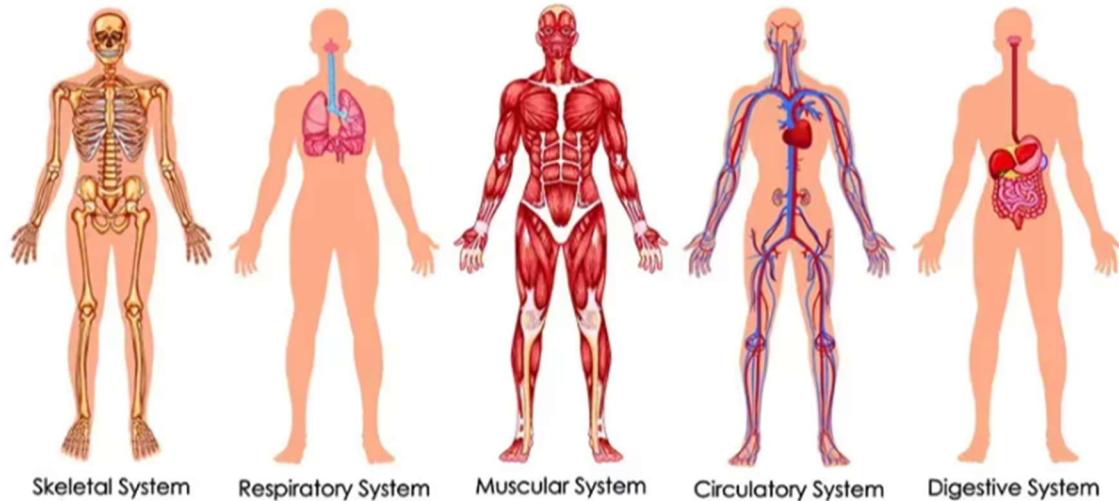


Kirkcaldy High School



BGE Science Medical Science Body Systems

Name: _____

Class: _____

Teacher: _____

Expectations and Outcomes Learner Evaluation

Topic: Body Systems

Experience and Outcomes	Date Completed (dd/mm/yy)	Evaluation How happy are you with it? (😊 ? 😞)
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		
I can state the parts of the respiratory system		
I can explain how air enters the lungs		
I can explain how air enters the blood		
I can describe the function of each part of the respiratory system		
I can state the main functions of the skeleton		
I can name some of the main bones of the skeleton		
I can state the name of joints in the body		
I can state the types of joints in the body		
I can explain how the types of joints move		
I can define the 3 types of muscle.		

I can describe how muscles join to bone		
I can describe how muscles work		
I can undertake an experiment to test muscle fatigue		
I can explain why muscles become tired		
I can name the 4 types of teeth.		
I can describe the job of each type of tooth.		
I can describe the purpose of teeth.		
I can identify different parts of the tooth.		
I can describe problems that can affect our teeth		
I can state what plaque is.		
I can explain what plaque does to our teeth.		
I can state the definition of digestion.		
I can state which organs make up the digestive system.		
I can state the role of enzymes in digestion.		
I can carry out an investigation on digestive enzymes.		
I can state the name of the main parts of the male and female reproductive systems.		
I can describe the functions of the main parts of the male and female reproductive systems.		
I can list changes that happen to boys during puberty.		
I can list changes that happens to girls during puberty.		
I can list changes that happen to both boys and girls during puberty.		
I can state the definition of fertilisation.		
I can name the male and female parts involved in fertilisation.		
I can describe how a foetus develops.		
I can describe the growth rate of the embryo in the womb.		

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.

Success Criteria

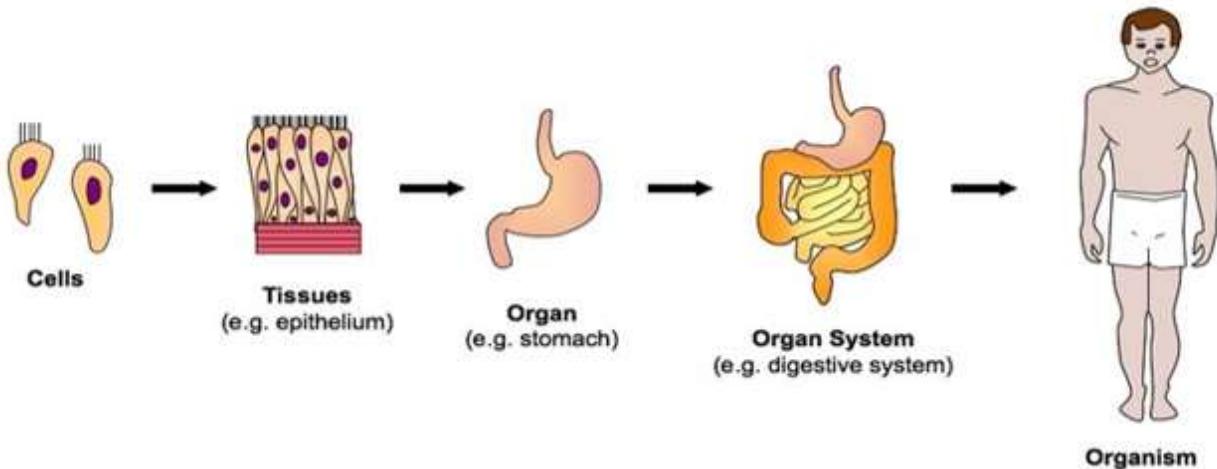
I can describe how the body is organised

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

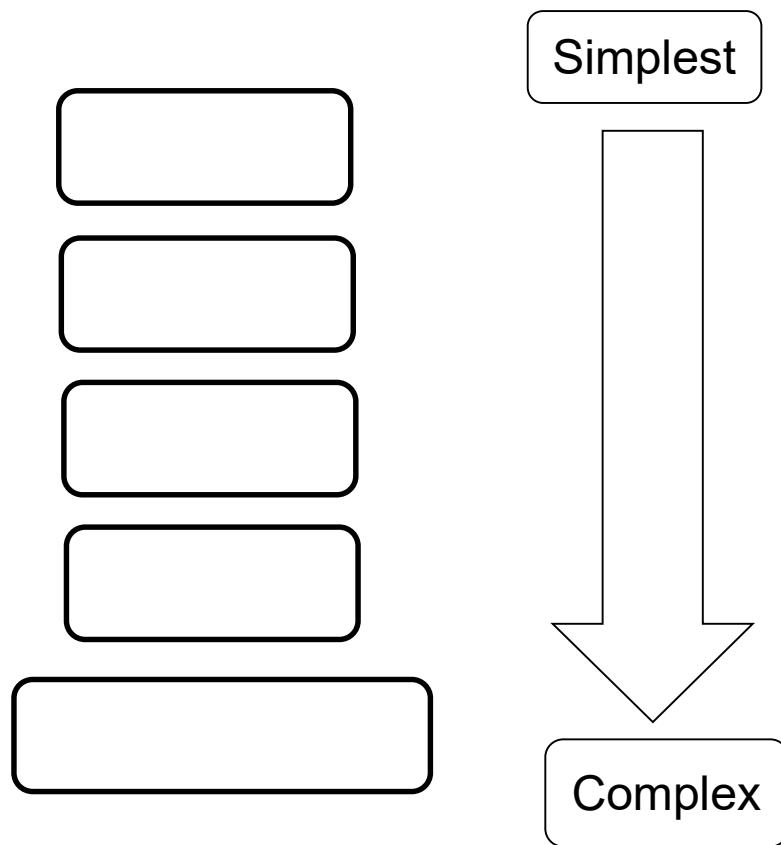
Tick me at the end if ***you can***
...

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**.

Blood

Starter

Write down three different cell types and describe their structure.

Learning Intentions

- I am learning about Blood.

Success Criteria

- I can state the components of blood
- I can describe the function of our blood

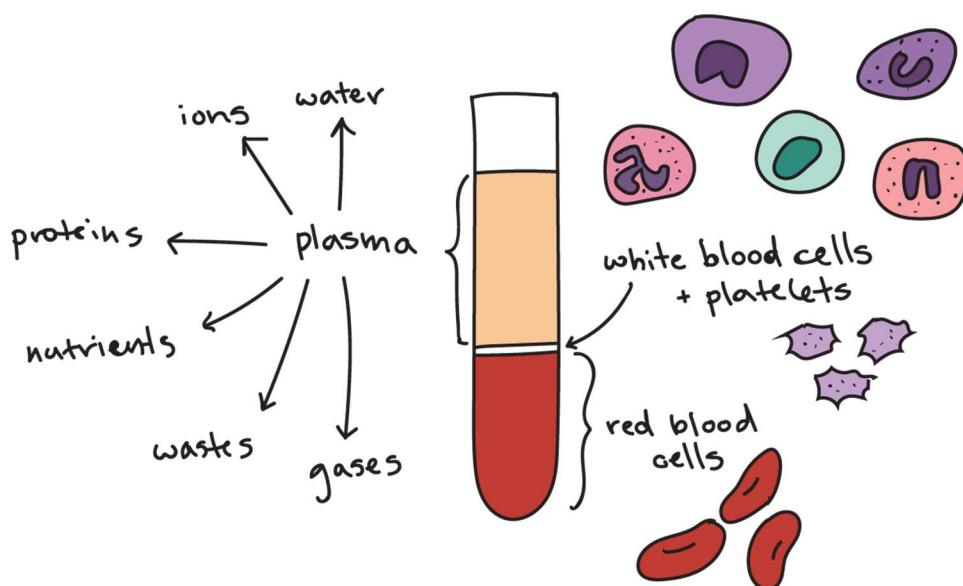


Blood

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.

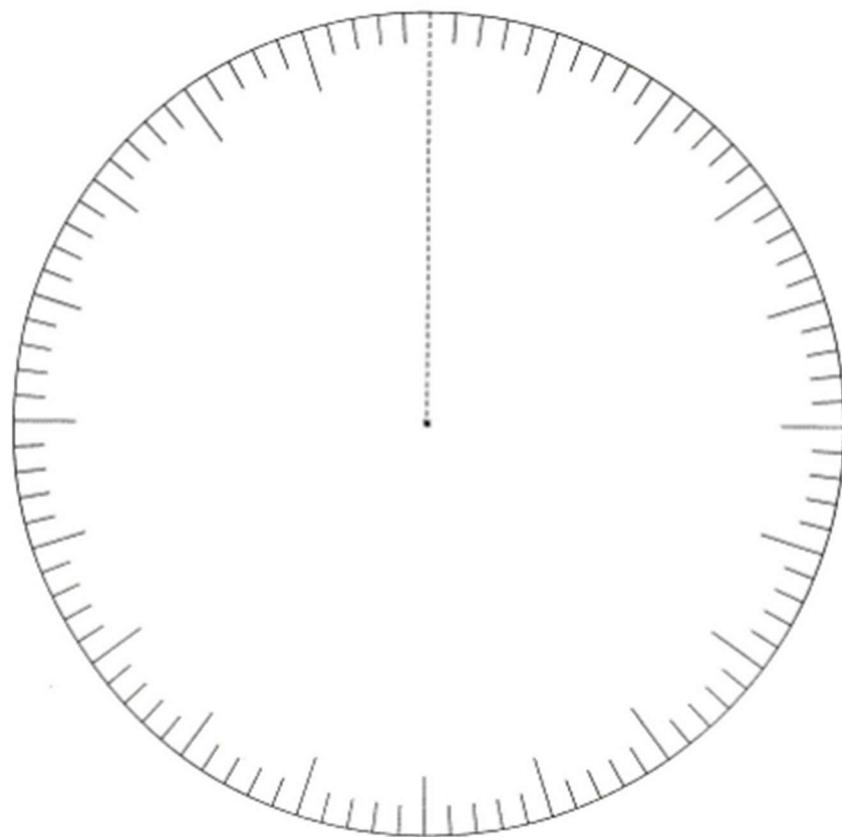


Blood Cell Basics – Activity

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.

