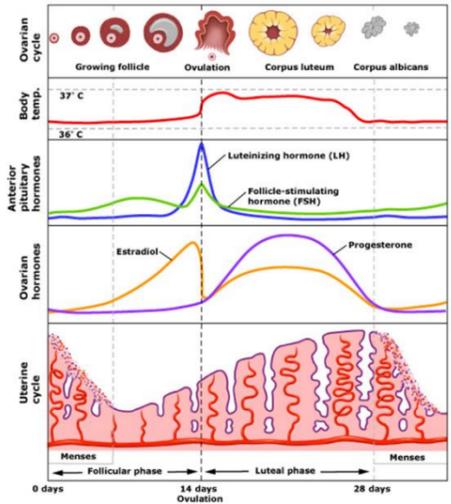


%	I can ...	Prove it!																				
	<p>Explain the theory of Jean Baptiste Lamarck and the theory of evolution (triple only)</p> <p>Explain the role of Alfred Russell Wallace in developing the theory of evolution and his pioneering work on speciation (triple only)</p> <p>Interpret graphs relating to hormone levels in the menstrual cycle (triple only)</p> <p>Explain how developments in microscopy have enabled IVF treatments to be improved (triple only)</p> <p>Evaluate social and ethical issues and risks from the perspective of patients and doctors (triple only)</p>	<p>1. Complete the table comparing the different theories of evolution:</p> <table border="1" data-bbox="861 326 1984 608"> <thead> <tr> <th>Scientist</th> <th>Jean Baptiste Lamarck</th> <th>Alfred Russell Wallace</th> <th>Charles Darwin</th> </tr> </thead> <tbody> <tr> <td>Time period</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Big Idea</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Evidence</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Reasons the theory was not accepted</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>2. Use the graph to answer the following questions:</p>  <p>a) On which day does LH peak? b) As the level of progesterone increases, what happens to the thickness of the uterus wall? c) On which day is the body temperature the highest? d) How can you tell from the graph that oestrogen stimulates LH release? e) How can you tell from the graph that oestrogen inhibits FSH release?</p> <p>3. Find three developments in microscopes and explain how each one has helped us to understand and use IVF.</p> <p>4. Write a statement for each of the following for a newspaper article about IVF: a. from the perspective of a patient (what are your hopes and concerns) b. from the perspective of a doctor (what are your concerns and aims)</p>	Scientist	Jean Baptiste Lamarck	Alfred Russell Wallace	Charles Darwin	Time period				Big Idea				Evidence				Reasons the theory was not accepted			
Scientist	Jean Baptiste Lamarck	Alfred Russell Wallace	Charles Darwin																			
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Explain how classification models have developed over time due to improvements in microscopy and biochemistry)

Describe the role of Charles Darwin and his book 'The origin of species' on the development of the theory of evolution and the issues he had with getting people to accept this theory (triple only)

Explain the role of Mendel and other scientists on our changing understanding of genetics (triple only)

Evaluate the use of genetic engineering and modification and describe the potential uses of this in the future

Use tables and graphs to extract information about reflex actions

Explain the effect on cells of osmotic changes in bodily fluids (triple only)

Describe how water ions and urea are lost from the body (triple only)

Explain the roles of thyroxine (produced by the thyroid gland) and adrenaline (produced by the adrenal gland) linking this to negative feedback loops (triple only)

Explain the use of FSH and LH as a fertility drug (triple only)

Explain IVF (in vitro fertilisation) (triple only)

Link hormone cycles to ovulation and menstruation

1. For each of the below developments, write a sentence explaining how it has helped us to develop classification models:

- the invention of a transmission electron microscope
- mapping the genome
- discovering DNA
- the invention of the scanning electron microscope

2. Write a synopsis to go on the back of 'The Origin of the Species' explaining briefly what the book is about.

3. Imagine you could go back in time. Write a speech to the other scientists who were working at the same time as Charles Darwin trying to convince them that he is correct. You should counter each of the following arguments:

