a

What is homeostasis?

The _____ of the internal _____ of a cell or organism to maintain _____ conditions for function, in response to _____ and _____ changes.

Keywords: internal, conditions, external, optimum, regulation

b

Name three things that are controlled by homeostasis.

1. _____
2. _____
3. _____

Choose the correct answer:

Homeostasis is a voluntary/involuntary control system that involves nervous or chemical responses.

All control systems include receptors, effectors and coordination centres. Add examples of the parts of the body that carry out these roles in the space in the boxes.

Keywords: brain, specialised cells, muscles, spinal cord, glands, pancreas

receptors _____ _____	Bring about responses to restore optimum levels.
coordination centres _____ _____	Detect stimuli.
effectors _____ _____	Receive and process information.

Draw one line from each box to connect it to its role.

d

What is the role of the nervous system?

To react to the _____.

To _____ our behaviour.

What does CNS stand for?

_____

Which two organs make up the CNS?

_____

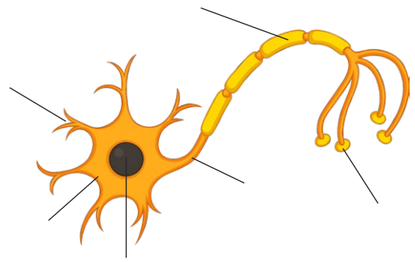
e

What is the function of the nerve cell?

To carry _____ rapidly around the body.

Label the nerve cell diagram: the nucleus, cell body, dendrites, axon, myelin sheath and synapse.

Next to each adaptation of the nerve cell write the part of the cell that its referring to. Use the labels on the diagram to help you.



It can make lots of connections to other nerve cells.

_____

It's very long to carry the nerve impulse a long way.

_____

It's insulated so the impulses travel rapidly.

_____

It has lots of mitochondria to transfer the energy needed to make transmitter chemicals.

_____

g

Put the following terms into a flow diagram to summarise how the nervous system works.

effector, stimulus, response, CNS, receptor

_____ → _____ → _____ → _____ → _____

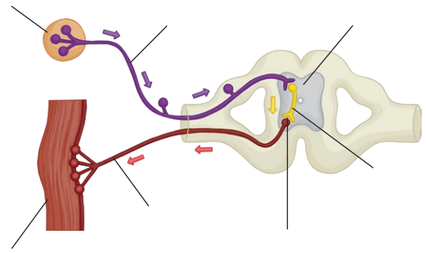
h

Why are reflexes important?

Reflexes happen r_____ and a_____, you don't have to _____ about them. This helps you to avoid d_____/h_____. Bodily functions like _____ and _____ happen via reflexes.

i

Label the diagram below with the following key parts of a reflex arc: receptor, spinal cord, motor neurone, sensory neurone, relay neurone, synapse, effector



Organise the steps of a reflex arc below into the correct order by numbering each box from 1-8.

At the synapse a chemical is released, it diffuses across the synapse.	
The impulse reaches the effector which is stimulated to respond.	
The receptor is stimulated.	
When the impulse reaches the next synapse, a chemical is released which travels across the synapse.	
This triggers an electrical impulse in the relay neurone.	
An electrical impulse travels along the sensory neurone to the CNS.	
This triggers an electrical impulse in the motor neurone.	

j

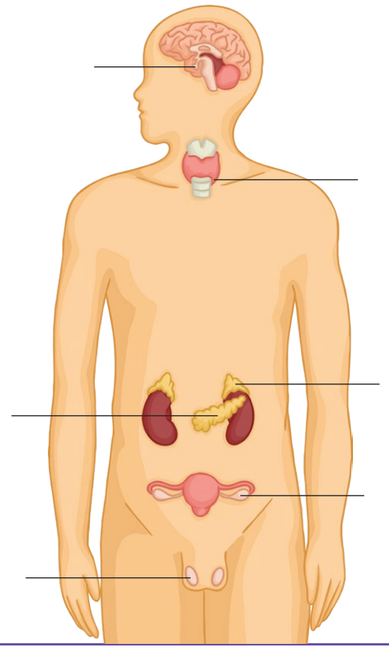
Complete the paragraphs using the keywords: hormones, chemical, blood stream, slower, organs, blood, receptors, longer, glands.

The endocrine system produces a _____ response to a stimulus. The _____ of the endocrine system secrete _____ into the _____ _____.

The _____ carries _____ to target _____ which have _____ to pick up the hormone. Hormonal effects are _____ than the nervous system but last for _____.