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

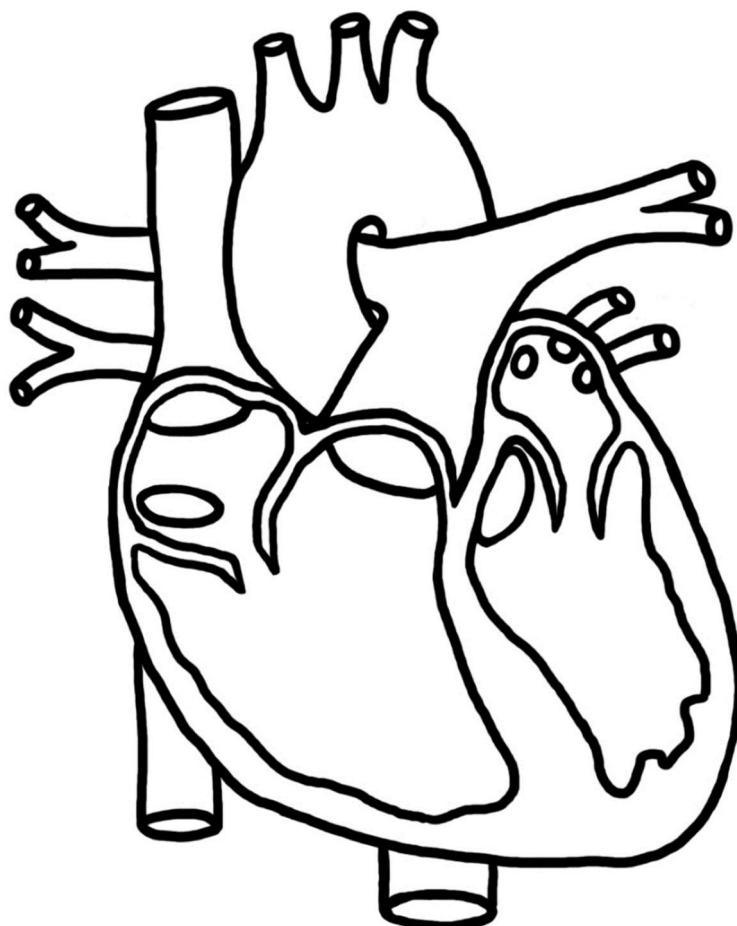
The heart is a muscular organ that _____ around the body to _____.

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.

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

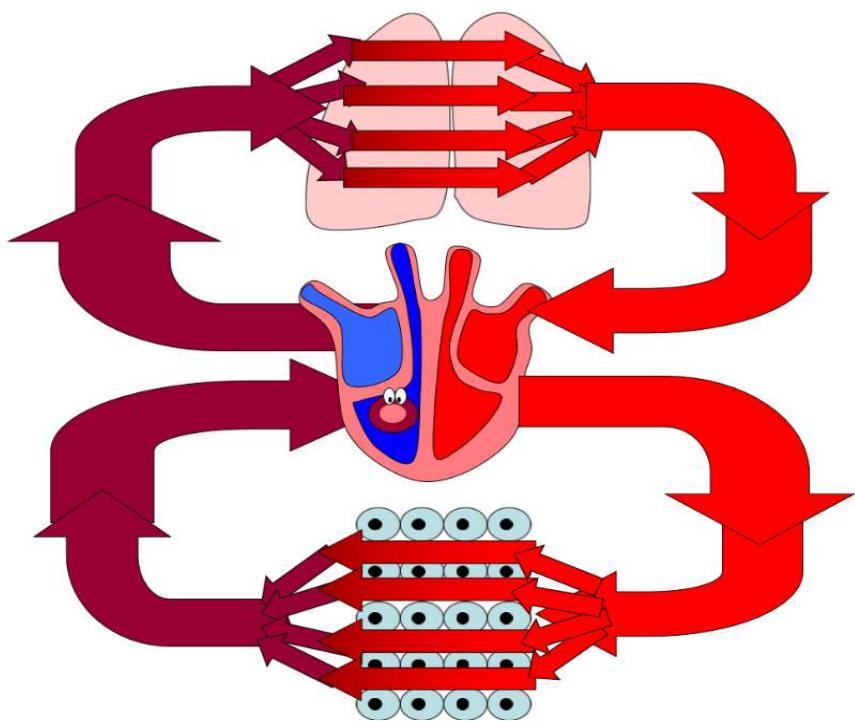
The blood flows into the lungs from the _____ side of the heart and collects _____ (from the air we breathe).

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



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 away 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?

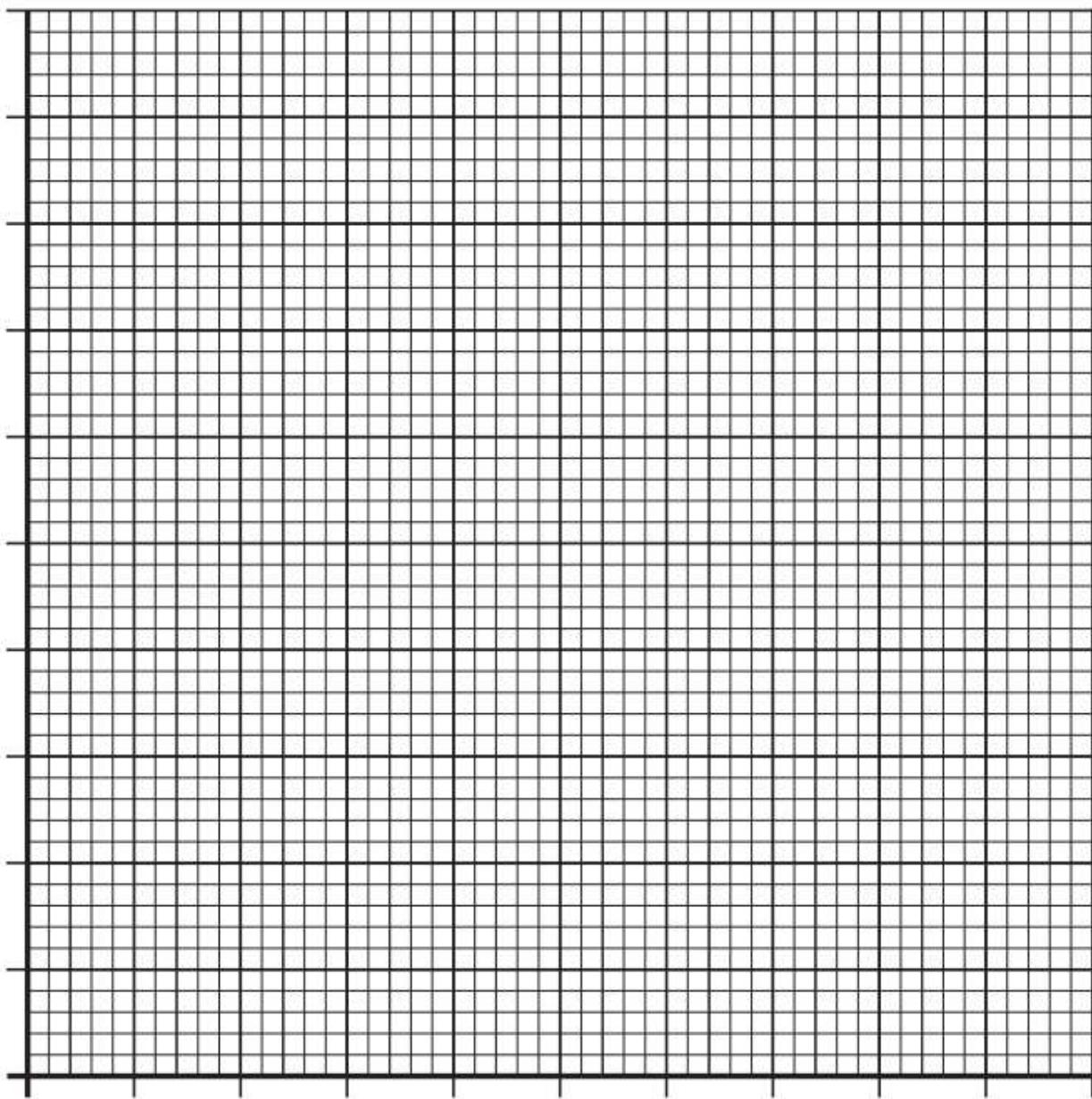
Hypothesis (What do you predict will happen?):

Results:

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

Graph:

Draw a bar chart to show how the type of exercise affects your heart rate (bpm).

**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.

The Lungs

Starter

Did you know...your nostrils take turns taking breathing air in and out?

...Prove it

Learning Intentions

- To learn about the respiratory system
- To learn about how we breath.

Success Criteria



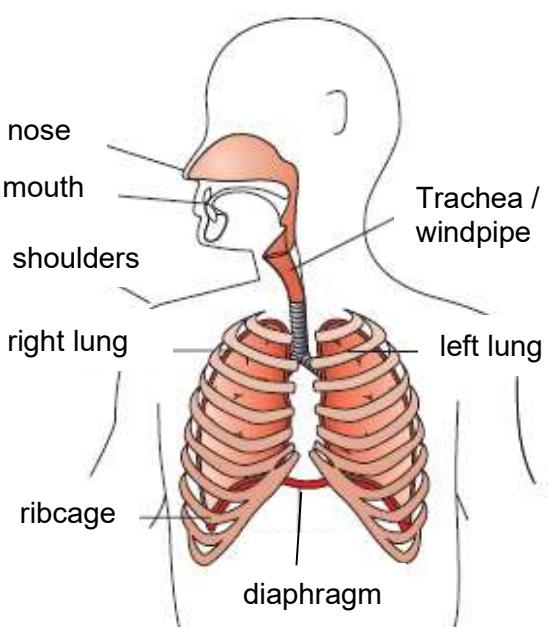
- I can state the parts of the respiratory system
- I can explain how air enters the lungs
- I can explain how air enters the blood
- I can describe the function of each part of the respiratory system

The Respiratory System

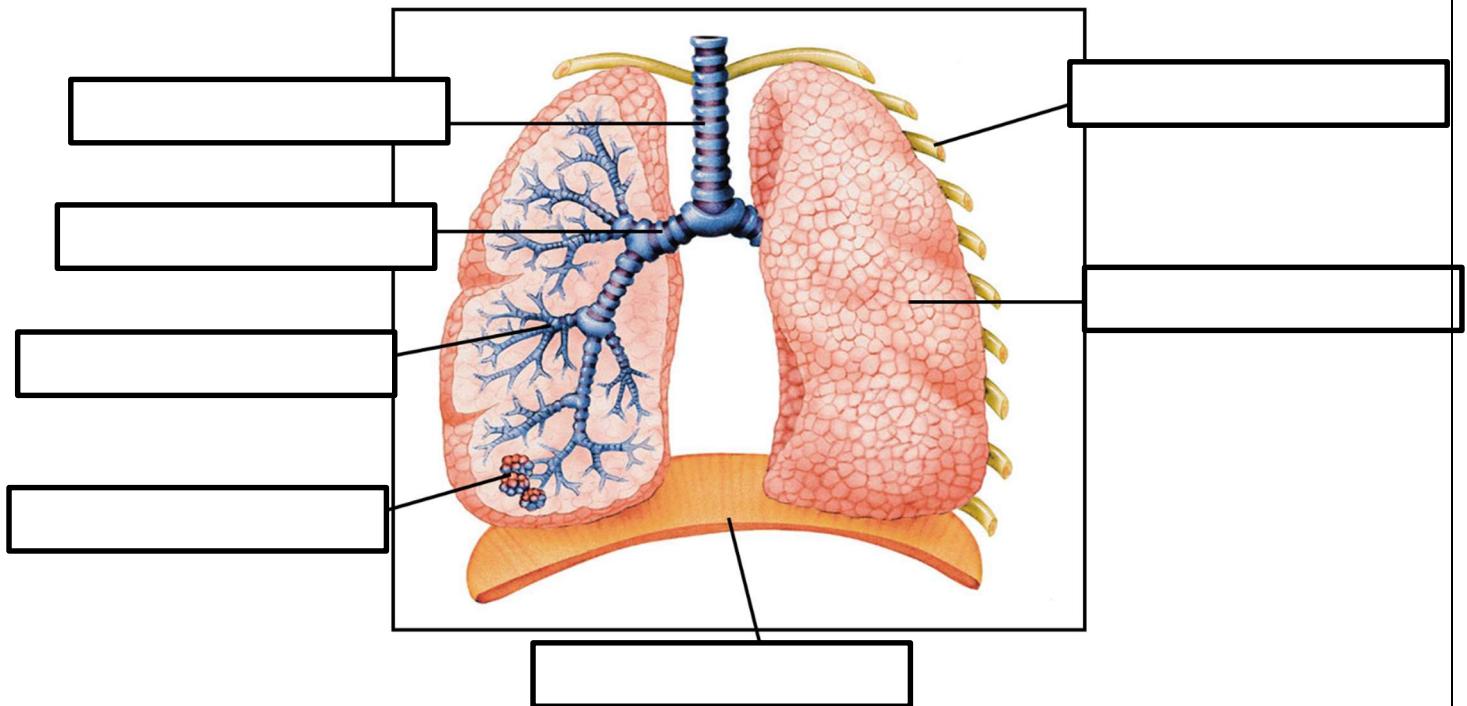
The lungs are the organs of gas _____.

Our cells need the oxygen from the air and we must get rid of the _____ product _____.

Air enters the breathing system by the nose or mouth.