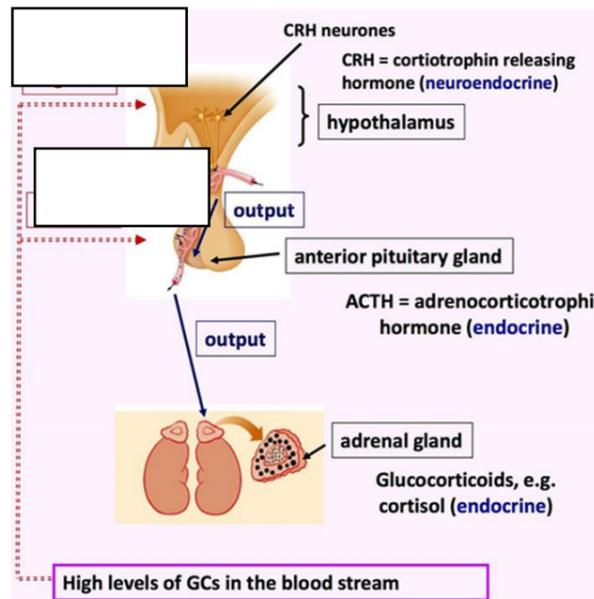
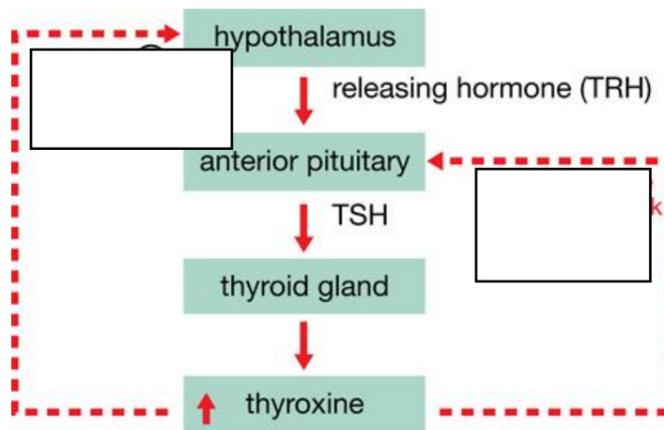
- God created all living things
- There is no evidence
- We do not know how characteristics are inherited

5. Write a short biography of Gregor Mendel outlining his work and his discoveries.

6. Complete the table to evaluate the use of genetic engineering

Advantages	Disadvantages

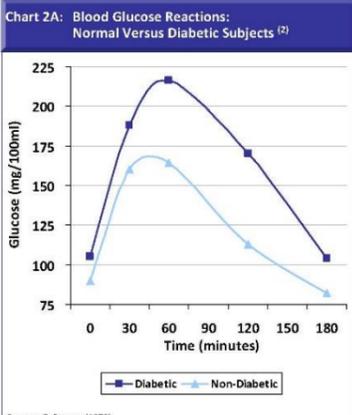
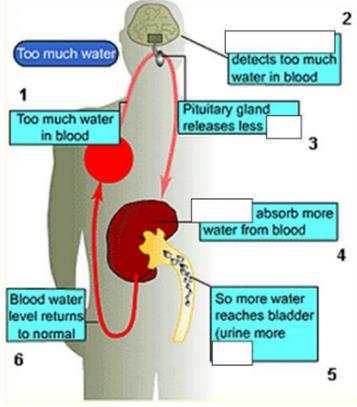
7. Complete the diagrams to show how thyroxine and adrenaline control our internal conditions in a negative feedback loop.

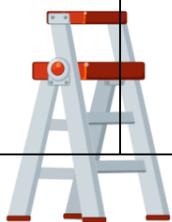


8. Create a leaflet to display in an IVF clinic to prospective parents explaining the science behind their fertility drugs. Make sure you explain the roles of LH and FSH. Include a description of the stages they will go through during the process of IVF

- During the menstrual cycle, which hormone peaks during ovulation?
- During the menstrual cycle, which hormone peaks before menstruation?



