

Te Paepae o Aotea Science Badge

ELECTRONICS			
<i>Complete 20 stars</i>			
Rating	No	Exercises of Electronics	Sign
*	1	Make a collection of newspaper and/or magazine articles on recent developments in electronics.	
**	2	Design and build a simple circuit to control the brightness of a bulb with a selection of resistors, or a variable resistor	
*	3	Make a small wall chart showing how we can identify carbon resistors by their colour code.	
*	4	Collect, mount and label 5 examples each of conductors, and insulators.	
**	5	Describe, with the aid of diagrams, the construction of a crystal microphone and a moving-coil loudspeaker.	
***	6	Build a simple working crystal (or one diode) radio set.	
**	7	With the aid of block diagrams, explain how a simple radio receiver works, including tuning, demodulating, and audio frequency amplifying.	
**	8	Draw a block diagram of a simple radio transmitter and explain in your own words what happens at each stage. Include words like "carrier wave," "frequency", "wavelength" and "modulated".	
*	9	Draw and name the symbols of at least 10 commonly used electronics parts.	
*	10	Find out what L.E.D. is. Demonstrate one working, using a torch cell and the appropriate resistor.	
***	11	Build a small 1 transistor amplifier which	

		can be added to your crystal.	
*	12	Write a short account in your own words, of someone who was famous in developing radio communications.	
***	13	Design and build a simple burglar alarm using a Reed switch, relay, battery, and some sort of alarm, e.g. bell, buzzer, light.	
***	14	Find out what thermistors do. With a thermistor, relay, battery, design and build a fire alarm.	
**	15	Collect and name at least 10 different components found in a radio or TV set.	
*	16	Demonstrate to your teacher that you can use a multimeter to measure voltage, current and resistance.	
**	17	Demonstrate your soldering skills by soldering some small nails into an interesting geometric shape.	
***	18	Find out what a bridge rectifier is. Construct one using diodes and demonstrate it working, using a power pack from school which has a low voltage A. C. supply.	
**	19	Make a wall chart showing how a transistor functions.	
**	20	Using batteries, bulbs and switches build and demonstrate an AND gate and an OR gate.	