09/09/24 Biology Worksheet

The table below shows some characteristics shared by most animals, complete the table by giving the missing characteristics and examples.

Characteristic	Example
they require nutrition	eating food
they respire	releasing energy from carbohydrate
	some animals can fly
they control their internal conditions	
	increase of the population of foxes
they grow	

Answers:

Movement, control of blood glucose/temperature/osmoregulation etc, reproduction, increasing in mass or size/cells divide/increase in height etc

23/09/24 Chemistry worksheet

Research some examples of chemical reactions in everyday life and in industry. Summarise the purpose of the reaction, identify the product and reactants and state what type of chemical reaction it is.

This question is about displacement reactions.

Iron is extracted from iron oxide by a displacement reaction with carbon.

(a) Balance the equation for the reaction.

$$Fe_2O_3 + 3\ C \rightarrow \_\_\_\_\_Fe + \_\_\_\_\_CO$$

(2)

(b) Iron oxide is reduced in this reaction.

How does the equation show that iron oxide is reduced?

(1)

(c) Calculate the relative formula mass (M_r) of Fe_2O_3

Relative atomic masses (A_r): O = 16 Fe = 56

M_r = _____

Answers:

(a) $Fe_2O_3 + 3\ C \rightarrow \mathbf{2}\ Fe + \mathbf{3}\ CO$

(b) (iron oxide) loses oxygen

ignore references to gain of electrons

(c) (M_r =) (2 × 56) + (3 × 16)

= 160

21/10/24 Density worksheet

The figure shows a rock found by a student on a beach.

To help identify the type of rock, the student took measurements to determine its density.

(a) Describe a method the student could use to determine the density of the rock.

(6)

The student determined the density of the rock to be 2.55 ± 0.10 g/cm^3.

(b) What are the maximum and minimum values for the density of the rock?

Maximum density = _____ g/cm^3

Minimum density = _____ g/cm^3

(1)

(c) The table below gives the density of five different types of rock.

Type of rock	**Density in g/cm^3**
Basalt	2.90 ± 0.10
Chalk	2.35 ± 0.15
Flint	2.60 ± 0.10
Sandstone	2.20 ± 0.20
Slate	2.90 ± 0.20

Which two types of rock in above table could be the type of rock the student had?

Tick (✓) **one** box.

Basalt or chalk ☐

Chalk or flint ☐

Flint or sandstone ☐

Sandstone or slate ☐

(1)

(d) The student only took one set of measurements to determine the density of the rock.

Explain why taking the measurements more than once may improve the accuracy of the density value.

(2)

(Total 10 marks)

Answers:

(a) Any valid method
(b) maximum density = 2.65 (g/cm^3) minimum density = 2.45 (g/cm^3)
(c) chalk or flint
(d) a mean can be calculated, which reduces the effect of random errors