

## Lesson 5 – Tasks

### Task 1

Fill in the gaps

The main iron ores are \_\_\_\_\_ ( $\text{Fe}_3\text{O}_4$ ), which is an iron  
\_\_\_\_\_, \_\_\_\_\_ ( $\text{Fe}_2\text{O}_3$ ), which is an iron  
\_\_\_\_\_ and \_\_\_\_\_ ( $\text{FeCO}_3$ ), an  
\_\_\_\_\_ carbonate

### Task 2

Match up the elements in the two columns above. Then write down the resulting sentences:

**Pure iron**

**contains only Fe and C**

**Steel**

**has less than 1.76% of C**

**Alloy steel**

**contains Fe, C and other elements**

**Steel**

**Has not many uses nowadays**

**Carbon steel**

**has more than 1.76% of C**

**Carbon**

**is the most used ferrous metal**

**Cast iron**

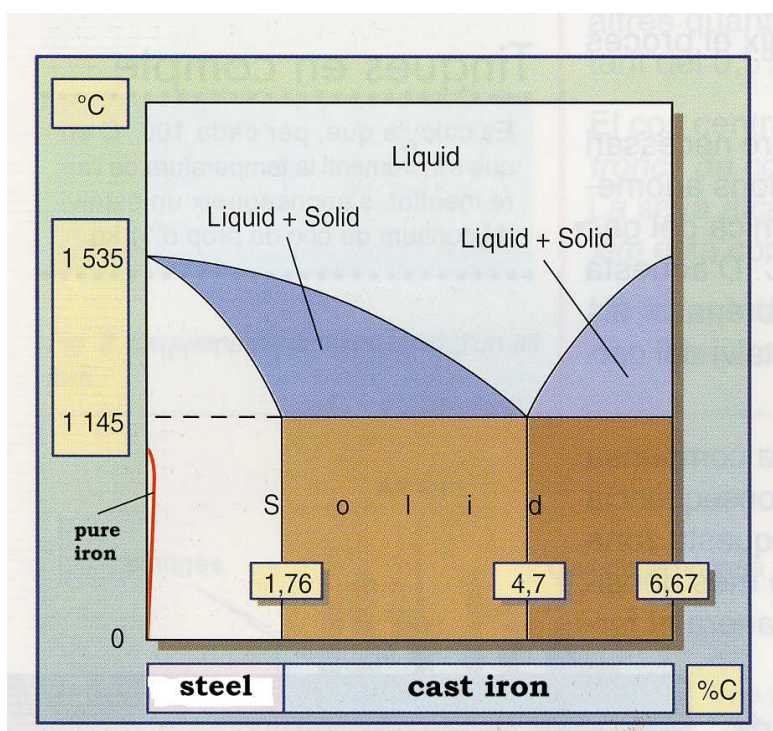
**acts as a hardening agent in steel**

**Pure iron**

**has less than 0.02% of C**

### Task 3

Look at the graph and answer the questions



- a) What kind of phase diagram is this, according to what has been studied in lesson 3?
- b) Which is the iron's melting point?
- c) Is there a eutectic point in the graph? If so, find it precisely
- d) Locate the following points on the graph, work out whether the alloy is solid, liquid or liquid + solid and write a sentence about every one:
- i) 2% C, 1150°C
  - ii) 3% C, 1600°C
  - iii) 1% C, 1500°C
  - iv) 4,7% C, 1100°C
  - v) unknown % of C, 1800°C
  - vi) unknown % of C, 1000°C
  - vii) 0% C, 1540°C

Example:

1. An alloy Fe-C with 2%C at 1150°C is in liquid + solid state

#### Task 4

Match up the elements in the two columns below. Then write down the resulting sentences:

<b>Limestone</b>	<b>takes out the impurities from crude steel</b>
<b>Iron ore</b>	<b>converts iron into crude steel</b>
<b>Molten slag</b>	<b>is iron with too much carbon and is brittle</b>
<b>Oxygen converter</b>	<b>is a raw material of blast furnace</b>
<b>Pig iron</b>	<b>comes from the reaction of the impurities of the ore with the limestone</b>
<b>Electric furnace</b>	<b>burns off spare steel from pig iron</b>
<b>Molten iron</b>	<b>is a raw material of blast furnace</b>
<b>Oxygen converter</b>	<b>is the same as pig iron</b>

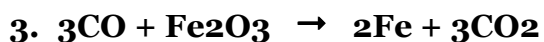
#### Task 5

The following chemical reactions take place in a blast furnace.  
Work out where the reactants come from in every reaction



✓ C comes from the coke carbon

✓ O<sub>2</sub> comes from the \_\_\_\_\_



#### Task 6

- Who was the Greek god of the forge?
- Who was the Roman god of the forge?

#### Task 7

a) Find out which statements are **True (T)** or **False (F)**:

Statement	T/F?
China is currently one of the major producers of iron ore	
Humans used first iron than bronze to make tools	
Pure iron has no carbon at all	
Wrought iron and forged iron is the same material	
A blacksmith produces cast iron	
hot-blast stove provides hot air for the production of molten iron	
The USA is currently one of the major producers of iron ore	
An oxygen converter converts the pig iron into molten steel	
The molten iron (also called <i>pig iron</i> ) has no carbon at all	
An alloy steel has more than 6.67% of carbon in its composition	

b) Write again the sentences you considered false changing something to make them be correct.