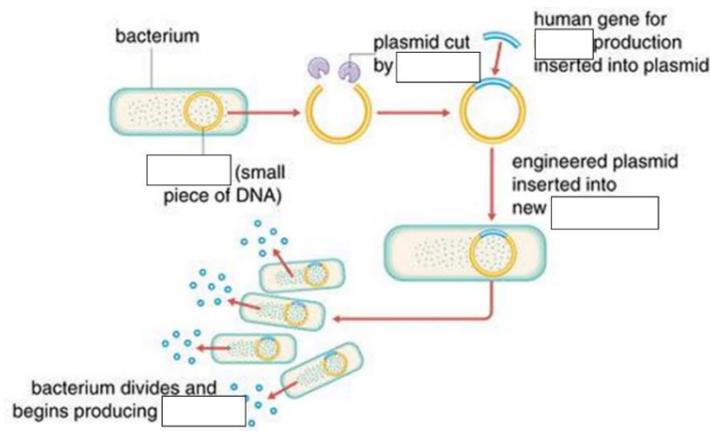
%	I can ...	Prove it!																																												
<p>60%</p> 	<p>Describe what monitors and controls body temperature (triple only)</p> <p>Explain the role of the skin in thermoregulation (triple only)</p>	<p>1. Complete the following paragraph using these key words: sweat, blood, 37°C, skin, shiver, energy, contract, thermoregulatory, vasoconstriction, vasodilation Human body temperature should be kept at around _____. This gives an optimum temperature for _____ to work. The _____ centre in the brain monitors and controls body temperature using receptors that detect the temperature of _____ flowing through the brain and by receiving electrical impulses from receptors in the _____. If the body temperature is too high then _____ happens, where blood vessels near the surface widen. More _____ is also produced. These processes cause _____ to be transferred to the surroundings. If the body temperature is too low then _____ happens, where blood vessels near the surface of the skin narrow. Less _____ is also produced and skeletal muscles _____ and relax quickly (_____).</p> <p>2. Draw a flow diagram to describe how the body controls blood glucose levels:</p>																																												
	<p>Describe and explain the body's response to extreme body temperature (triple only)</p> <p>Describe and explain how the body controls blood glucose concentration (making reference to glucose, glycogen, glucagon, negative feedback cycle, insulin and the pancreas)</p>	<p>3. Read the graph and answers the questions below:</p>  <p>a. Compare the blood glucose concentration between the diabetic and non-diabetic in the first 60 minutes following a meal.</p> <p>b. Explain this difference.</p> <p>c. Draw a line on the graph where you think the insulin level would be for the non-diabetic</p>																																												
	<p>Compare data (from graphs) regarding blood glucose levels in people with and without diabetes</p> <p>Explain how these automatic systems are controlled: blood glucose, water (triple only) and temperature</p>	<p>4. Complete the table below:</p> <table border="1" data-bbox="840 1380 1911 1810"> <thead> <tr> <th>Contraceptive</th> <th>Reliability</th> <th>Side-effects</th> <th>Convenience</th> </tr> </thead> <tbody> <tr><td>Oral</td><td></td><td></td><td></td></tr> <tr><td>Injection</td><td></td><td></td><td></td></tr> <tr><td>Implant</td><td></td><td></td><td></td></tr> <tr><td>Skin patch</td><td></td><td></td><td></td></tr> <tr><td>Condoms</td><td></td><td></td><td></td></tr> <tr><td>Diaphragms</td><td></td><td></td><td></td></tr> <tr><td>Intrauterine</td><td></td><td></td><td></td></tr> <tr><td>Spermicidal</td><td></td><td></td><td></td></tr> <tr><td>Abstinence</td><td></td><td></td><td></td></tr> <tr><td>Sterilisation</td><td></td><td></td><td></td></tr> </tbody> </table>	Contraceptive	Reliability	Side-effects	Convenience	Oral				Injection				Implant				Skin patch				Condoms				Diaphragms				Intrauterine				Spermicidal				Abstinence				Sterilisation			
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<p>Evaluate hormonal and non-hormonal methods of contraception (oral, injection, implant, skin patch, condoms, diaphragms, intrauterine device, spermicidal agents, abstinence, sterilisation)</p>	<p>5. For each of the below, give a reason why this might affect a person's decision about which type of contraception to use: Ethical, Religious, Financial, Social</p> <p>6. A couple know that they are both carriers of the cystic fibrosis allele. They want to have a child but are considering screening their embryo or foetus before they make a decision on whether or not they will carry the baby full term. Write them a letter explaining the advantages and disadvantages of screening their embryo and foetus.</p>																																													
<p>Explain why issues around contraception are not answered solely by the field of Science</p> <p>Explain the process of embryo screening and evaluate based on ethical, social and economic perspectives</p>	<p>7. Complete the diagram to show how water levels are controlled:</p> 																																													