Structure of the lungs

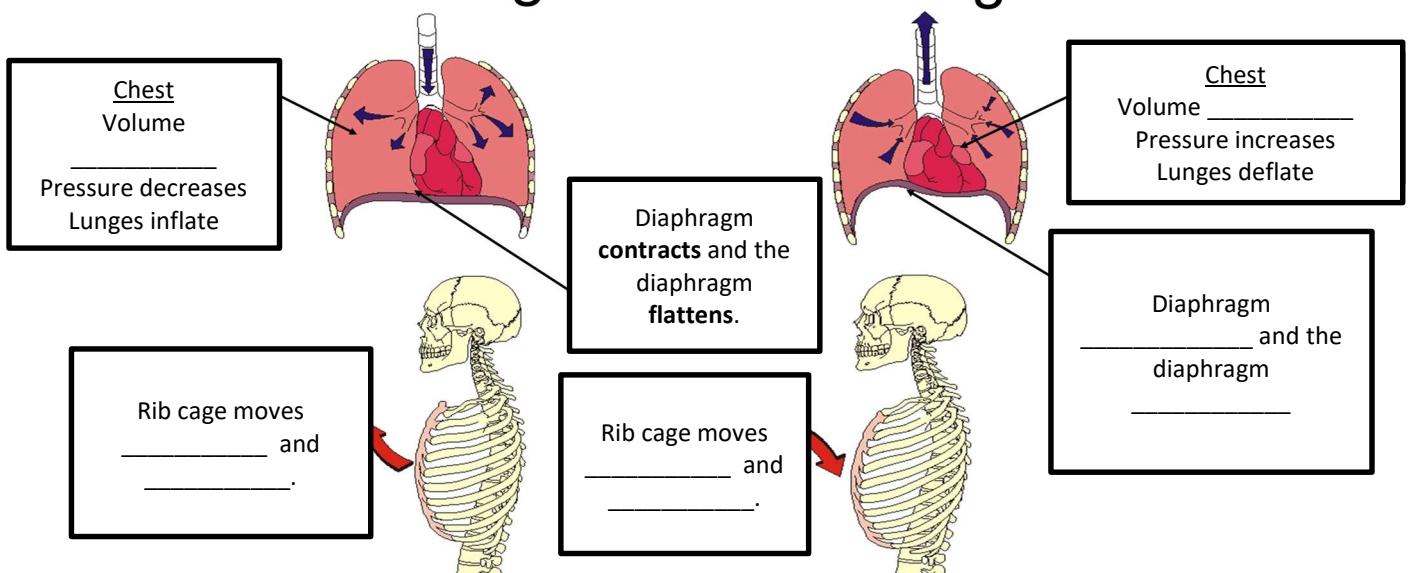


The windpipe and the bronchi have rings of _____ in them. This makes sure that they stay open at all times.

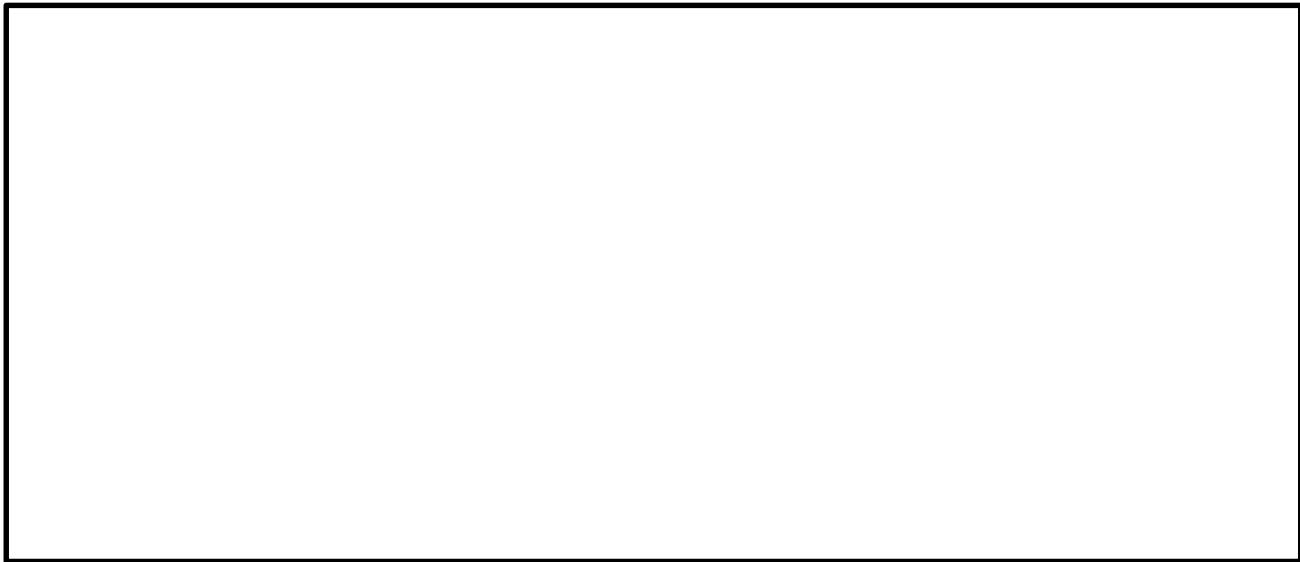
Function of the diaphragm

Breathing In

Breathing Out



Lung Dissection



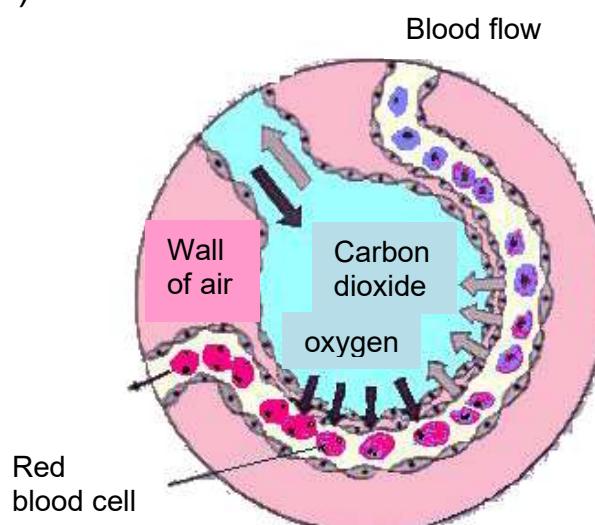
The air sacs

The air breathed in reaches the air sacs and is full of _____.

The air sacs are surrounded by _____.

As the blood flows through the vessel:

- _____ moves from the air sac to the blood.
- _____ moves from the blood to the air sac (so we can breath it out)



The Skeleton

Starter

We all have a skeleton, what do you think the job of the skeleton is?

Learning Intentions

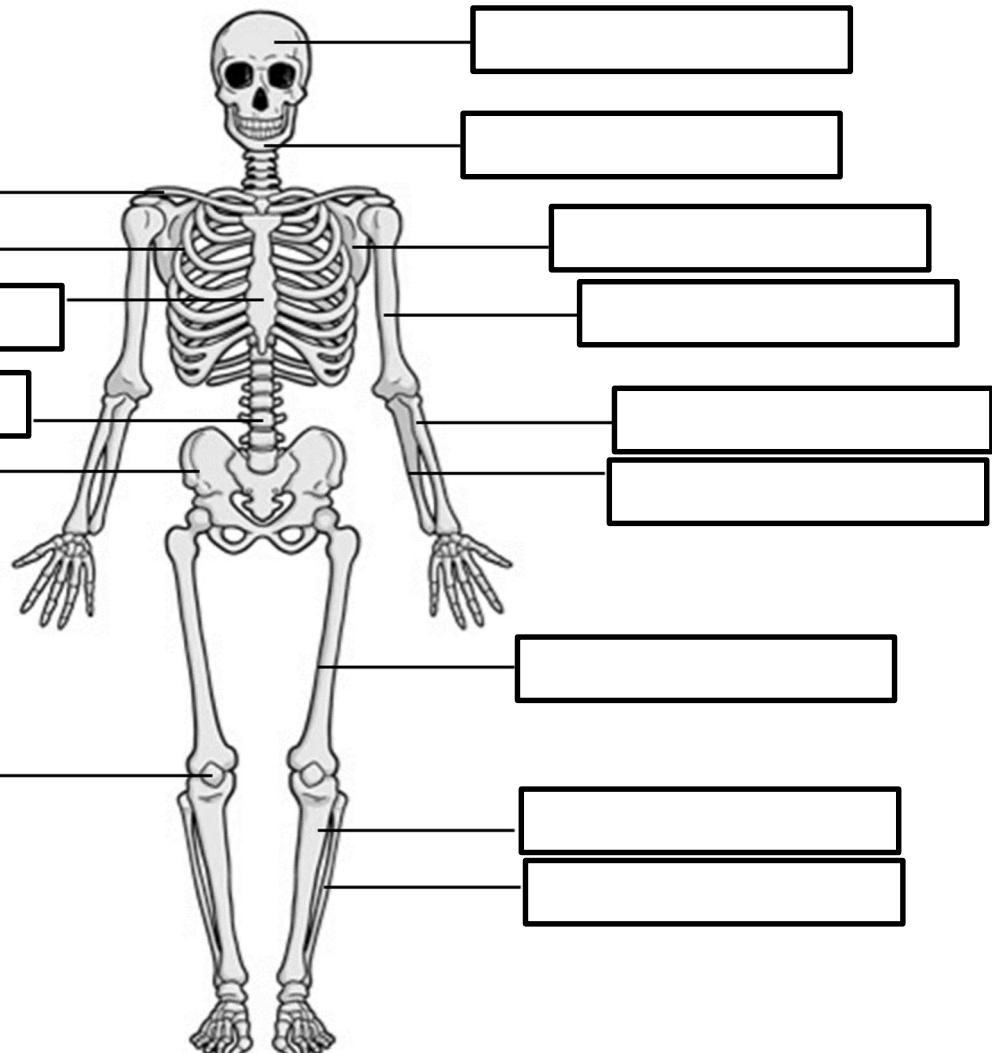
- To find out what the main functions of the skeleton are
- To be able to name some of the main bones of the skeleton

Success Criteria

I can state the main functions of the skeleton

I can name some of the main bones of the skeleton

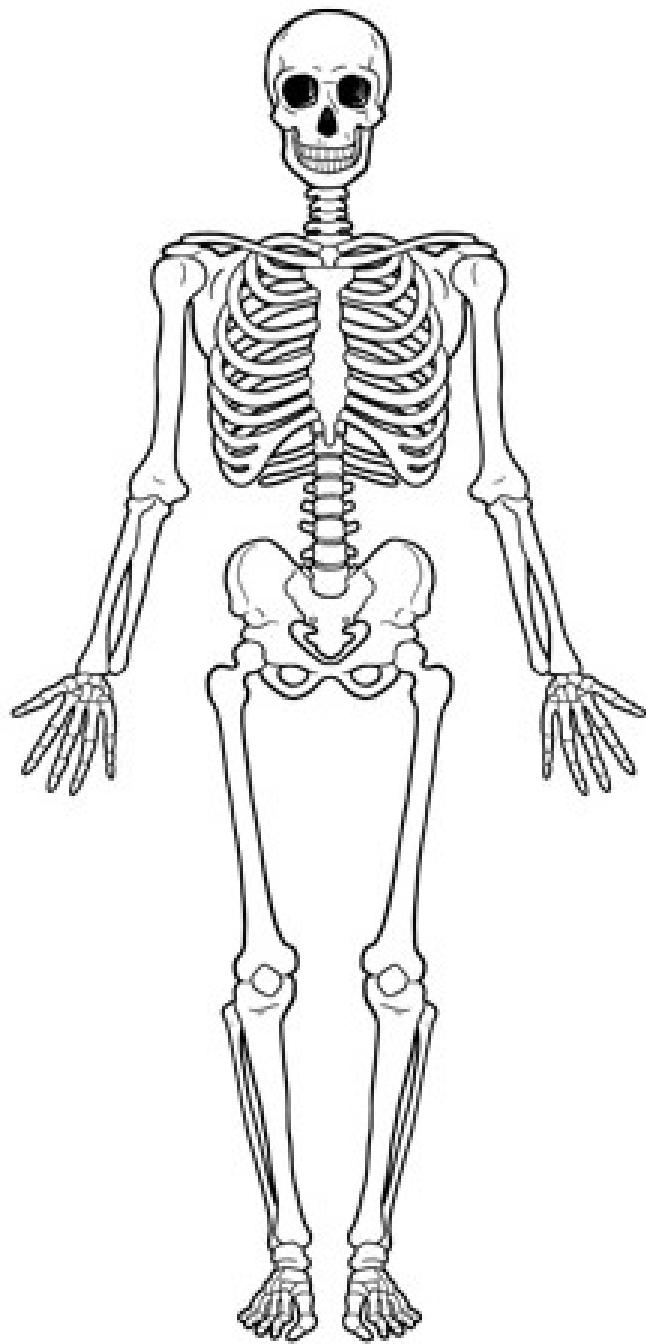
Tick me at the end if ***you can***
...



Functions of the skeleton

The three main functions of the Skeleton are _____, _____ and _____.

Now choose 3 colours and shade the bones in our body which provide the 3 main functions. *Create a colour key below the diagram.*



Colouring key:

Optional Mr. Skeleton

Joints

Starter

Can you think of any joints in the body?

