



# Teaching and Learning Newsletter

---

---

LDEUTC

Autumn 2021

---

---

# TEACHING AND LEARNING AUTUMN 2021

In the first two half terms of the year, we have seen some wonderful T&L practice taking place across the college.

## Prior Knowledge Assessment

We started the year by assessing all our learners on their prior knowledge in order to give both us and our learners a clear indication of their level of knowledge retainment. As a result, we were able to give useful feedback to the learners (mostly by in the form of Formative Assessment but also through in-lesson Assessment for Learning. Additionally, we were able to identify more general gaps in knowledge and re-adjust our curriculum and lesson planning to address those gaps.

## Focus on Oracy

‘Empowering all students to find their voice to succeed in school and life’ (Voice 21)

Knowing how important it is for all learners to develop their ability to clearly articulate and present knowledge and ideas, Oracy have been a key focus for this term. In order to achieve effective classroom oracy intervention across all subjects, we chose



to focus on one main strategy of Think. Pair. Share. In the next few pages, you will be able to see some excellent examples of TPS applied across the college.

Please also have a look at Kate's [TPS CPL PowerPoint](#) (under Autumn 2021) for more explanations and practical tips. Additional Oracy CPL sessions supporting **Questioning** and **Presentations** could be found on the same link.

## Focus on Retrieval Practice

Another focus for this term have been Retrieval Practice. Retrieval practice is the act of trying to recall information without having it in front of you or 'Retrieval practice boosts learning by pulling information **out** of students' heads, rather than cramming information into students' heads.' (Dr. Pooja Agarwal) and It is one of the most effective methods to achieve long-term retention of knowledge.

In our first [Retravel Practice CPL](#), Delivered by Adam, we looked at a few basic practical strategies such as **Cold-Calling**, Using **Mini Whiteboards**, and 'No Opt-outs'.

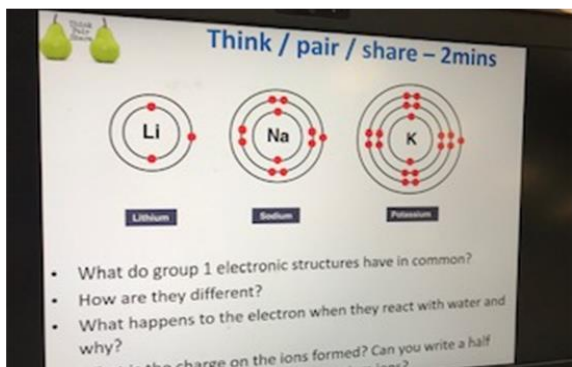
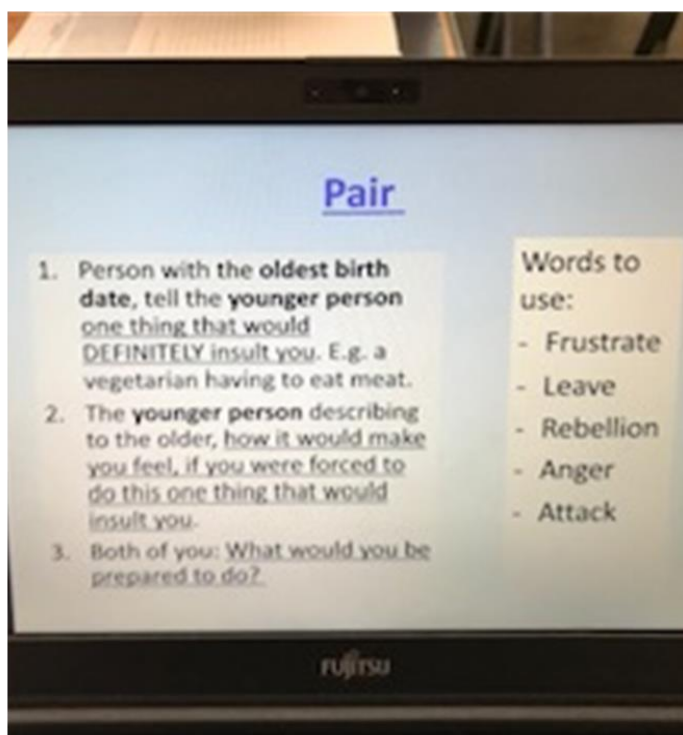
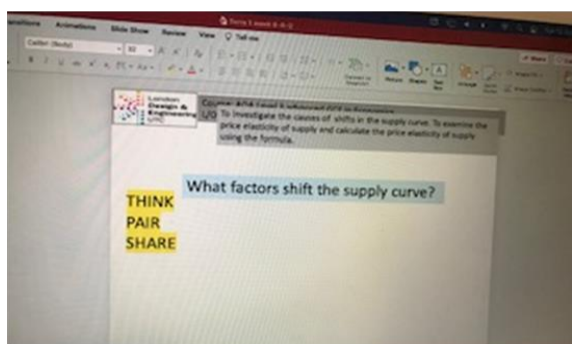
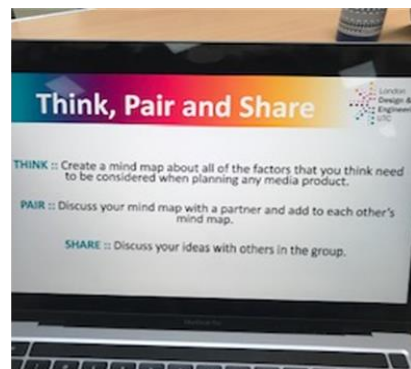
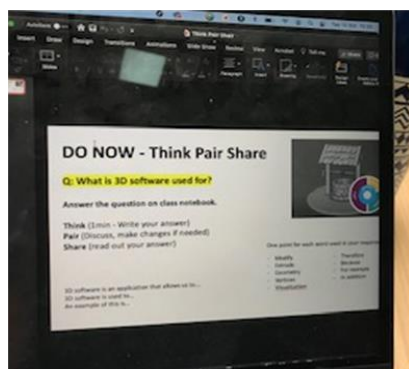
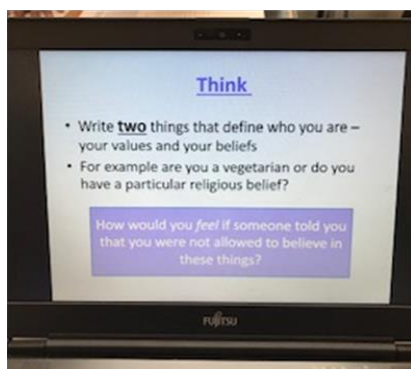
Many quick retrieval activities can be very effectively be applied through practices of Oracy such as TPS and many teachers are already using both strategies together.

