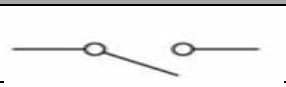
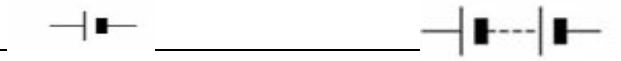
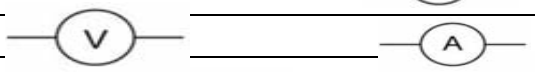
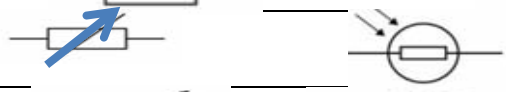
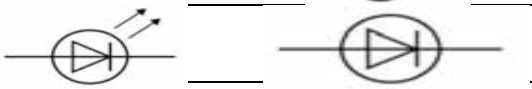
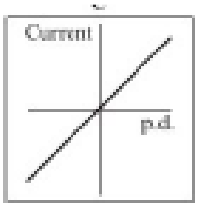
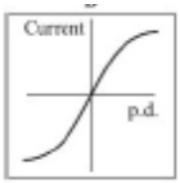
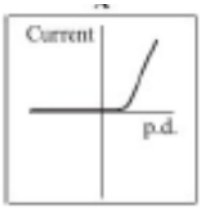
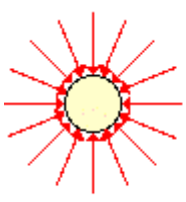
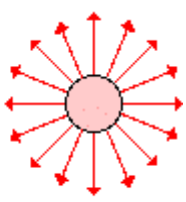
P3 Electrical Circuits Fact Sheet

Electrical symbols	
1. 	Switch (open)
2. 	**Cell and Battery**
3. 	Lamp
4. 	Voltmeter and Ammeter
5. 	**Resistor and Thermistor**
6. 	**Variable resistor and LDR**
7. 	**LED and Diode**
8. 	Fuse
Functions of electrical components	
9. Which components only let current flow in one direction?	**Diode (and LED)**
10. Why will current not flow backwards through a diode?	The resistance is very high
11. Which component will only emit light when current flows through it in the forward direction?	LED (light emitting diode)
12. Why is the use of LEDs increasing?	use a smaller current than other lighting and are more efficient
13. Give a use of LDRs	**Switching lights on when gets dark**
14. As light intensity increases what happens to the resistance in a light dependent resistor (LDR)?	**Decreases**
15. As light intensity increases what happens to the current in a light dependent resistor (LDR)?	Increases
16. Give a use of thermistors	Freezer alarms or thermostat on a boiler
17. What happens to the resistance in a thermistor as temperature increases?	**Decreases**
18. What happens to the current through a thermistor as temperature increases?	Increases
Definitions, symbols and units	
19. What is electric current?	**Flow of electric charge**
20. What are the units for current?	Amperes or Amps (A)
21. What is the work done per coulomb of charge that passes between 2 points in a circuit called?	Potential difference (or voltage)
22. What are the units for potential difference?	**Volts (V)**
23. What are the units for electric charge?	Coulombs (C)
24. What resists current in a circuit?	Resistance
25. What are the units for resistance?	**Ohms (Ω)**
26. What happens to current if resistance is increased?	**Decreases**
27. What happens to current if resistance is decreased?	Increases

28. Which component is shown in these graphs? 	**Resistor (at constant temperature)**
29. 	**Filament bulb**
30. 	**Diode**
31. How is a lot of energy wasted in a filament bulb?	As heat
32. What are the units for power	Watt (W)
33. The rate at which energy is transferred through an appliance is called its……	Power
Series and parallel circuits	
34. How do you work out the resistance in a series circuit?	**Add up resistances of each component**
35. The current in a series circuit is…..	the same through each component
36. The potential difference in a series circuit is…..	shared between the components
37. The current in a parallel circuit is….	Shared between the components
38. The potential difference in a parallel circuit is….	the same through each component
Household electricity and the National Grid	
39. What is current that flows in the same direction called?	**Direct current (DC)**
40. What do we call current that is changing direction?	**Alternating current (AC)**
41. What type of current is provided by batteries?	Direct
42. What type of current is provided by mains electricity?	Alternating
43. What does d.c. look like on an oscilloscope trace?	**Flat, horizontal line**
44. What does an a.c. look like on an oscilloscope trace?	**Wave**
45. What is the frequency of UK mains electricity	50Hz
46. What is the voltage of UK mains electricity?	230V
47. Name the wires (and colours) in an three core electrical cable	**Live (brown), neutral (blue), earth (green and yellow stripy)**
48. How electricity gets from power station to consumer	**National Grid**
49. What makes up the National Grid	**Pylons, cables and transformers**
50. What does a step up transformer do?	Increases voltage, decreases current

51. Where are step up transformers found?	Start of the National Grid
52. Where are step down transformers found?	End of the National grid
53. Why are step up transformers needed?	To decrease the current so less energy is lost in the National Grid
SKILLS SECTION. **4marks per question:** - Equation written down - Substitution of numbers into the equation - Number answer - Units	
54. What is the amount of charge in a wire if there is a current of 10A passing through a wire for 2 seconds?	**Q = I t** **Q = 10 x 2** **20Coloumbs (or C)**
55. What is the potential difference if there is a current of 20A and a resistance of 3 Ohms?	**V = I R** **V = 20 x 3** **60Volts (or V)**
56. What is the power if there is a potential difference of 5V and a current of 4 A?	*P = V I* P = 5 x 4 20W (or Watts)
57. What is the power if there is a resistance of 2Ohms and a current of 4 A?	$P = I^2 R$ P = 4x4 x2 32Ohms
58. What is the energy being used if there is a potential difference of 5V and a charge of 3C?	*E = Q V* E = 3 x 5 15 J (or Joules)
59. What is the energy being used if there is a power 200W, used for 2 minutes?	*E = P t* *E= 200 x 2 x 60* *24000J (or Joules)*
Triple content	
1. What type of material can become statically charged?	Insulating
2. What do you do with insulating materials to make them electrically charged?	Rub them together
3. How does a material become negatively charged	gains electrons from the other material
4. How does a material become positively charged?	loses electrons (goes to other material)
5. What happens when 2 objects with the same type of charge are brought together?	Repel
6. What happens when 2 objects with different types of charge are brought together?	Attract
7. Name a type of substance which electrical charges move quickly through	Metals
8. All charged objects have	an electric field around itself
9. The electric field is strongest	close to the charged object
10. A charged object placed in an electric field	Experiences a force
11.  	Field line for 1] negative source 2] positive source