Learning Intentions

- To find out what a joint is
- To find out the different types of joint in the body

Success Criteria

Tick me at the end if **you can**

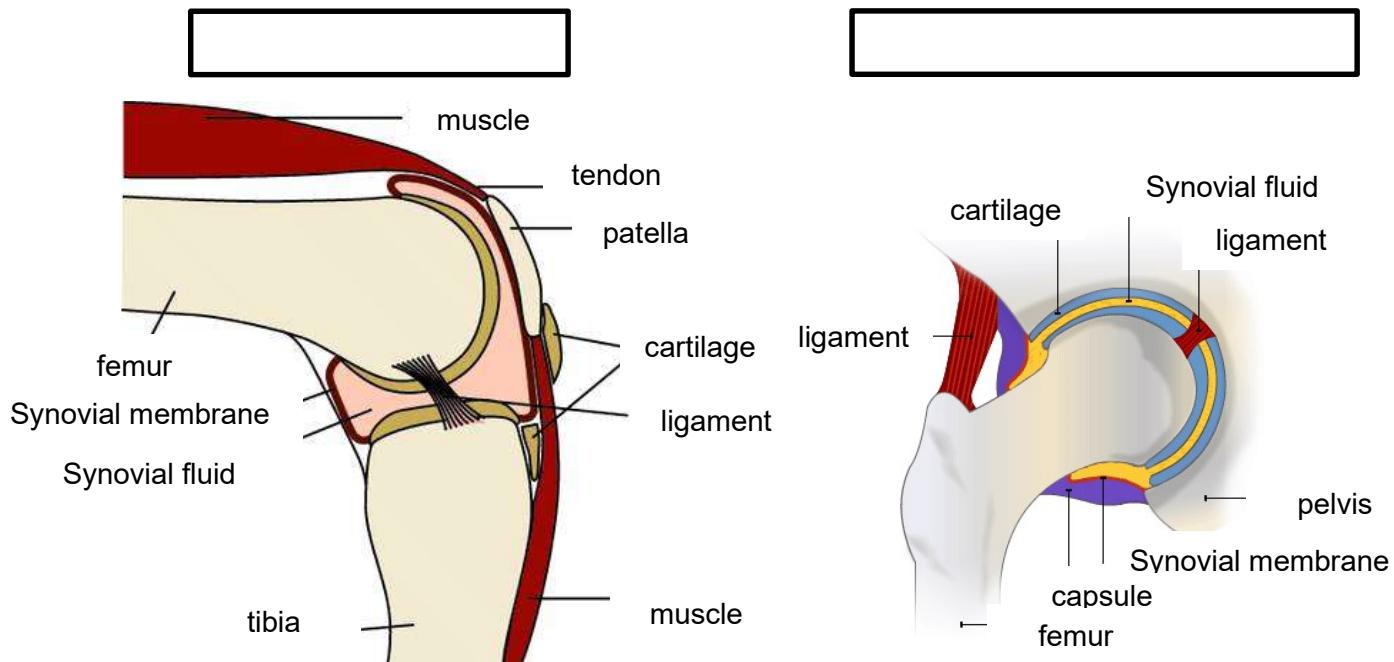
I can state the name of joints in the body

I can state the types of joints in the body

I can explain how the types of joints move

Types of Joints

The meeting point between two bones is called a Joint. There are two different types of joint:



Type of Joint	Movement of Joint	Examples of Joint

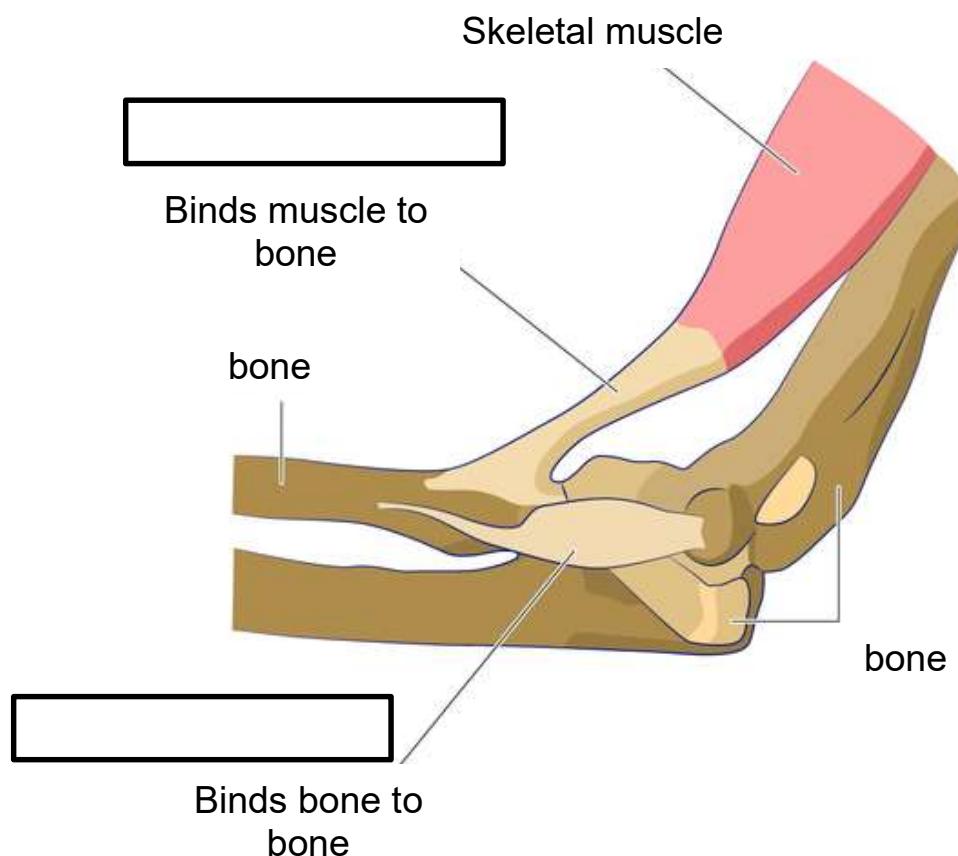
Cartilage – covers the ends of bones. It has two functions:

- Acts as a _____ in joints
- It is smooth so _____ when the joints move.

Ligaments – hold _____ together at a joint (connects **bone to bone**).

They hold the joint in place yet allow movement because they are slightly _____.

Tendon versus ligament



Muscles

Starter

Can you name any of the muscles in the body:

Learning Intentions

- To name the 3 types of muscle.
- To describe how muscles join to the bone.
- To describe how muscles work.

Success Criteria

I can define the 3 types of muscle.

I can describe how muscles join to bone

I can describe how muscles work



Types of muscles

There are 3 main types of muscle:

- _____ muscle (muscles in intestines)
- _____ muscle (heart muscle)
- _____ muscle (muscles that attach to skeleton)

Tendons

Tendons join muscle to bone.

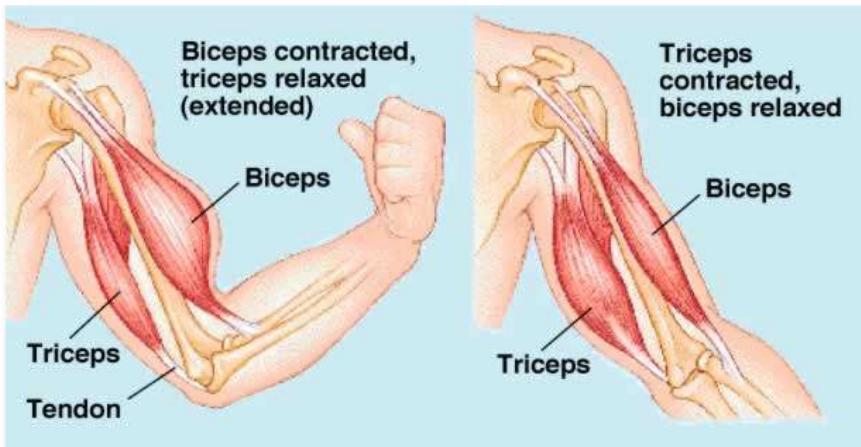
Tendons are _____ (they do not stretch). This means that all the movement of the muscle will be passed on to the bone.



Muscles working together

Antagonistic pairs

Muscles work in _____ pairs. They are said to be antagonistic to one another. Muscles _____ (get shorter and fatter) and _____ (longer and thinner)



Chicken wing Dissection



Muscle Fatigue

Starter

What did you learn from the chicken wing dissection?

What do you think happens to your muscles when you exercise for a long period of time?

Learning Intentions

- To find out what happens to our muscles when we exercise for a long period of time

Success Criteria

I can undertake an experiment to test muscle fatigue

I can explain why muscles become tired

Tick me at the end if **you can**



Muscle fatigue

This is when a muscle loses its ability to _____ as a result of over activity.

- It will happen when there is a lack of _____ to the muscle
- There is a build-up of _____.

Experiment

Aim – To investigate how grip strength/strength can be affected by time.

Method – In pairs go around the room trying each of the muscle fatigue exercises.

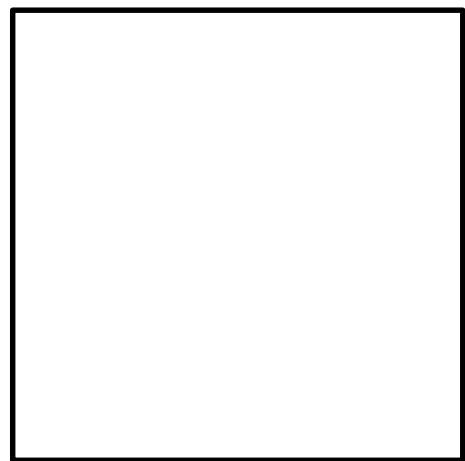
Conclusion:

Date: _____

Teeth

Starter

1. Draw your idea of the perfect tooth in the box.



2. What shape is it? Why is it this shape?

3. How many teeth do you think you have?

Learning Intentions

- To name the 4 types of teeth
- To describe the job of each type of tooth.
- To describe the purpose of teeth.

Success Criteria

- I can name the 4 types of teeth
- I can describe the job of each type of tooth.
- I can describe the purpose of teeth.



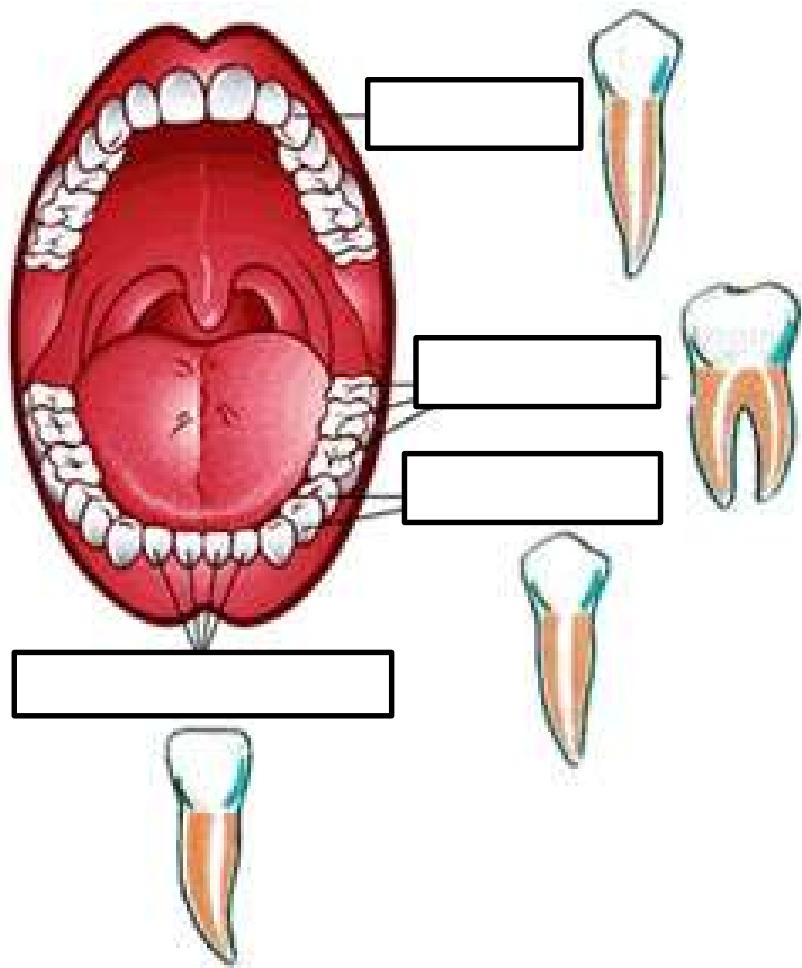
Types of teeth

A normal adult mouth has _____ teeth.

There are _____ different types of teeth which do different jobs.

Teeth break down food _____.

There are 4 types of teeth - _____, _____, _____ and _____.



