

### BTEC Science Extended Certificate.

Please bring this work with you to your first science lesson. It is fine to be handwritten, on paper. It will be needed to be handed in.

#### Task 1: Writing a method.

One of the important skills in applied science is to be able to write practical instructions clearly. This task is to help us see how good you are at doing this and what we need to do, to further help you develop.

Write a method that gives a year 7 student instructions for how to set up an experiment to heat 100 cm<sup>3</sup> of water safely using a Bunsen burner. The student must take readings of temperature every minute until the water boils.

Your method should include

- An apparatus list
- A labelled diagram
- A set of step by step instructions for the student to follow
- A suitable table for the student to use to record their results
- Health and safety instructions
- Information about how they can make their results accurate and reliable.

#### Task 2: Working with equations.

Use a calculator for the next section. Please show all working and attempt all questions.

Remember the equation for speed?

$$Speed = \frac{Distance}{Time}$$

- a. If a snail travels at 0.013 m/s, how long will it take to travel 15 m in my garden?
- b. How far would the same snail get in 24 hours if it doesn't stop moving? (Hint – how many seconds in 24 hours?)

In electricity, power, current (I) and resistance are related by the following equation:

$$P = I^2 R$$

- c. Work out the power if you have a current of 1.5 A and a resistance of 5.8  $\Omega$
- d. If a circuit has a power of 50 W with a current of 4.5 A, what is the resistance in the circuit?
- e. If a circuit has a power of 75 W and a resistance of 3.5  $\Omega$ , what is the current?