%	I can ...	Prove it!																				
<p>50%</p>	<p>Describe the role of Carl Linnaeus in development of a classification system</p> <p>Explain the binomial naming system of organisms</p> <p>Describe and explain the theory of 'natural selection' and 'evolution'</p> <p>Describe the evidence for evolution including antibiotic resistant and the fossil record</p> <p>Describe what a fossil is and explain how they form and explain why these cannot be used as evidence for how life began on Earth</p> <p>Describe selective breeding and explain the potential benefits and risks of this process</p>	<p>1. Complete the following sentences to describe the work done by Carl Linnaeus:</p> <ol style="list-style-type: none"> Carl Linnaeus was... He classified living things into... A binominal system means... For example... <p>2. For each of the below examples, highlight the genus in green and the species in blue:</p> <ol style="list-style-type: none"> Panthera leo (lion) Acinonyx jubatus (cheetah) Panthera tigris (tiger) Canis lupus (wolf) <p>3. Complete the following to show the process of natural selection using these words: reproduce, evolution, variation, mutations, genes, sexual</p> <p>There is _____ between different organisms of the same species (caused by _____ reproduction and by random _____)</p> <p>Some organisms will have a <u>selective advantage</u> for that particular environment and they will be more likely to _____</p> <p>If they survive, they can _____ and pass on the _____ for these characteristics to their offspring</p> <p>This means there will be <u>more organisms</u> with that characteristic in the next generation, leading to a gradual change in the species, which we call _____.</p> <p>4. Use the above structure to explain how bacteria become resistant to antibiotics.</p> <p>5. Explain how the below fossil record shows that a horse has evolved slowly over time:</p> <div data-bbox="703 1276 1081 1944"> <p>The diagram shows the evolution of horses from 60 million years ago to the present. It includes illustrations of the forelimb bones and the full animal for each stage: Eohippus (60 million years ago, 0.4m), Meshippus (40 million years ago, 0.6m), Merychippus (30 million years ago, 1.0m), Pliohippus (10 million years ago, 1.0m), and modern horse (1 million years ago, 1.6m). The bones show a transition from small, multi-toed feet to a single large hoof.</p> </div> <ol style="list-style-type: none"> Fossils are the _____ of an organism from _____ of years ago. Fossils can be made in four ways: <ul style="list-style-type: none"> From _____ of the animals not _____ properly. Because the _____ were not correct for decay so part of the animal did not decay. When parts of the organism were replaced by other _____ as it decayed. Traces of the organism were _____ e.g. foot prints Fossils provide evidence for how organisms have _____ over time (evolution). Fossils cannot be used as evidence for how life began on Earth because the fossil record is _____, (there are gaps where fossils are missing). <p>7. Complete the table to summarise selective breeding:</p> <table border="1" data-bbox="703 2033 1974 2389"> <thead> <tr> <th>Use of selective breeding</th> <th>Example</th> <th>Benefits</th> <th>Risks</th> </tr> </thead> <tbody> <tr> <td>Disease resistance in crops</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Animals with more meat or milk</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Large/unusual flowers</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Domesticated dogs with a good nature</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Use of selective breeding	Example	Benefits	Risks	Disease resistance in crops				Animals with more meat or milk				Large/unusual flowers				Domesticated dogs with a good nature			
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8. Complete the diagram to show the stages in genetically engineering insulin:



Describe the process of 'genetic engineering'

Explain how the nervous system is adapted for its function and why it is important