Type of Tooth	Function
Incisor	
Canine	
Premolar	
Molar	

Parts of the Tooth

Starter

1. Name the four types of teeth

2. Explain what each type of tooth does

Learning Intentions

- To find out the different parts that make up our teeth.
- To find out about problems that can affect our teeth

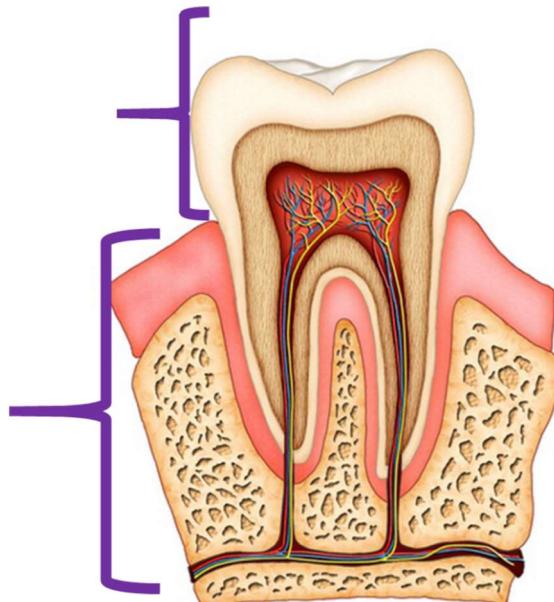
Success Criteria

I can identify different parts of the tooth

I can describe problems that can affect our teeth.

Tick me at the end if ***you can***
...

Anatomy of a tooth



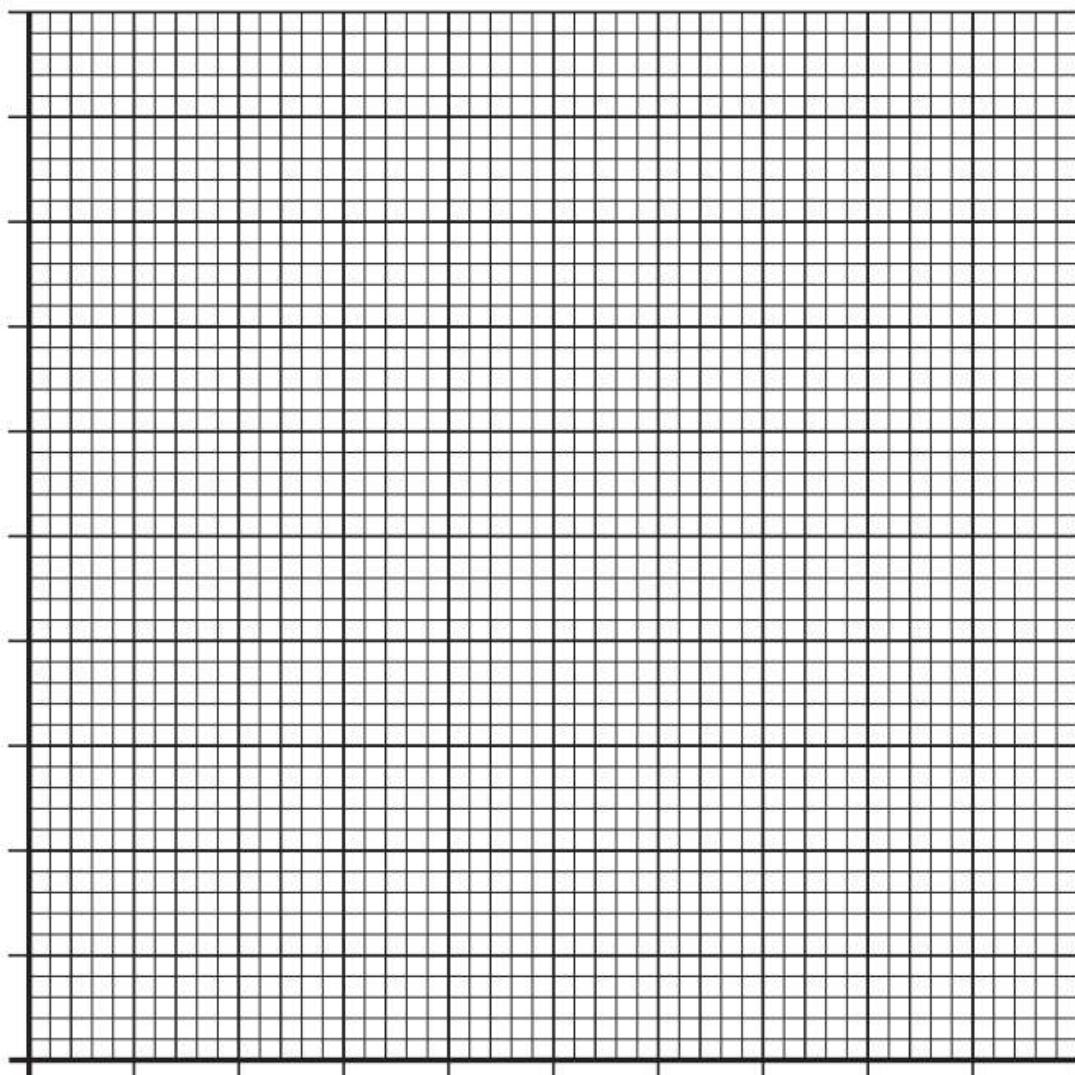
_____ is a very hard substance which covers the tooth.

_____ is a soft substance under the enamel

A survey was carried out to find out how long adults have gone without visiting the dentist. The results were as follows:

Length of time between dentist visit	Percentage of adults (%)
Less than 1 year	26
1-2 years	25
3-4 years	22
5-10 years	13
More than 10 years	12

Present the above information as a bar chart



Toothpaste

Starter

1. Why do we brush our teeth?

2. What happens if we don't?

Learning Intentions

- To find out what plaque is.
- To find out what it does to our teeth.

Success Criteria

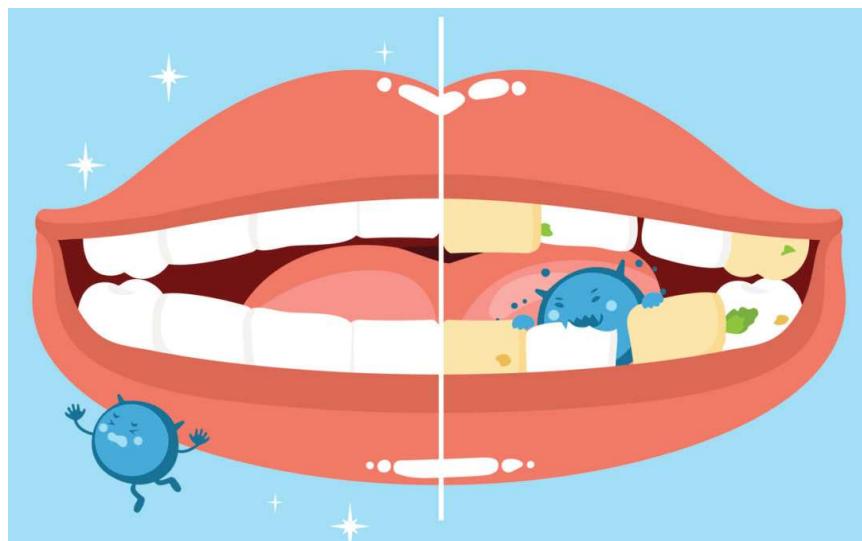
I can state what plaque is.
 I can explain what plaque does to our teeth.



How does toothpaste work?

Bacteria in plaque produce _____ which cause tooth decay.

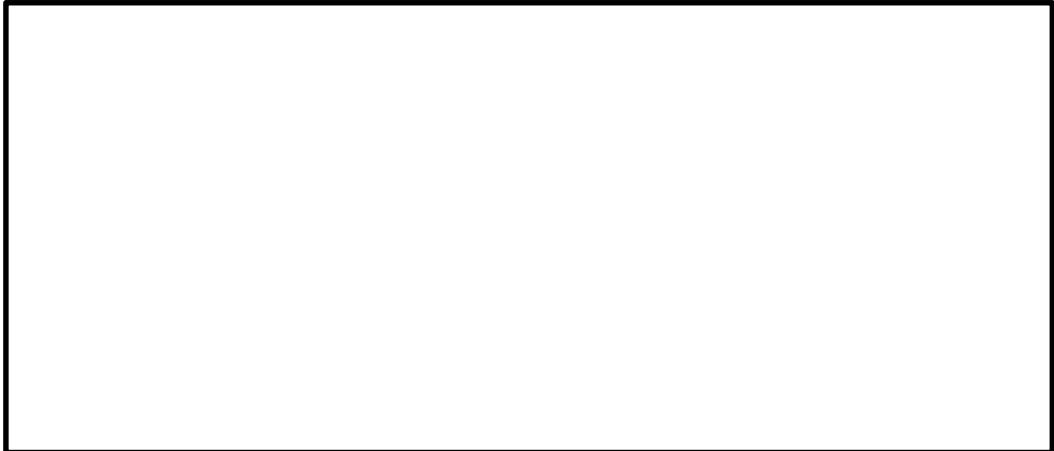
Toothpaste contains an _____ which _____ the acids.



Toothpaste Experiment

Aim: _____

Method: _____



Results: (which toothpaste was better?)

Conclusion: (*remember your aim*)

What have I found out from my experiment?

Evaluation:

What could I have done to improve my experiment?

Digestion

Starter

Brainstorm what you already know about digestion

Learning Intentions

- To find out the definition of 'digestion'
- To learn which organs make up the digestive system

Success Criteria

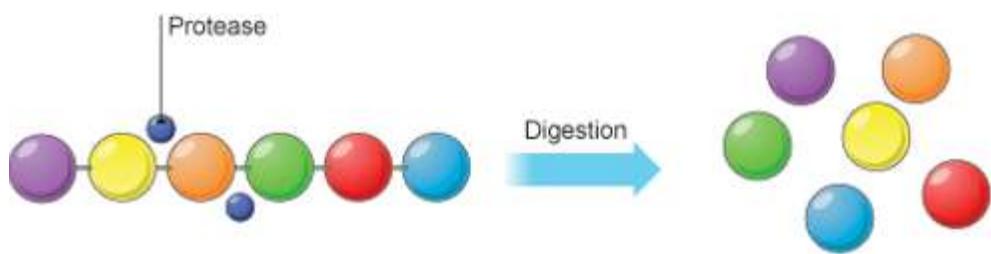
I can state the definition of digestion.

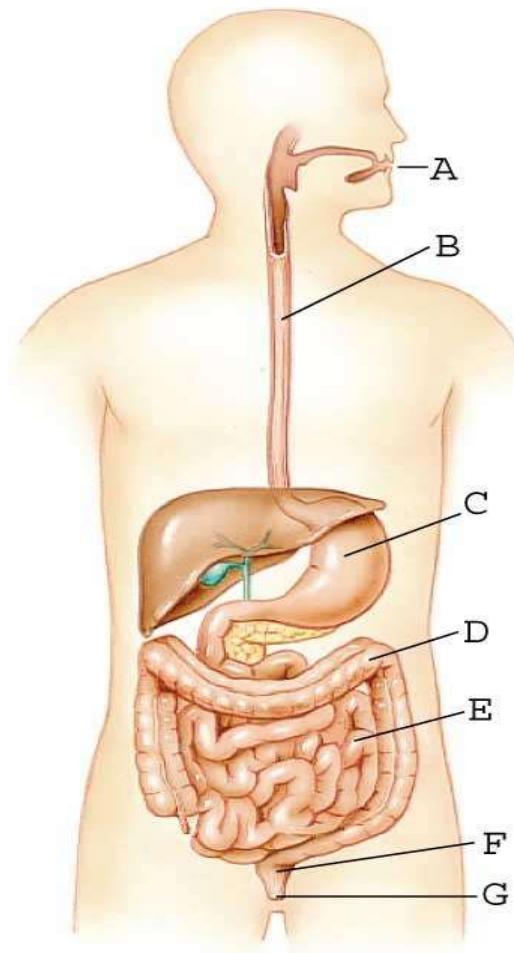
I can state which organs make up the digestive system

Tick me at the end if **you can**
...

Definition of digestion

Digestion is the physical and chemical breakdown of _____ food particles into _____ food particles so that they can be absorbed into the blood.





<u>Organ</u>	<u>How it helps break down food</u>
Mouth	
	Carries food from mouth to stomach
Stomach	
	Breaks food down from large insoluble molecules to small soluble molecules, and absorbs them into the blood
Large intestine	
	Stores solid waste
Anus	

Gums to bums demonstration...

