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| Explain why it is dangerous to move a person with a suspected fracture   * Might cause further damage e.g. to nerves | Explain how cartilage turns into bone   * Ossification * Add calcium and phosphorus |
| Describe the structure of the long bone   * Head with cartilage * Shaft with bone marrow | Describe how the arm bends and straightens   * Bend: bicep contracts, tricep relaxes (antagonistic)  * Straighten: bicep relaxes, tricep contracts |
| Explain advantages of an internal skeleton   * Flexible * Attach Muscles * Growth with the body * Framework | Describe the structure of a synovial joint, explain the function of each part   * Synovial membrane (holds in fluid), Synovial fluid (lubricates joint), Ligament (attaches bones together), Cartilage (cushions) |
| Describe range of movement in joints   * Ball and socket (360 degrees) * Hinge (lever movement) | Elderly people are more prone to fractures   * Osteoporosis (soft bones) |

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| Define a single circulatory system  Blood does one circuit through heart, only 2 chambers | Define a double circulatory system  http://t0.gstatic.com/images?q=tbn:ANd9GcS45Ka6czzN45vTOT2KtWayZN7SvXncXfetZL4Ol98Hub21dl0Y:www.cix.co.uk/~argus/Image3.gifBlood goes through heart twice in one circuit, heart has 4 chambers |
| Describe the contribution of Galen   * Heart has chambers * Heart sucked in blood | Describe the contribution of Harvey   * Valves in veins * Capillaries |
| Explain the advantages of double circulatory system   * Blood can be pumped at higher pressure | Describe the function of an artificial pacemaker   * Control heart beat |
| Explain sequence of contraction and valves in the heart   * Atria contract, AV valves open, Ventricles contract, AV valves close and semi lunar valves open | Describe how the pacemaker coordinates heart muscle contraction   * http://t0.gstatic.com/images?q=tbn:ANd9GcSVSiODrgRB5JtFFbJtXNdJZl2kHVfKFGbMZ6EH9t9dKLNO6ljV:www.zsf.jcu.cz/jab/5_3/fig1sedmera.jpgImpulse from SAN causes atria to contract, stimulates AVN, impulse from AVN causes ventricles to contract |

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| Explain the consequence of a hole in the heart   * Blood moves directly between sides of the heart * Less oxygen in the blood * Fixed by surgery | Explain the consequences of a damaged or weak heart valve   * Less effective blood circulation * Fixed by artificial valves |
| Understand why all unborn babies have a hole in the heart   * Don’t need a double circulatory system in the womb as they get oxygen from the mum | Explain advantages and disadvantages of an artificial pacemaker over a heart transplant   * No risk of reject or need to take immune-suppressants * Body might react with material |
| Explain the consequences of a blocked coronary artery   * Reduces blood flow to the heart * Treated by bypass surgery | Describe the processes of   * blood donation: Blood taken by needle in vein * blood transfusion: Blood given through IV |
| Describe the processes of blood clotting   * Platelets meets damaged blood vessels, series of chemical reactions, fibrin forms a mesh of fibres | Define agglutination   * Blood clumping caused by unsuccessful blood donations |
| Complete the table   |  |  |  | | --- | --- | --- | | Blood Type | Antigens | Antibodies | | A | A | B | | B | B | A | | AB | A & B | None | | O | None | A & B | | |

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| Explain how fish gills work   * Forcing water across filaments | Explain how permeable skin of amphibians work   * Gas exchange by diffusion through the skin |
| Explain adaptations of gas exchange surfaces (alveoli)   * Permeable, moist, large surface area, good blood supply, thin lining | Describe how the respiratory system protects itself against disease   * Mucus and ciliated cells |
| http://t1.gstatic.com/images?q=tbn:ANd9GcQ6L1DVJavy3_GCFpBAtIy_oPoYLfHFc6H5AesHu3eL-lgEkuqz:oxfordmedicine.com/doc/10.1093/med/9780199584048.001.0001/med_9780199584048_graphic043003-full.jpgDefine tidal air   * Amount taken in and out of the lungs in a normal breath | Define vital capacity air   * Total amount of air you can breathe out of your lungs |
| Define residual air   * Amount of air left in the lungs when you fully breathe out | Describe asbestosis and state cause   * Industrial cause * Inflammation and scarring limits gas exchange |
| Describe cystic fibrosis and state cause   * Genetic cause * Too much mucus in the bronchioles | Describe lung cancer and state cause   * Lifestyle cause * Cells grow rapidly, reducing surface area |
| Describe symptoms and treatment of asthma   * Treatment: Inhaler * Symptoms: Lining becomes inflamed, fluid builds up in airways, muscles contract, constricting the airways | |