Describe the role of the pituitary gland

Describe the roles of FSH, LH, Oestrogen and progesterone in the menstrual cycle

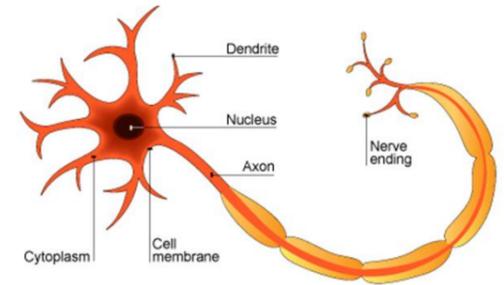
Describe the roles of oestrogen and progesterone in puberty

Explain type 1 and type 2 diabetes and how they can be treated

Compare and contrast the two types of diabetes

9. Match the feature to its function:

a. Neurones are long, which means that they can...	...to travel quickly along the neurone.
b. Neurones have branched endings called dendrites, which allow them to...	...carry electrical impulses to distant parts of the body.
c. Neurones have an insulating sheath, which allows the electrical impulse...	...connect with other neurones.



10. For each of the above adaptations, give a reason why this feature is important to the nervous system.

-
-
-

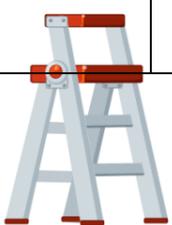
11. Give three processes that the pituitary gland is involved in and describe its role in each process.

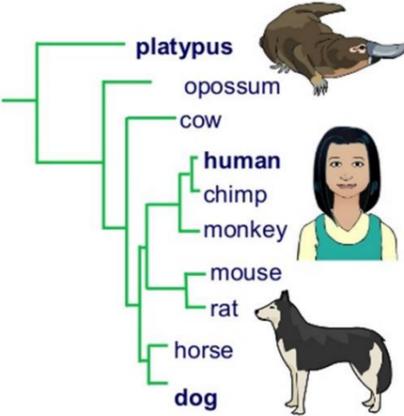
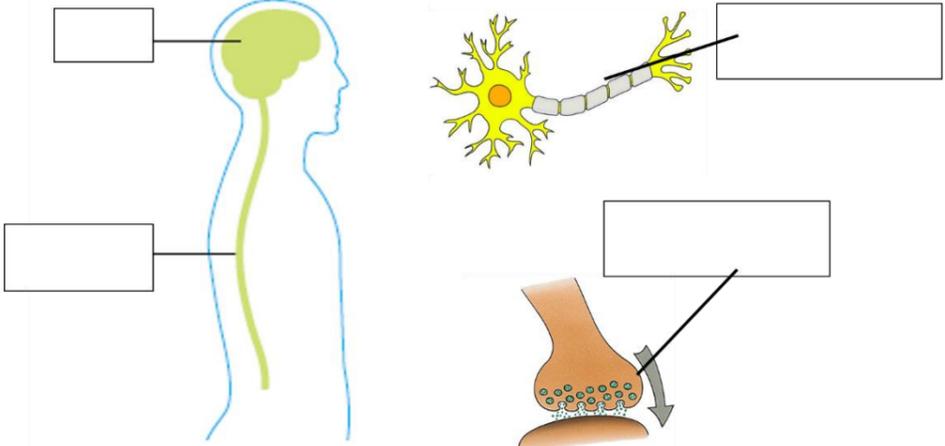
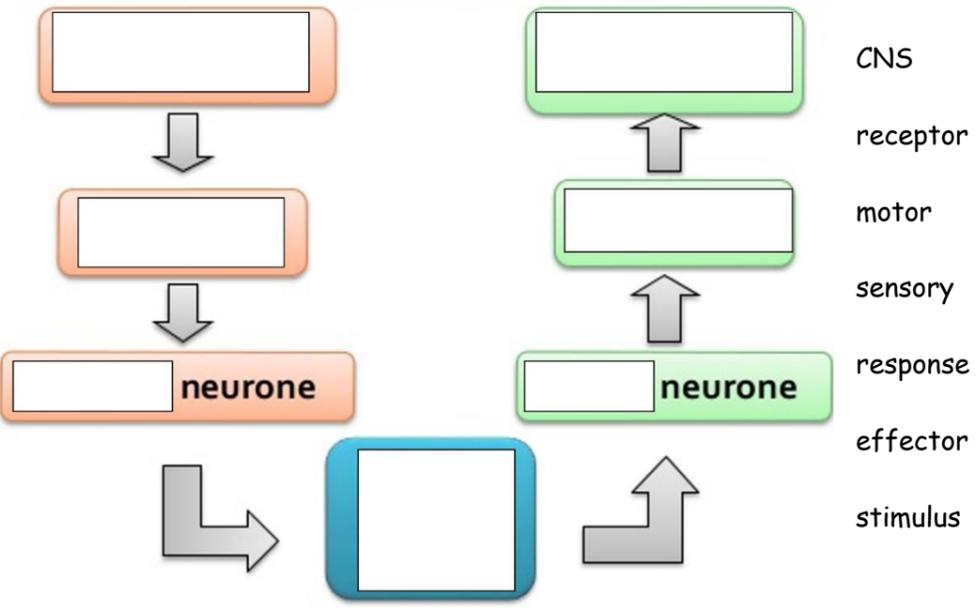
12.