Digestive enzymes

Starter

1. Name the parts labelled A to D.

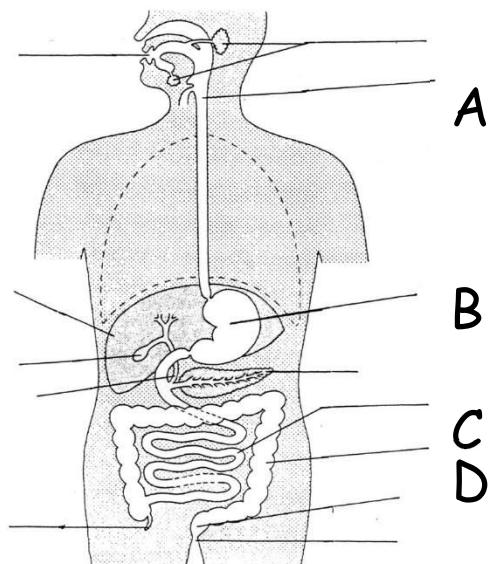
A. _____

B. _____

C. _____

D. _____

2. What is meant by 'digestion'?



Learning Intentions

- To find out about the role of enzymes in digestion
- To investigate digestive enzymes

Success Criteria

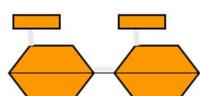
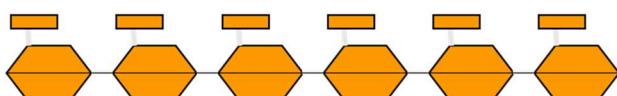
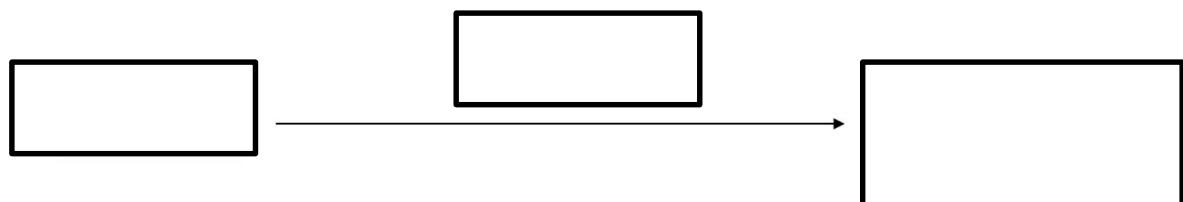
I can state the role of enzymes in digestion

I can carry out an investigation on digestive enzymes



Enzymes

- Enzymes are molecules made in all cells that help _____.
- Enzymes are needed to _____ break down food.



Investigating digestive enzymes

Aim: _____

Method: _____



Results:

Test tube	Starch test (✓ / x)	Sugar test (✓ / x)
1		
2		
3		

Conclusion: (remember your aim)

What have I found out from my experiment?

Test tube 1 contained _____ because ...

Test tube 2 contained _____ because ...

Test tube 3 contained _____ because ...

Reproduction

Starter

1. List the three parts of an animal cell.

2. What is the name of the **male** reproductive cell?

3. What is the name of the **female** reproductive cell?

Learning Intentions

- I am learning about the parts of the body used in reproduction.

Success Criteria

I can state the name of the main parts of the male and female reproductive systems.

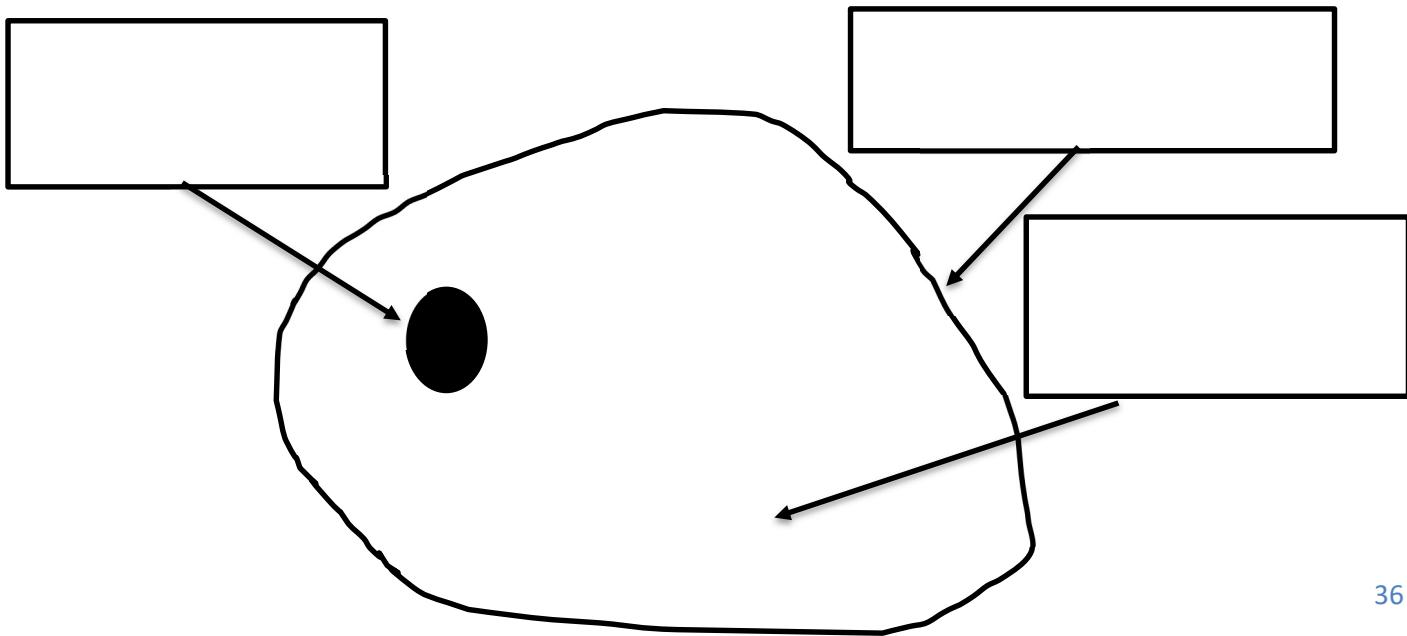
I can describe the functions of the main parts of the male and female reproductive systems.

Tick me at the end if **you can**
...

Revision: Animal Cells

Use your knowledge of animal cells from the 'Body Systems' topic to complete the boxes below, labelling each part of a basic animal cell.

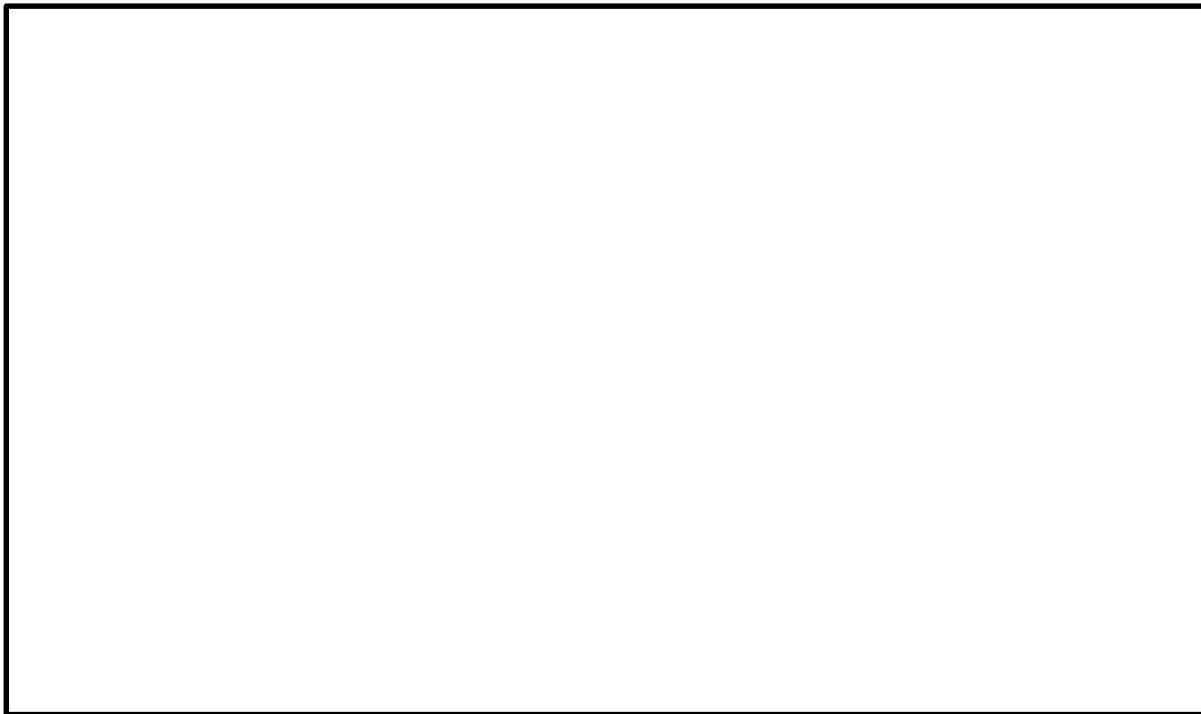
Extension task: write down the job of each part of the animal cell.



Sperm and Egg

Your teacher will show you a diagram of a sperm and egg cell.

- Draw labelled diagrams of a sperm cell and an egg cell in the box then answer the questions below.

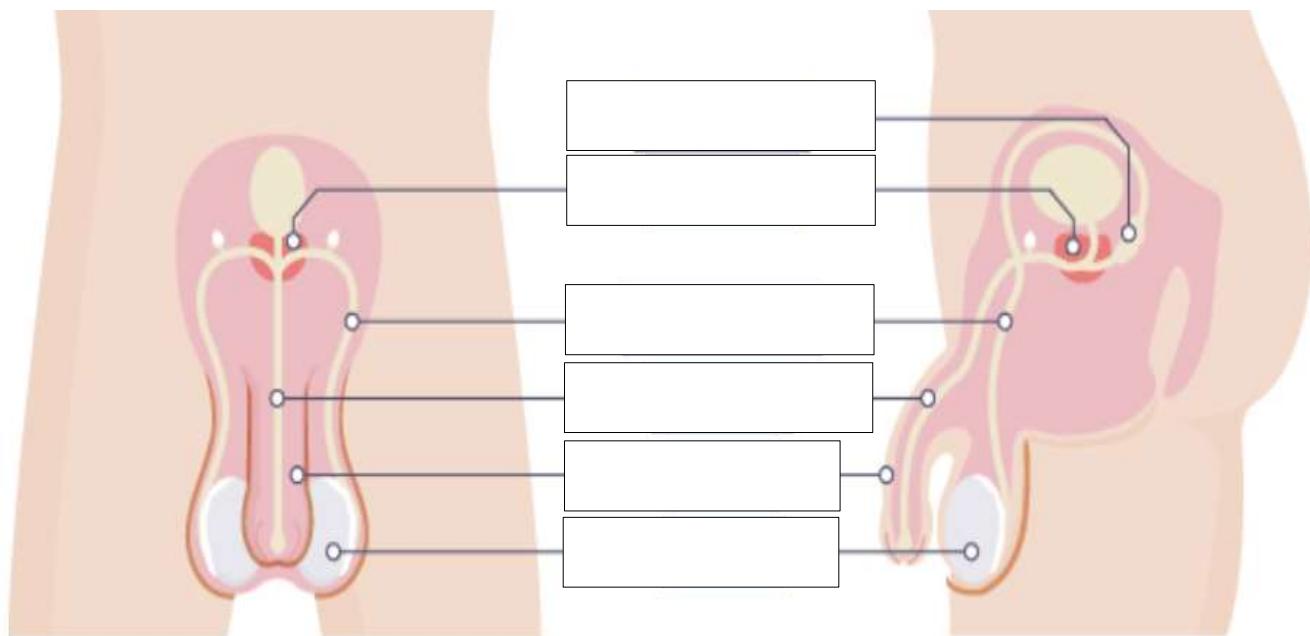


1. Why does a sperm cell have a tail?

2. Why is an egg cell larger than a sperm cell?

The Male Reproductive System

Label the parts of the male reproductive system below.



