**S3 Physics**

**Density and Kinetic Theory**



**OUTCOME Booklet**

* Learning Outcomes

SCN 4-08b

Through experimentation, I can explain floating and sinking in terms of the relative densities of different materials

SCN 4-05a

I have developed my understanding of the kinetic model of a gas. I can describe the qualitative relationships between pressure, volume and temperature of gases.

**How Confident am I with the Content Statements?**

* Circle the symbols to keep a record of your progress.

 ☺ I am confident that I understand this and I can apply this to problems

 😐 I have some understanding but I need to revise this some more

 ☹ I don’t know this or I need help because I don’t understand it

* You can use this to help you pick the areas of the unit that need the most revision.
* As you revise your class work you will be able to circle more and more smiley faces.
* If that does not help then you should ask your teacher!

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| **Content Statements** | **Can you do this?** | **Comments** |
| **Density** |
| 1 To be able to explain, by looking at their densities, whether an object will float or sink in various liquids. | ☹ 😐 ☺ |  |
| 2 State that density is mass per unit volume of a substance. | ☹ 😐 ☺ |  |
| 3 To state that the units of density are grams per cubic centimeter (g/cm3). | ☹ 😐 ☺ |  |
| **4** Use the formula density =mass/volume to calculate the density of various objects. | ☹ 😐 ☺ |  |
| 5 To know how to measure the volume of a regular shaped solid. | ☹ 😐 ☺ |  |
| 6 To be able to describe how to measure the density of a regular shaped object. | ☹ 😐 ☺ |  |
| 7 To know how to measure the volume of an irregular shaped object. | ☹ 😐 ☺ |  |
| 8 To be able to describe how to measure the density of an irregular shaped object. | ☹ 😐 ☺ |  |
| 9 To be able to describe how to measure the density of a liquid. | ☹ 😐 ☺ |  |
| 10 To explain why different liquids separate when added together. | ☹ 😐 ☺ |  |
| **Kinetic Theory** |
| 11 To be able to identify a solid, liquid or gas by looking at a drawing of their particle arrangements. | ☹ 😐 ☺ |  |
| 12 To state that The Kinetic Theory of Gases describes a gas as a large number of small particles, all of which are in constant, random motion. | ☹ 😐 ☺ |  |
| 13 To state that the Kinetic Theory helps explain properties of gases such as volume, temperature and pressure. | ☹ 😐 ☺ |  |
| 14 To state that the pressure of a gas is caused by the particles colliding with the walls of the container that it is in. | ☹ 😐 ☺ |  |
| 15 To state that the temperature of a gas depends on the kinetic energy of the gas particles. | ☹ 😐 ☺ |  |
| 16 To state that the unit of Pressure is Pascals. | ☹ 😐 ☺ |  |
| 17 To state that as the volume of a fixed mass of gas increases, the pressure decreases provided the temperature of the gas remains constant (Boyle’s Law). | ☹ 😐 ☺ |  |
| 18 To be able to explain, with the aid of a diagram, why as the volume of a gas increases the pressure decreases provided that temperature remains constant. | ☹ 😐 ☺ |  |
| 19 To be able to use an Excel Spreadsheet to draw a graph. | ☹ 😐 ☺ |  |
| 20 To state that as the temperature of a gas increases the pressure increases provided the volume of the gas remains constant and that this is known as Gay Lussac’s Law. | ☹ 😐 ☺ |  |
| 21 To be able to explain why as the temperature increases the pressure of a gas increases provided the volume remains constant. | ☹ 😐 ☺ |  |
| 22 To state that as the volume of a gas increases the temperature increases provided the pressure of the gas remains constant and that this is known as Charles’ Law. | ☹ 😐 ☺ |  |
| 23 To be able to explain why as the temperature of a gas increases its volume increases provided the pressure of the gas remains constant. | ☹ 😐 ☺ |  |