**Year 3 Summer 2 DT/ Computing Gears and Robotics**

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| **Learning objectives** | **Key vocabulary** | **Useful websites to search for** |
| Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]  Problem solve as they explore the features of the Control Box. ***(Science and Technology)***  Design and alter a series of commands made to the Control Box as they operate a motor, LEDs, and a buzzer. ***(Science and Technology)***  Use the looping function of the Control Box to repeat a pattern of actions. ***(Science and Techn***  Use the instructions to build the K’NEX Spinning Carpet Ride model. ***(Science, Technology, and Engineering)***  Use the instructions to build the K’NEX Spinning Carpet Ride model. ***(Science, Technology, and Engineering)***  .  Program the K’NEX Spinning Carpet model to add excitement and safety for the riders. ***(Science, Technology, Engineering, and Mathematics)***  Design a system and an actual safety device to remove riders from the ride in the event of a failure. ***(Technology and Engineering)***  Analyze a group of gears to determine whether a machine is geared up or geared down and to find the gear ratio of the gear system. ***(Science, Technology, Engineering and Mathematics)***  Rebuild the K’NEX Spinning Carpet Ride with a new gear ratio and analyze the impact of the change to the system. *(Science, Technology, Engineering,* | **Cams-** a projection on a rotating part in machinery, designed to make sliding contact with another part while rotating and impart reciprocal or variable motion to it.  Control Box - control box provides the physical interface to allow an operator to control a piece of equipment and monitor its performance. Control boxes typically contain a variety of instruments such as switches, knobs, sliders and buttons.  **Debugging-** Finding and correcting errors  **Gears- Gears** are wheels with teeth that slot together. ... If the **gears** are of different sizes, they can be used to increase the power of a turning force. The smaller wheel turns more quickly but with less force, while the bigger one turns more slowly with more force.  **Levers -** a rigid bar resting on a pivot, used to move a heavy or firmly fixed load with one end when pressure is applied to the other.  **Linkages -**  A mechanical linkage is an assembly of bodies connected to manage forces and movement.  **Logical steps –**Using rules to solve problems  **Programming -** Instructions written in a language (code) computer can understand.  **Robot-** A robot is just a computer that can perform a series of complex tasks automatically. Robots use a central computer to process information, as well as input and output devices to react and to carry out tasks.  **Sequencing-** A set of instructions that are followed in order. | [**http://www.knex.co.uk/**](http://www.knex.co.uk/) |
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