

| Topic: KS3 Year 8 Electronics | | Duration: 5 lessons. Autumn Term 1 | Composite: Unit Test |
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| Key vocabulary: | Core knowledge Components | Powerful knowledge components crucial to commit to long term memory | Links to previous and future topics |
| <p>Circuit Diagram, open switch, closed switch, battery, cell, lamp/bulb, ammeter, buzzer, fuse, resistor, voltmeter, LED (Light emitting diode), flux, tinning, current, voltage.</p> <p>Long (snipe) nose pliers, Wire strippers, Side cutters, Soldering iron, Solder, Soldering iron stand, Extraction unit, Dry Joint.</p> <p>Extension: Colour code. Ohms, tolerance</p> | <ol style="list-style-type: none"> 1. Why are symbols used in circuit diagrams? 2. What is meant by a 'universal' symbol? 3. What are the symbols for open switch, closed switch, battery, cell, lamp/bulb, ammeter, buzzer, fuse, resistor, voltmeter, LED ? 4. What are the names of the equipment used when soldering? 5. What are the safety rules when soldering? 6. How do you recognise a good solder joint? 7. What are the steps to follow when soldering? 8. What is tinning? Why is tinning done? 9. What is flux? What does it do? 10. What do the following components look like open switch, closed switch, battery, cell, lamp/bulb, ammeter, buzzer, fuse, resistor, voltmeter, LED ? <p>Extension: How do you read a resistor colour code?</p> | <ul style="list-style-type: none"> • Be able to draw an electronic circuit diagram correctly. • Be able to identify components and match them with appropriate symbols • Use correct safety rules when soldering • Choose and be able to use the correct tools and equipment when soldering. • Use the technique of tinning. • Be able to identify where flux has been used in the soldering process • To have produced a working circuit and assembled it into a light. <p>Extension</p> <ul style="list-style-type: none"> • To be able to read the value of resistors used, by reading the colour codes. | <p>Some pupils may have learnt the symbols for battery, switch, lamp at KS2 or in science.</p> <p>Stand alone topic in year 8.</p> <p>Will further develop knowledge of components, ohms law and systems in KS4.</p> |

| Topic: KS3 Year 8 CAD CAM | | Duration: 5 lessons. Autumn Term 2 | Composite: Unit Test |
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| Key vocabulary: | Core knowledge Components | Powerful knowledge components crucial to commit to long term memory | Links to previous and future topics |
| <p>CAD (Computer Aided Design) CAM (Computer Aided Manufacturing) Laser Cutter Vectorise, Etching Scale. Sequence. Laser Optics, Beam, Micro-switch Ventilation</p> <p>Key commands: LINE, DELETE, SELECT, GROUP, HANDLE, CIRCLE, CONTOUR, ARC, SHAPE, PATH, VECTORISE, EXPLODE.</p> | <ul style="list-style-type: none"> • What does CAD stand for? What is CAD ? • What does CAM stand for? What is CAM ? • What is the name of the CAD software you have been using? • What is the name of the CAM machine you have been using? • What are the advantages of CAD / CAM? • What are the disadvantages of CAD / CAM? • What is meant by vectorising an image? How do you vectorise an image? • What effect does drawing in a particular colour in a CAD file have on the behaviour of the laser cutter? • Why are the sizes you use in your CAD file important? • What are the steps to follow when doing CAD/CAM? • What are the key safety rules when using the Laser cutter? | <ul style="list-style-type: none"> • To be confident using CAD package 2D Design. • To be confident sending CAD file to machine (Laser cutter). • To have used a range of commands within CAD. • To be able to use 2D design package have produced a selection of seasonal designs using CAD, to scale. • To be able to use the criteria for self-checking work, ensuring designs meets all constraints of the laser cutter. • To be able to send an appropriate CAD file to the laser cutter <p>Extension</p> <ul style="list-style-type: none"> • Extended use of command (ISOMETRIC) | <p>Stand alone topic in year 8. Will further develop knowledge of CAD in year 9.</p> |