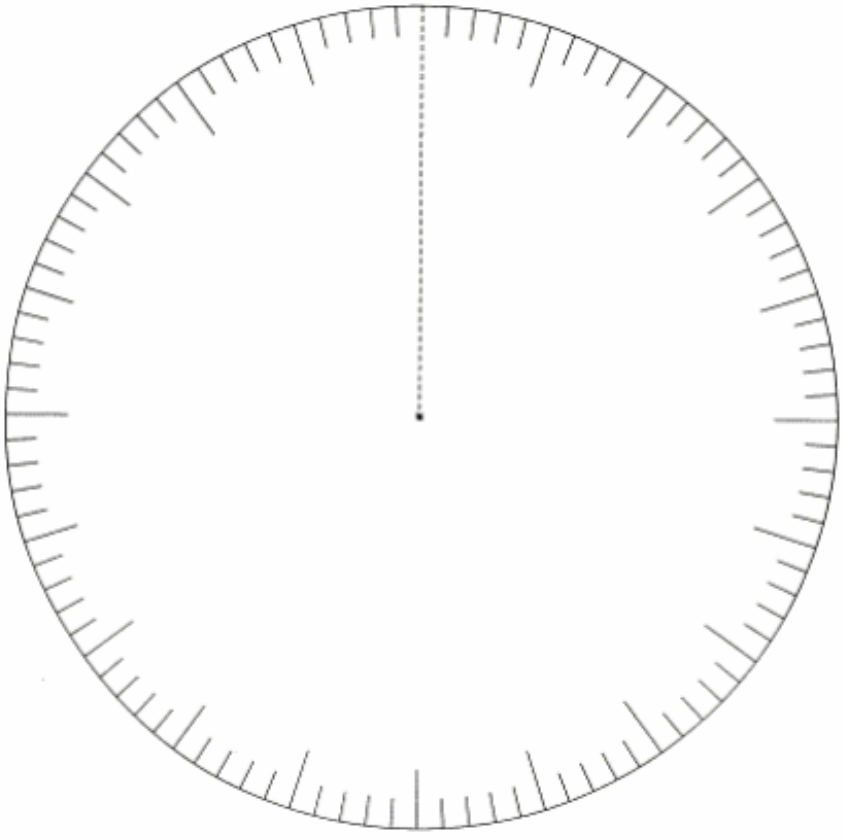
1. Amy's heart beats 46 times in 20 seconds at rest, calculate how many times her heart beats per minute.