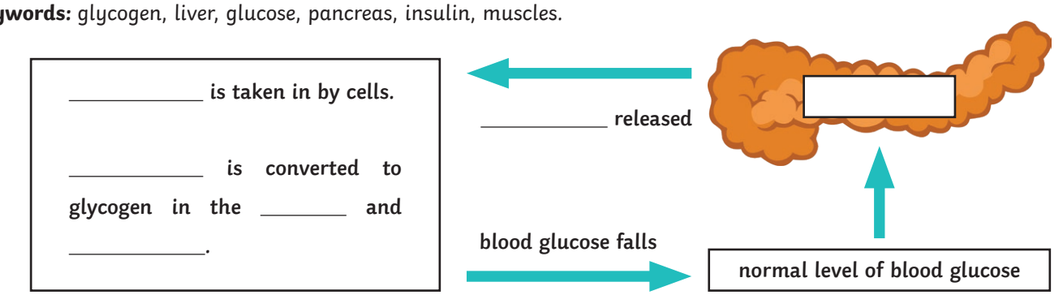
k

Label the main endocrine glands shown in the diagram using the following keywords: thyroid, pituitary gland, testes, adrenal gland, pancreas, ovaries.



a

Complete the boxes to show how insulin controls blood glucose levels.
Keywords: glycogen, liver, glucose, pancreas, insulin, muscles.



b

What causes type 1 diabetes?
The _____ does not make enough _____, so blood glucose isn't controlled and it gets very _____ after eating a meal.

When does type 1 diabetes usually start?

_____

How is type 1 diabetes treated?

_____

d

Which patient has diabetes?

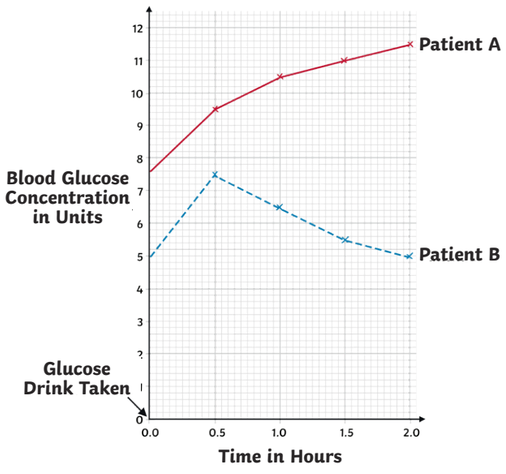
_____

How do you know?

_____

_____

_____



c

What causes type 2 diabetes?
The cells in the body no longer respond to the _____ that is produced by the _____.

What are the risk factors for type 2 diabetes?

_____

How is type 2 diabetes treated?

_____

e

What is the main reproductive hormone in the female?

_____

What is ovulation?

_____

What is the main reproductive hormone in the male?

_____

What does this hormone do?

_____

f

Draw one line from each hormone to the role it plays in menstruation. One role will be connected to two hormones.

follicle stimulating hormone (FSH)	Maintains the uterus lining.
luteinising hormone (LH)	Stimulates the release of an egg.
oestrogen	Causes maturation of an egg in the ovary.
progesterone	

g

Write the number of each of the following methods of contraception next to the way that they work:

1. oral contraceptive
2. barrier methods (condoms or diaphragms)
3. abstinence
4. surgical methods
5. intrauterine devices
6. progesterone (via implant, injection or skin patch)
7. spermicidal agents

Contains hormones that inhibit FSH production so that no eggs mature.

Inhibits the maturation and release for a number of months or years.

Prevents the sperm reaching an egg.

Prevent the implantation of the embryo or releases a hormone.

Kill or disable sperm.

Avoids intercourse when an egg might be in the oviduct.

Sterilise the male or female by cutting or tying tubes to prevent the egg or sperm reaching their target area.

h

The following is a method for measuring reaction time.

1. Person 1 sits upright on the chair with eyes focussing across the room.
2. Person 1 puts the forearm of their dominant arm across the table with their hand hanging over the edge.
3. Person 2 holds a ruler vertically with the bottom end of the ruler between person 1's finger and thumb. Person 1 mustn't be hold the ruler.
4. Person 1 tells person 2 to be prepared to catch the ruler.
5. Person 2 lets go of the ruler and person 1 catches the ruler with their thumb and first finger as quickly as possible as it drops.
6. The number on the ruler that is level with person 1's thumb is recorded.
7. Both people have a rest and then the test is repeated several times.

What is the dependent variable in this investigation?

_____

_____

The average distance before person 1 catches the ruler is 14cm. They swap roles and person 2 catches the ruler, their average distance before catching it is 12cm.

Who has the fastest reaction time?

_____

How do you know?

_____

_____

_____

a

What is homeostasis?

The **regulation** of the internal **conditions** of a cell or organism to maintain **optimum** conditions for function, in response to **internal** and **external** changes.