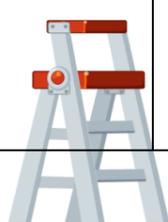
Hormone	Role in puberty	Role in menstrual cycle
Luteinising hormones		
Follicle stimulating hormone		
Oestrogen		
Progesterone		

13. Complete the table to compare Type I and Type II diabetes:

	Cause	Age of diagnoses	Treatment
Type I			
Type II			



%	I can ...	Prove it!												
<p style="text-align: center;">40%</p>	<p>Define 'species' (linking to future fertility and breeding)</p>	<p>1. Complete the following definition of a species using these words: fertile, organisms, reproduce 'A species is a group of _____ that can _____ together to produce offspring that are _____ (can also reproduce).'</p> <p>2. Use the evolutionary tree below to answer the questions:</p>  <p>a. Which organism is most closely related to humans? b. Which organism is least closely related to humans? c. Which organism is most closely related to the platypus?</p>												
	<p>Interpret information from evolutionary trees</p>	<p>3. a) Write a definition of extinction that includes these words: species, alive b) List the 5 reasons that a species may become extinct and give an example of each one:</p> <table border="1" data-bbox="661 1083 1974 1320"> <thead> <tr> <th>Reason</th> <th>Example</th> </tr> </thead> <tbody> <tr> <td>1. Changes to the</td> <td></td> </tr> <tr> <td>2. New</td> <td></td> </tr> <tr> <td>3. New</td> <td></td> </tr> <tr> <td>4. New, more successful</td> <td></td> </tr> <tr> <td>5. A single, catastrophic.....</td> <td></td> </tr> </tbody> </table>	Reason	Example	1. Changes to the		2. New		3. New		4. New, more successful		5. A single, catastrophic.....	
	Reason	Example												
	1. Changes to the													
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5. A single, catastrophic.....														
<p>Explain what extinction is and describe factors which may contribute to the extinction of a species</p>	<p>4. List 5 examples of when we might use genetic engineering</p> <p>5. Label the structures of the nervous system</p> 													
<p>Give examples of genetic engineering</p>	<p>6. Use these words to complete the flow chart to show the pathways taken by an electrical impulse:</p> 													
<p>Describe the structure of the nervous system</p>	<p>Describe the pathway of a message from stimulus to response</p>													