2. Is Amy's heart rate healthy?

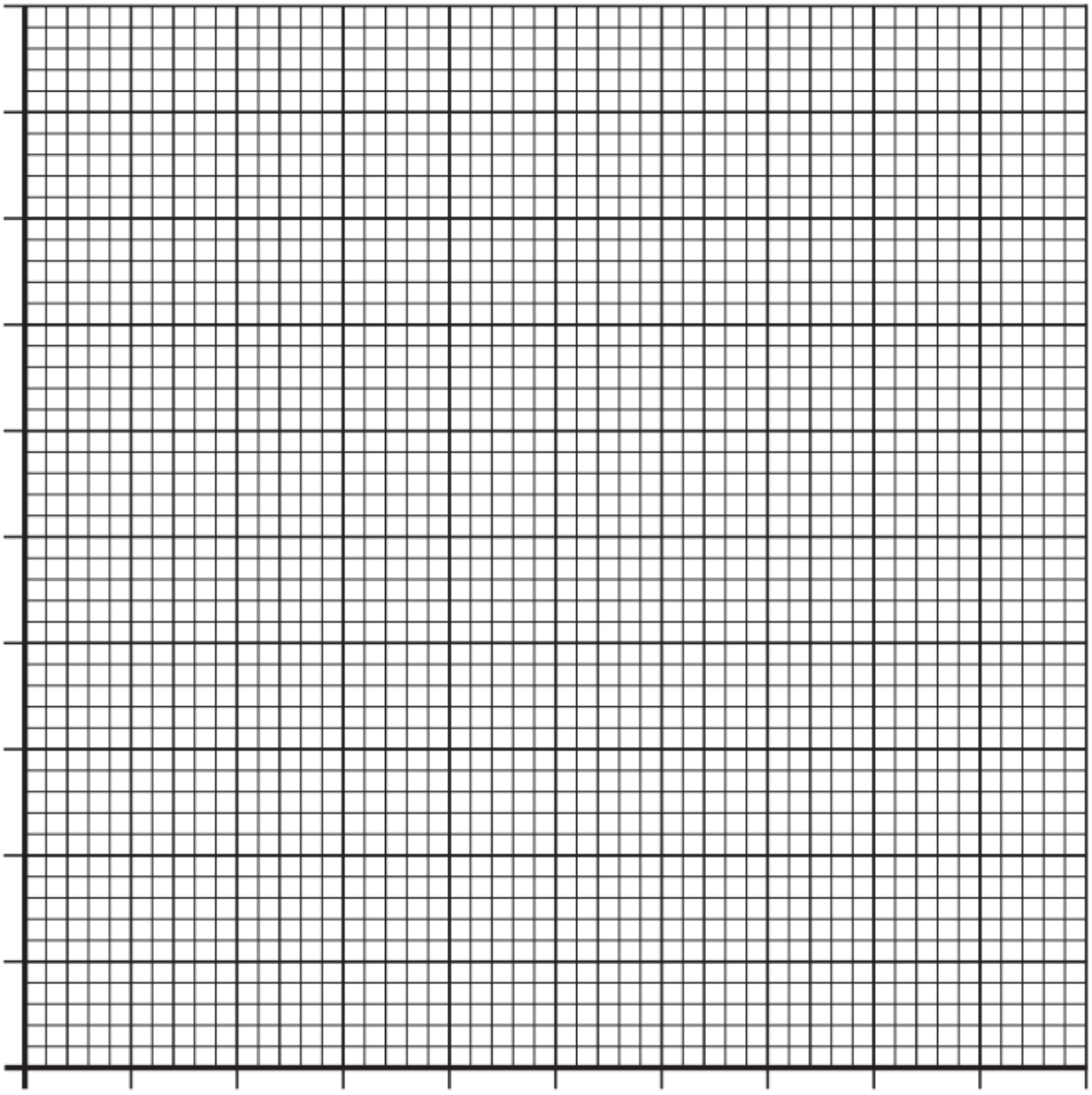
3. Suggest how Amy could improve her heart health.

Graph paper for numeracy tasks:





Graph paper for numeracy tasks:



Extension Tasks

Word Search

Human Body Systems

L A S I I O R B R P V T L D U M A I N I
T S G N U L O E N N S H N R X S S H U E
D T B H E A N S L E M G M E A S E I I C
C H E A R R R S O I M N T E R E P S D I
T N L L E M S G E T A L L L A X T T R C
O E S I I E I H C A I D R A C H U A B V
A R I N N H T E N E Y I U O I A M S U T
U V G G U O R A L U C S U M E L E T T T
J O I N T S U R R I N T E S T I N E S N
H U D I G E S T I V E U M R O N O A T I
B S S H I V R B M A A S S Y R G N H D I
O N T U E L S O I S B T H C O R T N T U
D E O T P M E N V L T U E R N S H S N G
Y E M S E I R E T R A M U T C E R S N E
R I A O L O S S E V R E N A N E E T A B
T E C T T E N S N I E V I M B L O O D A
I T H E S S T Y E K M R S H S U A U L R
N L L U K S T I Y S N C N I E G U C U A
E H L S M O O T H T U O M I I E L H G A
C T X M H O X Y G E N I A R B T N L E E

Oxygen	Joints	Smooth	Touch
Septum	Bones	Inhaling	Cardiac
Nervous	Mouth	Smell	Hear
Digestive	Rectum	Heart	Blood
Muscular	Exhaling	Arteries	Intestines
Skull	Taste	Nerves	Lungs
Brain	Body	Stomach	Veins

Draw a comic strip on one of the topics. Ask your teacher for ideas.

Extra Questions

1. What are the three parts of an animal cell?

_____

_____

2. State the function of the cell membrane.

_____

_____

3. State the function of the nucleus.

_____

_____

4. State the function of the cytoplasm.

_____

_____

5. Describe how you would prepare cheek cells under the microscope.

_____

_____

6. Name three types of body systems.

_____

_____

7. Describe the function of the circulatory system.

_____

_____

8. Describe the levels of organisation in the body, starting from cells.

_____

_____

9. Give one example of a specialised cell and state how it is suited to its job.

_____

_____

10. Name the four chambers of the heart.

_____

_____

11. Explain why we colour the right side of the heart blue and the left side of the heart red.

_____

_____

12. Describe what happens to your heart beat after exercise.

_____

_____

13. Explain how to calculate your heart rate.

_____

_____

Colouring Sheet

Color the Animal Cell