

Homework 1. Lesson 3.

Name: _____ Group: _____ Due date: _____

Iron is extracted in the blast furnace. Iron ore, limestone, coke and hot air are the raw materials.

a. Give the reason for adding each of the following to the furnace:

(i) Coke _____

(ii) Limestone _____ (2)

b. Complete the following word equation that represents the main reaction occurring in the blast furnace.

Iron oxide + Carbon \rightarrow _____ + _____ (1)

c. Which substance has been **oxidised** in this reaction? Give a reason.

Substance. _____

Reason. _____ (2)

d. What is the name of the most common ore of aluminium?

_____ (1)

e. Why can aluminium **not** be extracted from its ore in the same way as iron?

_____ (1)

f. What method must be used for aluminium extraction?

_____ (1)

g. What advantage does aluminium have over iron for making window frames?

_____ (1)

h. Iron is used to make cutlery but knives and forks do not rust.

What is iron combined with to stop it rusting?

_____ (1)

i. What is this type of material called?

_____ (1)

Total / 11

Homework 2. Lesson 4.

Name: _____ Group: _____ Due date: _____

- . A student was investigating the reactivity of copper, magnesium and zinc. He placed each metal into the solutions shown in the table and recorded his observations.

Metal	Solution	Observations
Magnesium	Copper sulfate	A brown solid forms and the solution turns from blue to colourless.
Zinc	Copper sulfate	A brown solid forms and the solution turns from blue to colourless
Magnesium	Zinc sulfate	The magnesium ribbon turns dark grey.
Copper	Zinc sulfate	No reaction.

- a. Use the information in the table to place the metals in order of reactivity.

Most reactive. _____

Least reactive. _____ (1)

- b. Name the products formed between the reaction of magnesium and copper sulfate solution.

_____ and _____ (2)

- c. Lead can be extracted from its oxide using carbon in a furnace. Complete the following word equation.

Lead oxide + Carbon \rightarrow _____ + _____ (2)

- d. What does the reaction tell you about the relative reactivities of lead and carbon?

_____ (1)

- e. Which substance in this reaction is being reduced? Give a reason for your choice.

Substance being reduced. _____

Reason. _____ (2)

- f. State why heating with carbon cannot be used to extract aluminium from its ore.

_____ (1)

Total / 9.

Homework 3. Lesson 5.

Name: _____ Group: _____ Due date: _____

Gold masks found in tombs of the ancient Egyptians are still shiny after thousands of years.

a. What is pure gold? Tick one.

A compound _____ . An element _____ .

An alloy _____ A mixture _____ (1)

b. The list shows some of the properties of gold:-

It conducts electricity, It melts at 1064°C It is yellow

It is easily scratched. It stays shiny. It conducts heat.

Which one of these properties shows that gold does **not** react with oxygen in the air?

_____ (1)

c. Which two of the properties above are properties of all metals?

_____ and _____ (2)

d. Old iron objects from tombs in Britain are often covered in rust. Iron reacts with oxygen when it rusts.

What else is needed for iron to go rusty? Choose **one** of the following:-

Lead. Nitrogen. Carbon dioxide. Water.

_____ (1)

e. A box contains a selection of metal objects from a tomb.

What piece of equipment would you use to separate the iron objects from the other metal objects?

_____ (1)

Total / 6

Homework 4. Lesson 7.

Name: _____ Group: _____ Due date: _____

Jill bought a can of Wax Seal to spray the parts underneath her car.

Wax Seal helps to prevent these parts rusting. It is a mixture of wax and a liquid called white spirit.

a. The body of Jill's car is made from steel an alloy containing iron and a non- metal element. Name this element. _____ (1)

b. Give **two** substances that are needed for iron to rust.
1. _____
2. _____ (2)

c. How does Wax Seal help to protect the car from rusting? _____ (1)

d. What is used to protect the body panels of the car from rusting? _____ (1)

e. Different methods of protection from rusting are more suitable to use in different situations.
Why would you not use the method you gave in answer "d" to prevent a bike chain from rusting.
Which method would you use and why?
Reason. _____ (1)

Method used and why.

_____ (2)

Total / 8

Homework 5. Lesson 8.

Name: _____ Group: _____ Due date: _____

An alloy is a mixture of elements. The table shows the mass of each element present in 100 g of five different alloys, bronze, solder, steel, stainless steel and brass.

Alloy	Mass of each element in 100g of alloy							
	Lead (g)	Tin (g)	Copper (g)	Zinc (g)	Carbon (g)	Iron (g)	Chromium (g)	Nickel (g)
Bronze	X	?	95	1	X	X	X	X
Solder	62	38	X	X	X	X	X	X
Steel	X	X	X	X	1	99	X	X
Stainless steel	X	X	X	X	X	?	20	10
Brass	X	X	67	33	X	X	X	X

a. Complete the missing percentages in the table (2)

b. Which alloy in the table above contains an element which is a non-metal?

_____ (1)

c. Which **two alloys** in the table contain only **two metals**?

_____ and _____ (2)

d. Another alloy called nichrome contains only the elements chromium and nickel. 100 g of nichrome contains 20 g of chromium.

How much nickel does it contain?

_____ g. (1)

e. Before 1992, two-pence coins were made of bronze. Steel rusts but bronze does not rust. Why does bronze not rust? Use information in the table above to help you.

_____ (1)

f. Rusting requires water and a gas from the air. Give the name of this gas.

_____ (1) Total / 8