**Year 9 Science Heat and Electricity Revision Booklet**

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Complete the terminology table.

|  |  |  |
| --- | --- | --- |
| Term | Definition | Unit |
| Energy |  |  |
| Temperature |  |  |
| Heat |  |  |

1. Classify the following forms of energy as potential or action energy.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| gravitational | electrical | elastic | chemical | nuclear | light | sound | kinetic |

|  |  |
| --- | --- |
| Kinetic energy (doing energy) | Potential energy (stored) |
|  |  |
|  |  |
|  |  |
|  |  |

1. Complete the table by using one of the types of heat transfer – Conduction, Convection and Radiation.

|  |  |
| --- | --- |
| Explanation | Type of heat transfer (conduction, convection, radiation) |
| Heat transfer by direct collision of particles |  |
| Occurs mainly in solids |  |
| Does not involve a transfer of matter |  |
| Occurs in fluids (gases and liquids) |  |
| How the sun’s energy reaches earth |  |
| Is the transfer of heat by the movement of particles |  |

1. Place the words into the sentences about heat transfer by convection. Words may be used more than once.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| solid | strongly | energy | more | convection | gases |
| free | kinetic | move | current | circular | less |

1. The transfer of thermal \_\_\_\_\_\_\_\_\_\_\_\_\_\_through a fluid is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. Fluids are liquids and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. Convection occurs in fluids because the particles in fluids are \_\_\_ \_\_\_\_ to \_\_\_\_\_\_\_\_\_\_.
4. When convection is occurring, the particles in the fluid move in a \_\_\_\_\_\_\_\_\_\_\_ path.
5. Particles close to the heat source gain \_\_\_\_\_\_\_\_\_\_\_\_\_ energy and move further apart.
6. The heated fluid becomes \_\_\_\_\_\_\_\_ dense and rises.
7. As the fluid moves away from the heat source the particles lose \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy and the fluid becomes more dense.
8. Cooler \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ dense fluid comes into replace the rising fluid.
9. This circular path is called a convection \_\_\_\_\_\_\_\_\_\_\_\_\_.
10. Convection cannot occur in a \_\_\_\_\_\_\_\_\_\_\_\_.
11. This is because the particles in a \_\_\_\_\_\_\_\_\_\_\_\_ are held together too \_\_\_\_\_\_\_\_\_\_\_\_\_.
12. Write 4 sentences explaining how heat is transferred by conduction.

|  |  |
| --- | --- |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |

1. Define the following:

|  |  |
| --- | --- |
| Static electricity |  |
| Current electricity |  |

1. Draw diagrams to show how a neutral wall can attract a negatively charged balloon. Use labels. Explain your diagram.
2. The tribolelectric series below shows the relative electron attracting powers of some different materials.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***strongest***  **electron attracting power**  ***weakest*** | | | | | | | | |
| sulfur | amber | rubber | ebonite | silk | wool | glass | acetate | cat’s fur |

Use the table to answer the following questions:

a) If amber were rubbed with silk, which material would gain electrons?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b) If glass were rubbed with wool, which material would lose electrons?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c) If acetate were rubbed with silk, which material would end up positively charged? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

d) What has happened to make this object positively charged?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. 
2. In the boxes provided, use a ruler and correct symbols to draw the

following circuit diagrams.

A. One cell with two globes in series with an ammeter measuring the current and a voltmeter measuring voltage across both globes.

B. A battery consisting of two 1.5V cells powering two globes in parallel. A switch has been added that turns both globes off when open.

1. Consider the circuits below and write the letter of the circuit in the table below to indicate whether the globes are in series or parallel.

|  |  |  |
| --- | --- | --- |
|  | Series Circuit | Parallel Circuit |
| The circuits which have globes in series/ parallel |  |  |
| Effect on globe brightness on adding extra globes |  |  |
| What would the effect be if a globe blew? |  |  |
| Describe the current in each circuit |  |  |