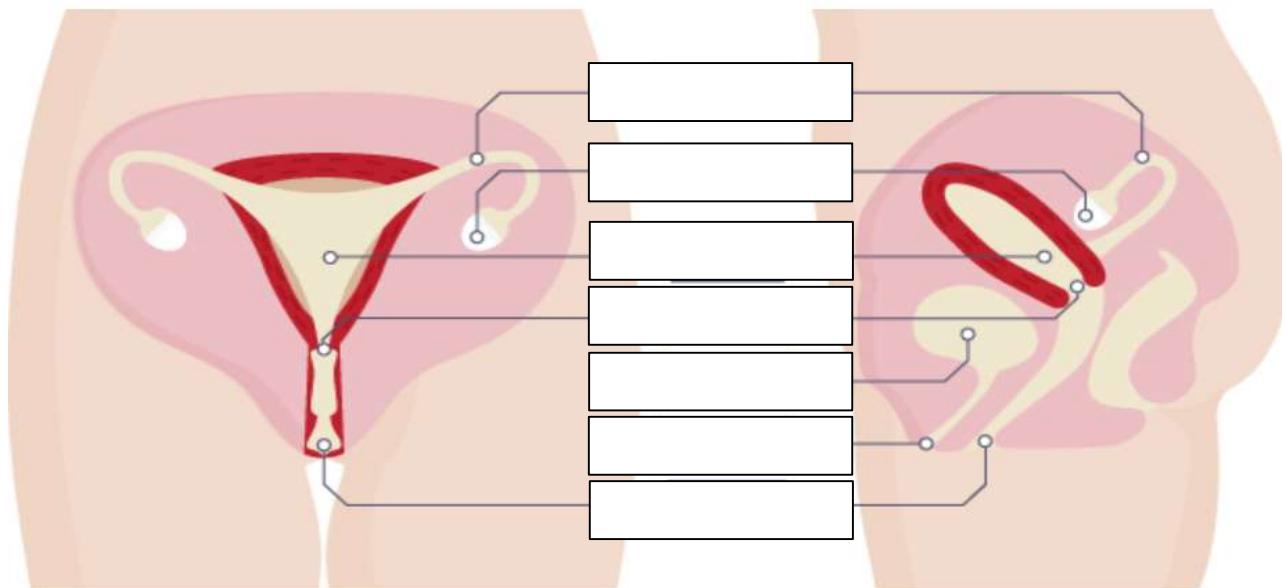
Complete the table, using the word bank to help.

Structure	Function
	Carries sperm from the testes to the penis
	Produce sperm for reproduction
	The organ from which semen and urine leaves the body.

Word bank: Penis, sperm duct, testes

Female Reproductive System

Label the parts of the female reproductive system below.



Complete the table, using the word bank to help.

Structure	Function
	Produces eggs.
	Transports the egg from the ovary to the uterus.
	The site of foetus development.
	Allows entry of sperm during sexual reproduction and exit of baby at birth.

Word bank: Vagina, oviduct, ovary, uterus

Puberty

Starter

- List three changes which happen during puberty.

Learning Intentions

- I am learning about what happens to the human body during puberty.

Success Criteria

- I can list changes that happen to boys during puberty.
- I can list changes that happen to girls during puberty.
- I can list changes that happen to both boys and girls during puberty.



Puberty

You will be working in groups to sort the statements below into 3 categories on the table over the page:

1. Changes that happen to **boys** during puberty
2. Changes that happen to **girls** during puberty
3. Changes that happen to **both** during puberty

The testes begin to produce sperm cells.	Voice becomes deeper	Growth of pubic hair.
Growth hormones released causing growth of body and reproductive organs.	Hips widen (often but not always) and breasts develop.	Oestrogen and progesterone hormones are released by the ovaries.
Production of testosterone by the testes	Increase in erections	Ovaries begin to release egg cells
Foreskin detaches from the glans.	Changes in moods and emotions.	Increased interested in sex

Changes in boys	Changes in girls	Changes in both boys and girls

Body Story - Teen Dreams

Answer the following questions whilst watching the video:

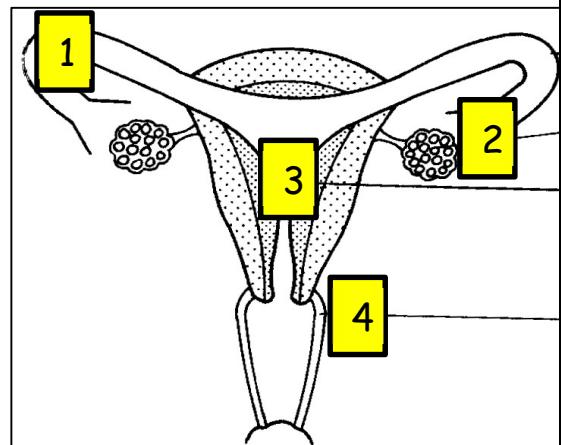
1. What is the purpose of a species?
2. What carries signals from Darren's brain to the rest of his body
3. What hormone makes changes to Natalie's brain?
4. What effect does testosterone have on male brains?
5. At what times do male hormones increase the most?
6. How big do follicles need to grow before eggs reach maturity?
7. What is the main purpose of sex hormones?
8. What causes spots?
9. How does rapid growth affect Darren's ability to dance?
10. How much oestrogen does an almost mature follicle produce?

Fertilisation

Starter

1. Name the parts 1-4 of the female reproductive system.

2. What is the function of parts 1 and 3?



Learning Intentions

- I am learning about fertilisation.

Success Criteria

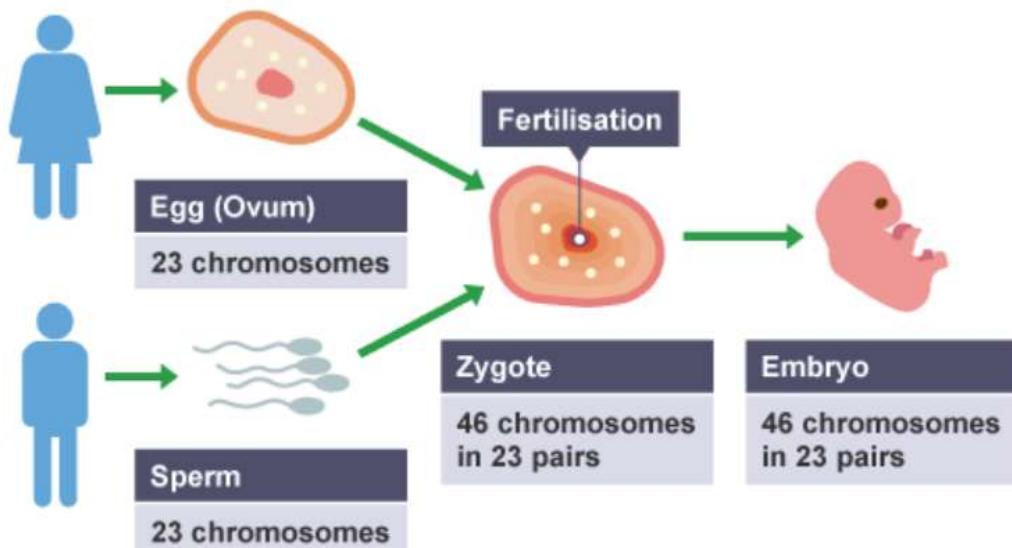
I can state the definition of fertilisation

I can name the male and female parts involved in fertilisation



Fertilisation

- Fertilization occurs when the _____ and the _____ joins, this produces a new cell called a _____.
- The zygote then matures into an _____.



An Everyday Miracle part 1 (up to 17:53)

Answer the questions to part 1 as you watch the video.

1. How many times a minute does the baby's heart beat?
2. How many babies are born each day?
3. How many times smaller is the sperm compared to the egg?
4. What will we condense a year into?
5. What are the names of the couple in the video?
6. How many days a year does a woman have a chance of becoming pregnant?
7. What is the name of the organ that releases eggs?
8. How many times in a woman's life will ovulation happen?
9. What distance does the sperm have to travel in the man?
10. What is the first "mortal danger" that the sperm face?
11. Where does the sperm meet the egg?
12. What does the dividing egg look like?
13. What happens to the lining of the uterus?

Pregnancy

Starter

1. Describe what happens during fertilisation.

2. What does a zygote develop into?

Learning Intentions

- I am learning about pregnancy.

Success Criteria

I can explain how a foetus develops.

I can describe the stages of pregnancy.

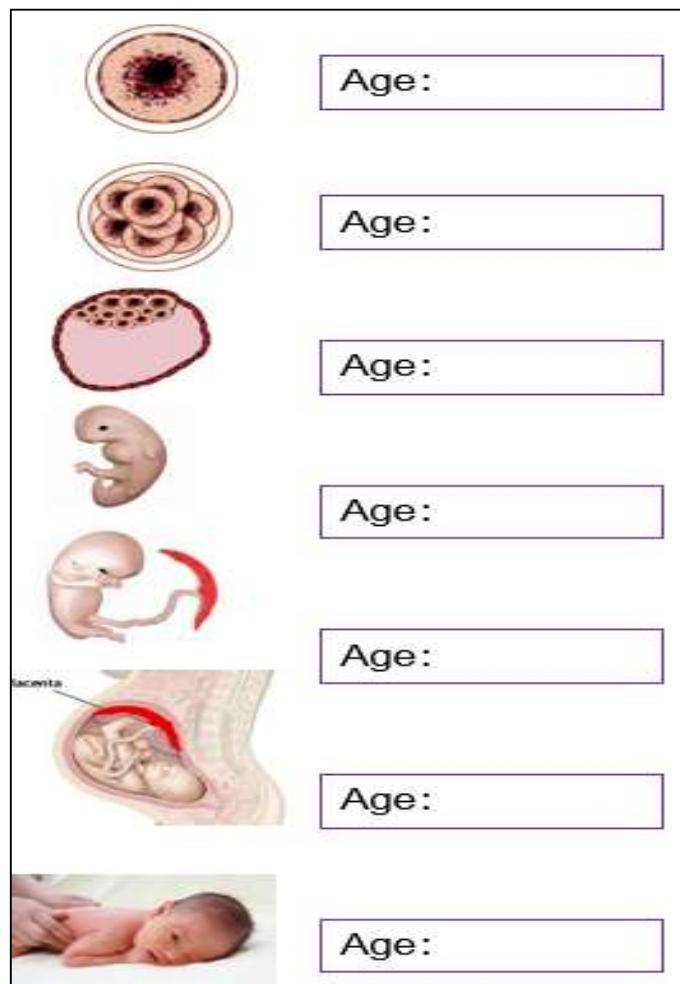


Stages of Pregnancy

When the sperm and the egg join, the cell formed is called a _____.

Between 1 and 8 weeks, the baby is called an _____.

After 8 weeks, it is called a _____.



An Everyday Miracle part 2 (17:53 to 37:09)

Answer the questions to part 2 as you watch the video.

1. What blood-sucking animal is the developing embryo compared to?
2. What time did Phillipa take the pregnancy test?
3. What is the round ball?
4. Where does work start?
5. What are millions of cells becoming?
6. What is the work fuelled by?
7. What does the 12 week foetus weigh?
8. What is the most common complaint?
9. When do most women feel better by?
10. What was ultrasound developed for?
11. When will the foetus have started to develop senses?
12. Where do we translate the signals from our sense?
13. What allows mother and foetus to live together?
14. What is the message Phillipa hears from her body?

Stages of Pregnancy

Starter

- Describe **three** of these key words:

Fertilisation

Sperm

Egg

Oviduct

Uterus

Ovary

Embryo

Zygote

Foetus

Pregnancy

Puberty

Testes

Learning Intentions

- I am learning about the stages of pregnancy.

Success Criteria

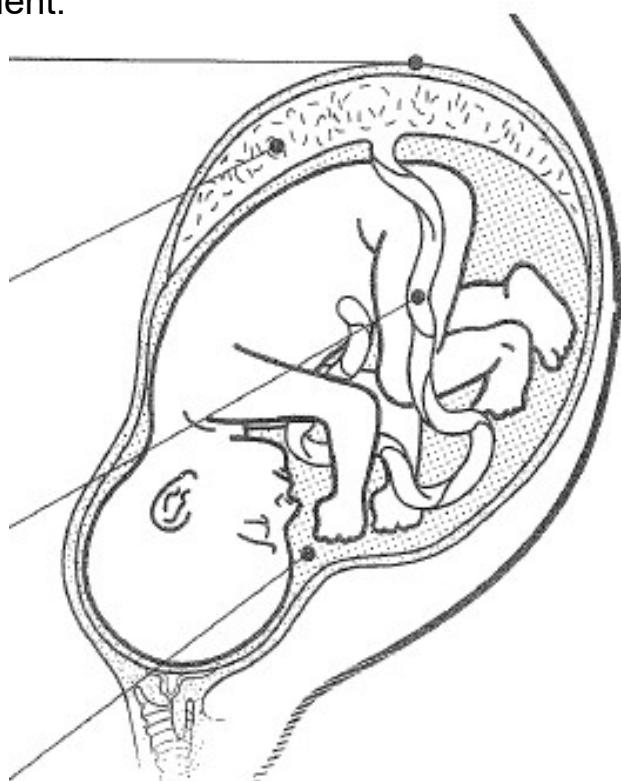
I can describe how a foetus develops.

I can describe the growth rate of the embryo in the womb.



Pregnancy

Label the parts involved in foetal development.