Describe the design of a reflex arc and explain its purpose

Define 'homeostasis' and explain why it is important

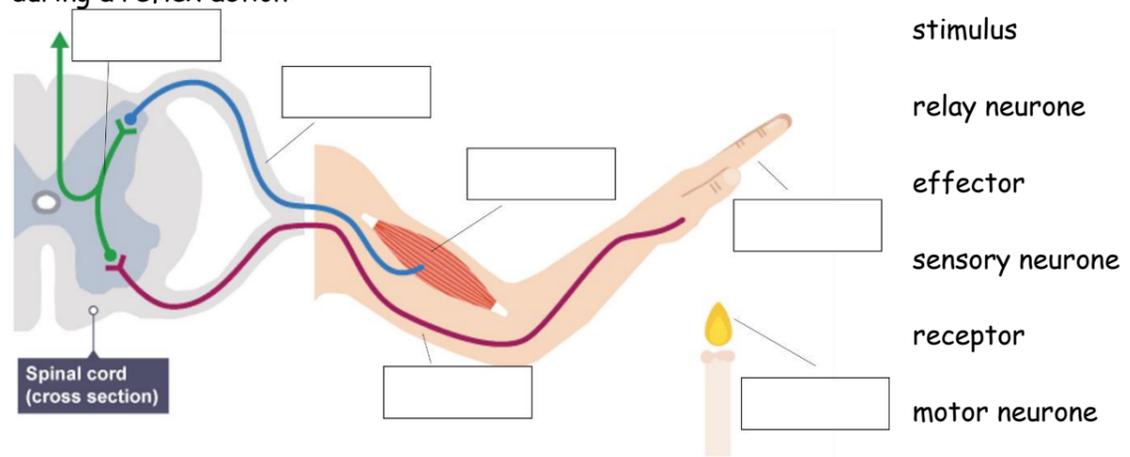
List three factors controlled by homeostasis in the human body

Describe the principals of hormonal coordination including what makes up the endocrine system

Describe what hormones are and label six glands in the body

Compare nervous system and hormonal responses

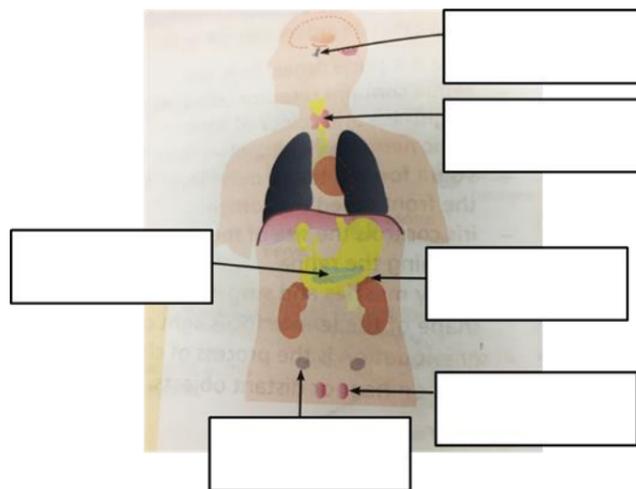
7. Use these words to complete the flow chart to show the pathways taken by an electrical impulse during a reflex action:



8. Explain why the reflex arc is used instead of the normal pathway.

9. a) Write a definition for homeostasis
b) Explain what would happen, if we did not control our internal conditions (use the word enzyme in your answer).
c) List 3 examples of things we control in the body.

10. Label this diagram of the endocrine system:



11. Give a definition of a hormone and list 5 examples.

12. Complete the table to compare nervous and hormonal responses:

	Nervous	Hormonal
Type of signal		
How the signal is carried		
Organs/structures involved		
Speed		
Duration		
Examples		

Key Words:

evolution, natural selection, speciation, species, extinction, classification, binominal. genus, species, evolutionary tree, fossil, selective breeding, genetic engineering (modification), plasmid, Gregor Mendel, Charles Darwin, Jean Baptiste Lamarck, Alfred Russell Wallace, CNS, neurone, synapse, reflex arc, sensory neurone, motor neurone, stimulus, receptor, effector, response, relay neurone, hormone, endocrine system, gland, pituitary gland, anti-diuretic hormone (ADH), insulin, glucagon, glycogen, pancreas, thermoregulatory centre, vasodilation, vasoconstriction, Type I diabetes, Type II diabetes, oestrogen, progesterone, testosterone, menstrual cycle, puberty, luteinising hormone (LH), follicle stimulant hormone (FSH), ovulation, menstruation, negative feedback, adrenaline, thyroxine, urea, deamination, selective reabsorption, tubules, dialysis, contraception, in vitro fertilisation (IVF),