Keywords: internal, conditions, external, optimum, regulation

b

Name three things that are controlled by homeostasis.

1. **blood glucose concentration**
2. **body temperature**
3. **water levels**

Choose the correct answer:

Homeostasis is a **involuntary** control system that involves nervous or chemical responses.

All control systems include receptors, effectors and coordination centres. Add examples of the parts of the body that carry out these roles in the space in the boxes.

Keywords: brain, specialised cells, muscles, spinal cord, glands, pancreas

Draw one line from each box to connect it to its role.

receptors specialised cells	Bring about responses to restore optimum levels.
coordination centres brain, spinal cord, pancreas	Detect stimuli.
effectors muscles, glands	Receive and process information.

d

What is the role of the nervous system?

To react to the **surroundings.**

To **coordinate** our behaviour.

What does CNS stand for?

central nervous system

Which two organs make up the CNS?

brain and spinal cord

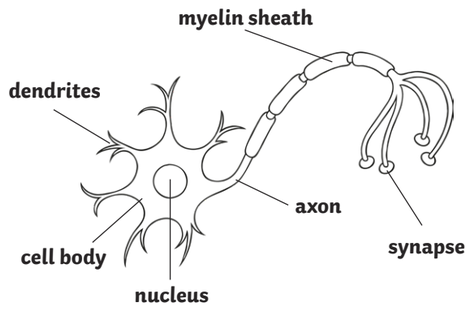
e

What is the function of the nerve cell?

To carry **electrical impulses** rapidly around the body.

Label the nerve cell diagram: the nucleus, cell body, dendrites, axon, myelin sheath and synapse.

Next to each adaptation of the nerve cell write the part of the cell that its referring to. Use the labels on the diagram to help you.



It can make lots of connections to other nerve cells.

dendrites

It's very long to carry the nerve impulse a long way.

axon

It's insulated so the impulses travel rapidly.

axon

It has lots of mitochondria to transfer the energy needed to make transmitter chemicals.

cell body (specifically, cytoplasm)

g

Put the following terms into a flow diagram to summarise how the nervous system works.

effector, stimulus, response, CNS, receptor

stimulus → receptor → CNS → effector → response

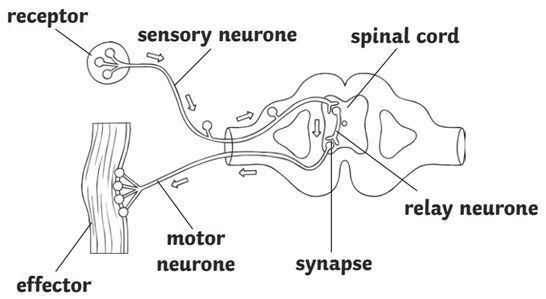
h

Why are reflexes important?

Reflexes happen **rapidly** and **automatically**, you don't have to **think** about them. This helps you to avoid **danger/ harm** . Bodily functions like **breathing** and **food digestion** happen via reflexes.

i

Label the diagram below with the following key parts of a reflex arc: receptor, spinal cord, motor neurone, sensory neurone, relay neurone, synapse, effector



Organise the steps of a reflex arc below into the correct order by numbering each box from 1-8.

At the synapse a chemical is released, it diffuses across the synapse.	**3**
The impulse reaches the effector which is stimulated to respond.	**7**
The receptor is stimulated.	**1**
When the impulse reaches the next synapse, a chemical is released which travels across the synapse.	**5**
This triggers an electrical impulse in the relay neurone.	**4**
An electrical impulse travels along the sensory neurone to the CNS.	**2**
This triggers an electrical impulse in the motor neurone.	**6**

j

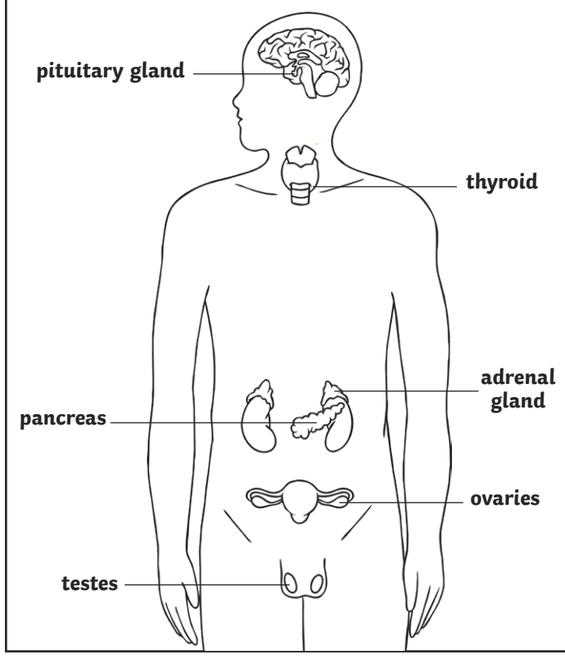
Complete the paragraphs using the keywords: hormones, chemical, blood stream, slower, organs, blood, receptors, longer, glands.