Stages of pregnancy

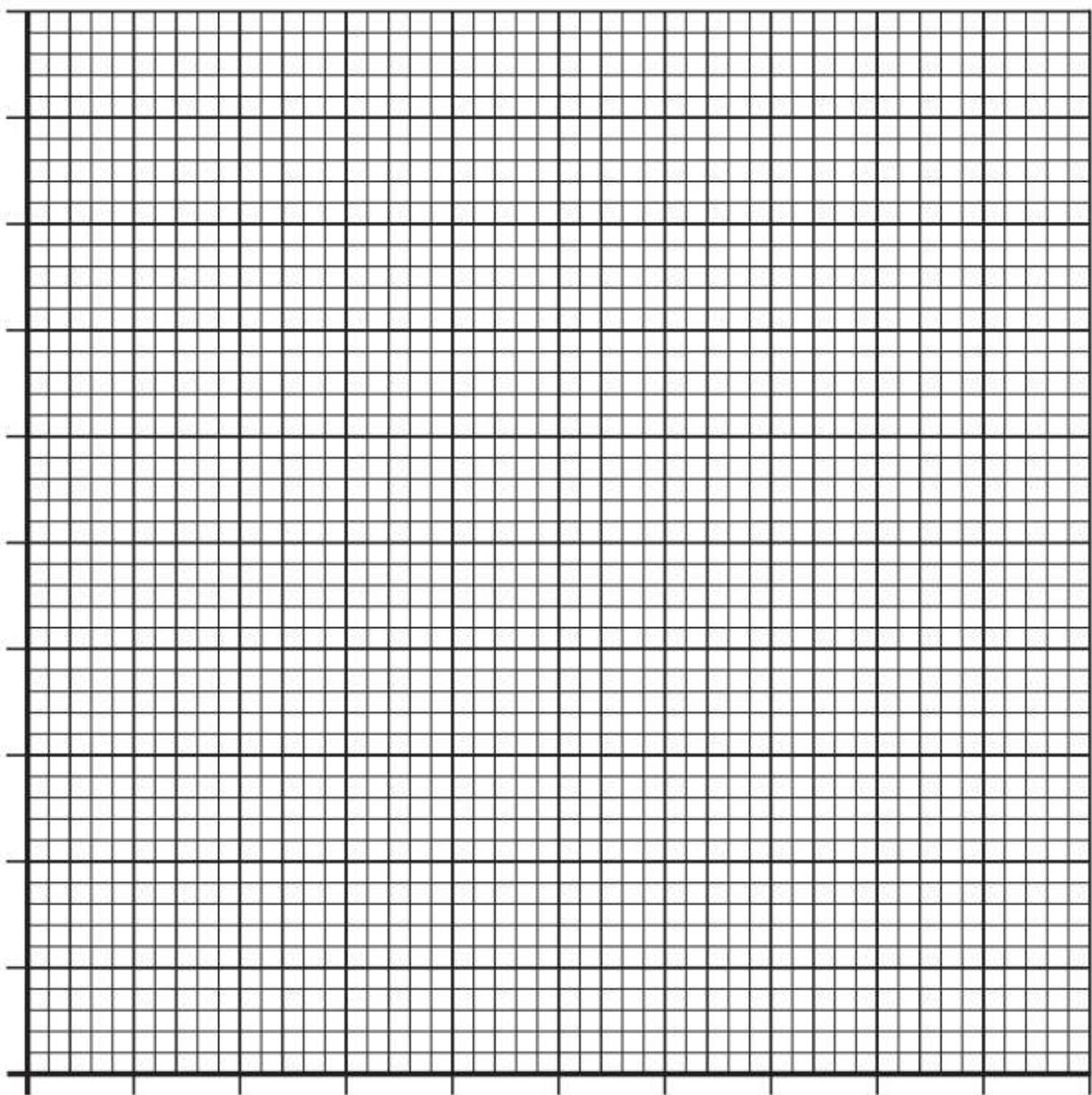
Pregnancy in humans lasts 9 months (40 weeks). It is split into three parts of 3 month each. Each part is called a _____.

First Trimester	Second Trimester	Third Trimester
At this Stage the Baby is known as an Embryo.	At this Stage the Baby is known as a Foetus.	At this Stage (24 Weeks) if born prematurely, the Baby could survive.
Week 3 - Implantation Occurs	Week 12 - All Vital Organs are now Formed. The Foetus can now hear Sounds and control its limbs, it can kick and even suck its thumb.	Week 24 to 36 - The Third Trimester is about growth, the Foetus will double in size.
Week 4 - Brain, Heart, Spine, Nervous and Circulatory Systems form.	Week 17 - The Gender of the Foetus can now be seen.	Week 33 - The Foetus can hear the Outside World, learning to recognise its mother's voice. The Foetus can now see, its pupils reacting to light.
Week 7 - Facial Features, Limbs, Digestive and Respiratory Systems Form.	Week 24 - Foetus is now about 32 cm in size.	Week 37 to 40 - Foetus is now about 50 cm in size.
Week 12 - Embryo is now about 8 cm in size.		

Growth rate of the embryo in the womb

Use the table below to plot a line graph.

Time (weeks)	Length (cm)
4	0.5
6	1
8	2
10	3
16	15
20	22
22	28
26	38
30	43
34	48
36	53

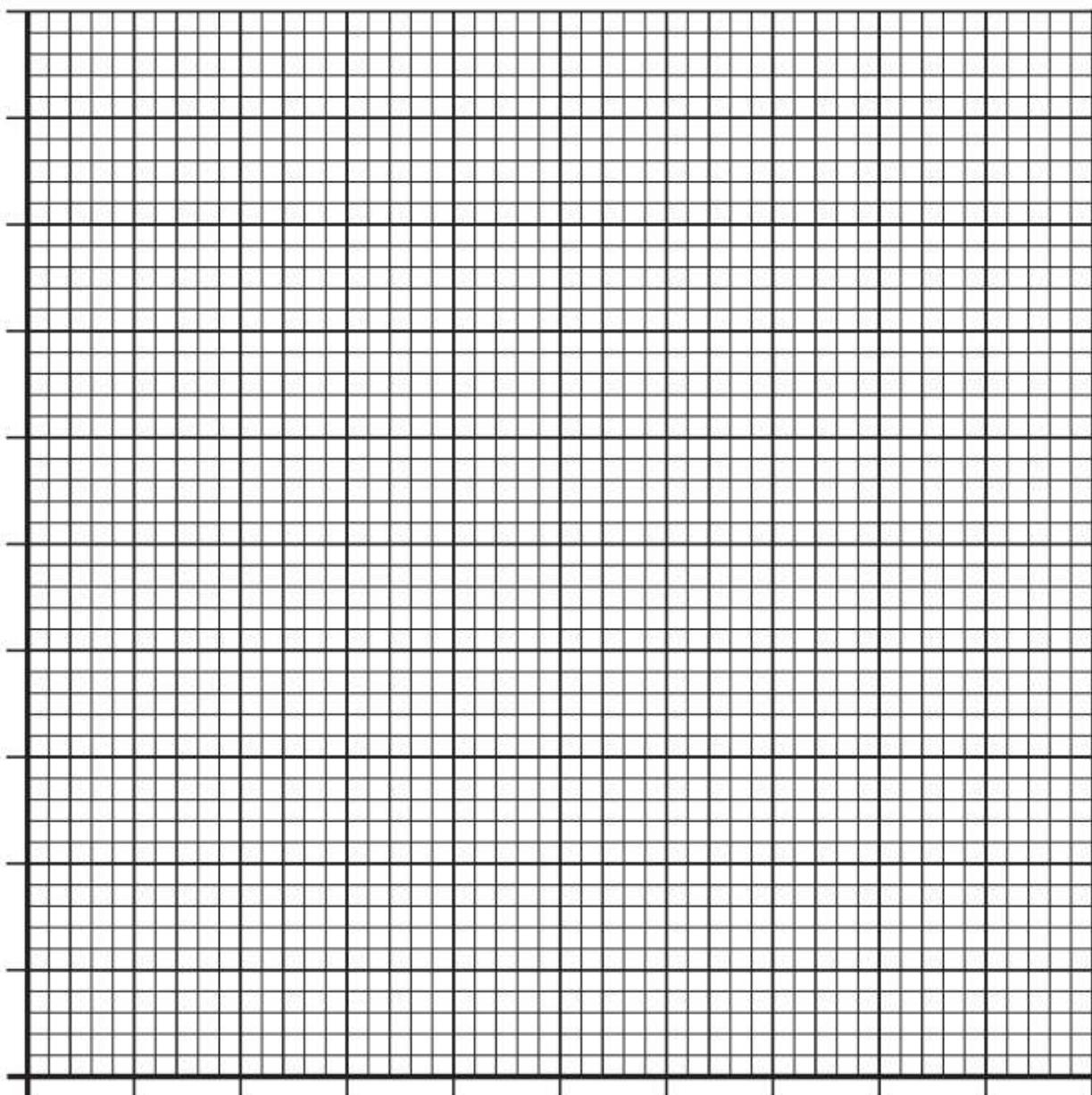


An Everyday Miracle part 3 (37:09 to end)

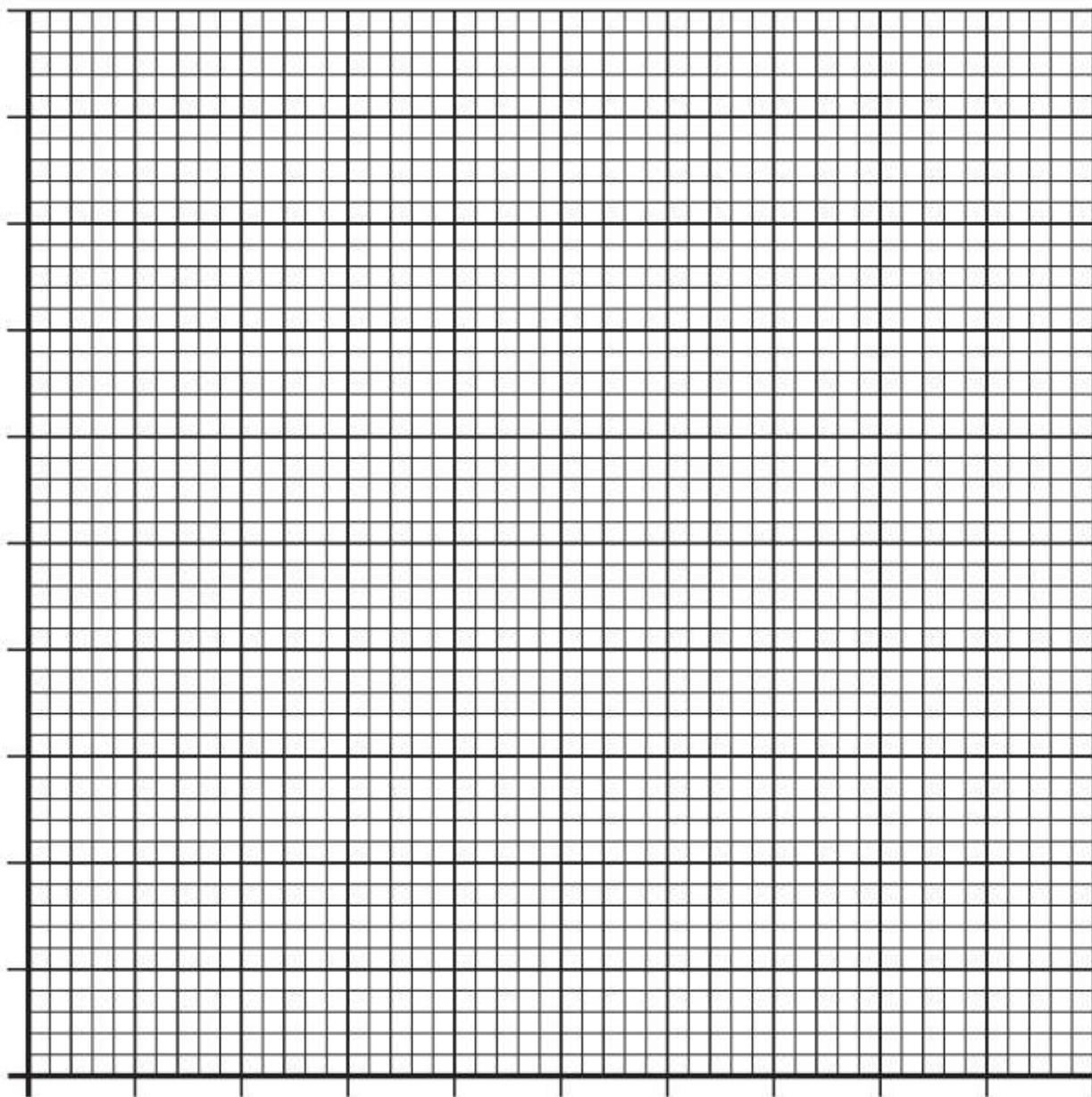
Answer the questions to part 3 as you watch the video.

1. What has happened to Phillipa's spine?
2. What is the most dramatic change?
3. When is Phillipa and Jeff's baby due at this point?
4. What is the most difficult task the body has to tackle?
5. Why is the baby not ready for the world?
6. How early was Phillipa's baby?
7. How far apart are Phillipa's contractions?
8. What does the head act as?
9. Where does the baby's head face during birth?
10. How should birth be viewed?
11. Where is the last baby shown from?

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.

Colouring Sheet

The Heart

