Homework: Tassomai - 4 daily goals each week

**Physics Unit 5 - Forces**

| **Learning intention** | **Key learning** |
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| What are contact and non-contact forces, vectors and scalars? | Define terms associated with the lesson.  Categorise forces as contact or non-contact.  Categorise vector and scalar quantities and explain why they are categorised in this way. |
| How do we calculate resultant force? | Recall what balanced and unbalanced forces are.  Define Newton’s 3rd law of motion.  Calculate resultant forces on objects with horizontal or vertical forces acting on them. |
| How do we resolve resultant forces? | Use a scale to draw force arrows.  Calculate the single resultant force on an object when forces are acting on an object in different directions. |
| What is Newton’s first law of motion? | Define Newton’s first law of motion.  Apply Newton’s first and third laws to exam questions to explain resultant forces. |
| What are moments? | Describe what moments are.  Use the equation moment of a force = force x distance to either work out the distance from a pivot or the size of a force being applied. |
| How do levers and gears work? | Explain how levers and gears transmit rotational effects of forces. |
| How do we interpret a speed-distance time graph? | Recall the equation for speed.  Interpret data from speed-distance time graphs. |
| What factors affect stopping distance? | Explain factors that affect stopping distances of vehicles.  Apply learning to explain why alcohol limits and driving speeds are set. |
| How do we interpret a velocity-time graph? | Explain why velocity is described as a vector quantity.  Interpret data from velocity-time graphs. |
| How do forces affect elasticity? | Recall the equation for elastic potential energy and apply this equation.  Explain how forces affect elasticity.  Describe the difference between elastic deformation and inelastic deformation caused by stretching forces. |
| How can extension be calculated? | Apply the equations for elastic potential energy to new scenarios to calculate the extension of a spring.  Apply the equation force = spring constant x extension |
| Required practical: What is Hooke’s law? | Apply knowledge from previous lessons to investigate how increasing force affects the extension of a spring. |

**Biology Unit 5 - Homeostasis and response**

| **Learning intention** | **Key learning** |
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| What is the human nervous system made of? | Describe the structure of the human nervous system.  Understand what happens at a synapse. |
| Required practical: How can we investigate reaction times? | Investigate how reaction time changes when using a dominant or non-dominant hand. |
| What is a reflex arc? | Describe the pathway that a nerve impulse takes during a reflex action.  Explain why reflexes are so important. |
| How is the brain structured? | Describe the different regions of the brain and their function.  Explain how knowledge of the brain has changed over time. |
| How does the eye work as a sense organ? | Describe the main parts of the eye and their function.  Explain how the change in the size of the pupil is a reflex action.  Explain accommodation. |
| How are problems with the eye corrected? | Describe how long and short vision (hyperopia/myopia) are caused.  Explain how long and short vision are corrected using lenses. |
| What is homeostasis? | Define homeostasis.  Describe how different factors affect the body. |
| What is the human endocrine system? | Define what a hormone is.  Identify glands of the endocrine system, what hormone they release and the impact it has.  Compare the endocrine and nervous system. |
| What is negative feedback? | Describe what is meant by negative feedback.  Explain the process of negative feedback using examples.  Explain how body temperature is regulated. |
| How is blood glucose levels controlled in the body? | Recall the role of the enzyme amylase in the digestion of starch into glucose.  Explain the role of insulin in the control of blood glucose levels.  Explain the role of glucagon in the control of blood glucose levels (Higher tier only). |
| What is diabetes and how is it controlled? | Describe the 2 different forms of diabetes.  Interpret data for diabetic and non-diabetic people.  Explain how both forms of diabetes is treated. |
| What hormones are involved in human reproduction? | Describe how male and female sex hormones cause secondary sexual characteristics.  Describe how female sex hormones control the menstrual cycle in mammals. |
| How are artificial hormones used in contraception and fertility treatments? | Understand what different types of contraception exist and the advantages and disadvantages of each.  Explain how oestrogen and progesterone are used in hormonal contraceptives.  Explain how FSH and LH are used in fertility treatment.  Describe the steps of IVF. |
| What are plant hormones? | Describe the role of auxins, gibberellins and ethene in plants.  Explain how auxins effect cell elongation in phototropism and geotropism. |
| Required practical: how does the direction of light affect the growth of plant seedlings? | Investigate how the direction of light affects the growth of plant seedlings. |
| Assessment | Complete an assessment to review learning of unit 5. |

**Chemistry Unit 6 - The rate and extent of chemical change**

| **Learning intention** | **Key learning** |
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| What is collision theory? | Recall the particle model of matter.  Explain what collision theory is in relation to rates of reaction. |
| How does surface area affect the rate of a reaction? | Explain how the surface area of a reactant can affect the rate of a reaction. |
| How does temperature affect the rate of a reaction? | Explain how temperature of a solution alters the movement of particles and how this can affect the rate of a reaction. |
| Required practical: how does concentration affect the rate of a reaction? | Investigate how concentration of a reactant can affect the rate of a reaction.  Present data in a table and graph.  Calculate the rate of reaction. |
| What is a catalyst? | Describe what a catalyst is.  Explain how a catalyst with affect the rate of a reaction.  Describe examples of catalysts used in industry and manufacturing.  Understand what is meant by activation energy |
| How do we interpret rate graphs? | Apply knowledge from pervious lessons to explain rate graphs.  Draw tangents to the curves on these graphs and use the slope of the tangent as a measure of the rate of reaction. (Higher tier only) |
| How do we perform rate calculations? | Calculate the rate of a reaction from a graph. |
| What is equilibria? | Recall what is meant by endothermic and exothermic reactions.  Describe how we show that reactions are reversible.  Describe that equilibria is reached when the forward and reverse reactions occur at exactly the same rate. |
| How do changing conditions such as pressure and temperature affect the rate of a reaction? | Explain how changing conditions in a closed system will affect the rate of a reaction. |
| What is the Haber cycle? | Describe what the Haber process is.  Explain why certain conditions are needed for the Haber process. |
| How are fertilisers produced industrially? | Explain how nitrate, phosphate and potassium based fertilisers are produced. |
| Assessment | Complete an assessment to review learning of unit 6. |