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| Explain the importance of physical digestion   * So food pass more easily through * Provides a larger surface area | Explain where bile is made and how it improves fat digestion   * Made in the gall bladder * Increases the surface area of fats |
| Explain why stomach pH is acidic where as mouth and small intestine is alkaline   * Optimum for enzymes * Stomach acid kills bacteria | Describe the breakdown of starch as a two step process   * Amylase: Starch 🡪 Maltose * Maltase: Maltose 🡪Glucose |
| Enzymes: complete the table   |  |  |  | | --- | --- | --- | | Enzyme | Substrate | Product | | Carbohydrase/ Amylase | Sugars/Starch | Glucose | | Protease | Proteins | Amino acids | | Lipase | Fats | Fatty acids and glycerol | | |
| Explain why large molecules are broken down to small molecules in digestion   * To be absorbed in the blood stream | Explain how the small intestine is adapted to efficient absorption of food   * Villi to increase surface area * Good blood supply * Permeable * Thin lining |

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| Explain the importance of maintaining constant water concentration in blood plasma   * So doesn’t affect water concentration in cells | * diagram-of-kidney question sheetdiagram-of-kidney question sheetdiagram-of-kidney question sheetCortex * Medulla * Renal Pelvis * Ureter * Renal Artery * diagram-of-kidney question sheetRenal Vein |
| Explain how the function of the kidney tubule forms urine   * Glomerulus & capsule   + Filter blood * Selective reabsorption * Loop controls water and salt levelshttp://home.comcast.net/~llpellegrini/Test%20clip%20art-%20nephron-Unlabeled.JPG | Explain the principle of a dialysis machine   * Dialysis removes waste by diffusion * Dialysis fluid has the same concentrations of sodium and glucose as the blood so these aren’t removed |
| Explain factors that affect urine concentration   * Water intake, heat, exercise |
| State where urea is made   * Liver | State what urea is made from   * Excess amino acids |
| Explain how concentration of urine is controlled by Anti-diuretic hormone (ADH)   * Increases the permeability of kidney tubules so more water is reabsorbed into the blood * Controlled by negative feedback | Explain how the body responds to increased concentration levels of carbon dioxide   * Detected by the brain, increases breathing   Explain why high levels of carbon dioxide is toxic   * Makes blood acidic |

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| Describe the role of oestrogen   * Thickens lining of the uterus | Describe the role of progesterone   * Maintains lining of the uterus |
| Describe the role of FSH   * Stimulates development of the egg | Describe the role of LH   * Causes ovulation (egg release) |
| Negative feedback controls the menstrual cycle   * Progesterone inhibits FSH | Explain how the contraceptive pill works   * Progesterone to stop eggs from developing |
| Describe artificial insemination to treat infertility   * Sperm placed in woman’s uterus | Describe use of FSH to treat infertility |
| Describe in vitro fertilisation (IVF) to treat infertility   * Fertilisation outside of the body | Describe egg donation to treat infertility   * Uses donors eggs for IVF |
| Describe surrogacy to treat infertility   * Use another woman’s uterus | Describe ovary transplants to treat infertility   * Ovary from another woman transplanted |
| Describe how foetal development can be checked, test for Down’s Syndrome   * Amniocentesis (look at sample of amniotic fluid) & Chromosomal Analysis (look at sample of placenta) * Risk of miscarriage | |

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| Explain causes of extremes in heights   * Genes * Hormones | State where human growth hormone is made and where is effects   * Pituitary Gland, effects the long bones |
| Describe how baby’s growth is monitored and why   * Check developing correctly * Measure length, mass and head size | Explain causes of increased life expectancy in modern times   * Less industrial disease, healthier diet, modern treatments, better housing |
| State 3 problems in the supply of donor organs   * Shortage of donors * Tissue match * Size and age | State 4 problems of using mechanical replacements of organs   * Size * Power supply * Materials used * Body reactions |
| Describe the 2 problems with transplants   * Rejection * Immuno-suppressive drug treatment | Explain why donors can be living   * You only need one kidney * Part of the liver can be taken |
| Describe the advantages of a register of donors   * People can volunteer to donate their organs | Describe the disadvantages of a register of donors   * Are people too lazy to sign up? |