The endocrine system produces a **chemical** response to a stimulus. The **glands** of the endocrine system secrete **hormones** into the **blood stream**.

The **blood** carries **hormones** to target organs which have **receptors** to pick up the hormone. Hormonal effects are **slower** than the nervous system but last for **longer.**

k

Label the main endocrine glands shown in the diagram using the following keywords: thyroid, pituitary gland, testes, adrenal gland, pancreas, ovaries.



a

Complete the boxes to show how insulin controls blood glucose levels.
Keywords: glycogen, liver, glucose, pancreas, insulin, muscles.

Glucose is taken in by cells.

Glucose is converted to glycogen in the **liver** and **muscles**.

insulin released

pancreas

blood glucose falls

normal level of blood glucose

b

What causes type 1 diabetes?
The **pancreas** does not make enough **insulin**, so blood glucose isn't controlled and it gets very **high** after eating a meal.

When does type 1 diabetes usually start?
In children and teenagers.

How is type 1 diabetes treated?
With insulin injections.

c

What causes type 2 diabetes?
The cells in the body no longer respond to the **insulin** that is produced by the **pancreas**.

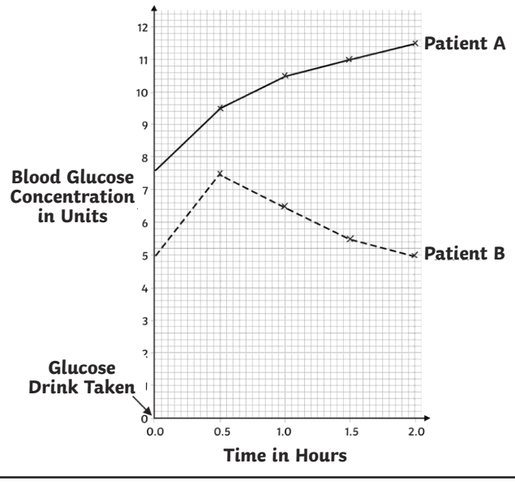
What are the risk factors for type 2 diabetes?
Obesity and lack of exercise.

How is type 2 diabetes treated?
A carbohydrate controlled diet and an exercise routine.

d

Which patient has diabetes?
patient A

How do you know?
Their blood glucose concentration continues to rise after they have the drink, while patient B's returns to normal.



e

What is the main reproductive hormone in the female?
oestrogen

What is ovulation?
When a mature egg is released from an ovary.

What is the main reproductive hormone in the male?
testosterone

What does this hormone do?
Stimulates sperm production.

f

Draw one line from each hormone to the role it plays in menstruation. One role will be connected to two hormones.

follicle stimulating hormone (FSH)	Maintains the uterus lining.
luteinising hormone (LH)	Stimulates the release of an egg.
oestrogen	Causes maturation of an egg in the ovary.
progesterone	

g

Write the number of each of the following methods of contraception next to the way that they work:

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2. barrier methods (condoms or diaphragms)
3. abstinence
4. surgical methods
5. intrauterine devices
6. progesterone (via implant, injection or skin patch)
7. spermicidal agents

Contains hormones that inhibit FSH production so that no eggs mature. **1**

Inhibits the maturation and release for a number of months or years. **6**

Prevents the sperm reaching an egg. **2**

Prevent the implantation of the embryo or releases a hormone. **5**

Kill or disable sperm. **7**

Avoids intercourse when an egg might be in the oviduct. **3**

Sterilise the male or female by cutting or tying tubes to prevent the egg or sperm reaching their target area. **4**

h

The following is a method for measuring reaction time.

1. Person 1 sits upright on the chair with eyes focussing across the room.
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3. Person 2 holds a ruler vertically with the bottom end of the ruler between person 1's finger and thumb. Person 1 mustn't be hold the ruler.
4. Person 1 tells person 2 to be prepared to catch the ruler.
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6. The number on the ruler that is level with person 1's thumb is recorded.
7. Both people have a rest and then the test is repeated several times.

What is the dependent variable in this investigation?
The distance on the ruler before person 1 catches it.

The average distance before person 1 catches the ruler is 14cm. They swap roles and person 2 catches the ruler, their average distance before catching it is 12cm.

Who has the fastest reaction time?
person 2

How do you know?
They caught the ruler in the least amount of time, because less of the ruler had passed through their finger and thumb before they caught it.