# THINK. PAIR. SHARE.

This term, to develop our learners' oracy and enable them all to articulate their thoughts and ideas more coherently, we decided on one key strategy because "doing fewer things in greater depth is vital when introducing new approaches." (Mary Myatt).

The simplest, gimmick-free strategies are always the best, and when implemented with real precision can be transformative. Our chosen strategy was "**Think. Pair. Share**" (TPS). Following intensive CPD, this approach has been successfully adopted across the college and has become embedded in our teaching and learning. Here is just a taster of the creative and effective ways this strategy has been incorporated. The results? Our learners are becoming more fluent, confident and articulate!

Please look at some of the wonderful examples on this page and the more detailed examples on the following to pages.



# THINK. PAIR. SHARE.

In science, learners have been doing Think. Pair. Share Do Now Tasks.

## Literacy (TPS) IN SCIENCE

### DO NOW: Think Pair Share

Think with your pair then be prepared to share your answers:

Are any of these people abnormal? Why?

Sentence stem:

1. \_\_\_\_\_ is abnormal because they show \_\_\_\_\_
2. It can be argued that everyone has an element of abnormality. By this we mean \_\_\_\_\_ It is shown through \_\_\_\_\_



Words to help: imbalanced emotions; have criminal tendencies; are different to what society

## Literacy (TPS) IN SCIENCE

Social Influence

Literacy, Oracy

DO NOW: Think-Pair-Share

4m

1. Why might people resist social influence?

2. Give examples of real-life application where individuals or groups have resisted social influence, and their reason for doing so.

ii) Is this justified?

1. Individuals may resist social influence because \_\_\_\_\_

2. An example of real-life resistance is from \_\_\_\_\_ where the individual/ group gave strong evidence to fight for their view. This is justified because \_\_\_\_\_

Inhuman, conditions, political, racism, human rights, economy, poverty

Note the indication of the time limit on the top slide, the Key Words bank on the left one and the sentence starters support on both slides.

In Digital Media, Learners have been effectively using Whiteboards to present their answers to the TPS task.

## Literacy (TPS) IN MATHS

Course: Edexcel Level 3 Advanced GCE in Mathematics  
THINK PAIR SHARE DO NOW TASK

THINK: Try the question below individually

- Write down the equation of a straight line that is parallel to  $y = 5x + 6$
- Find an equation of the line that is perpendicular to the line  $y = 5x + 6$  and passes through the point  $(-2, 5)$ .

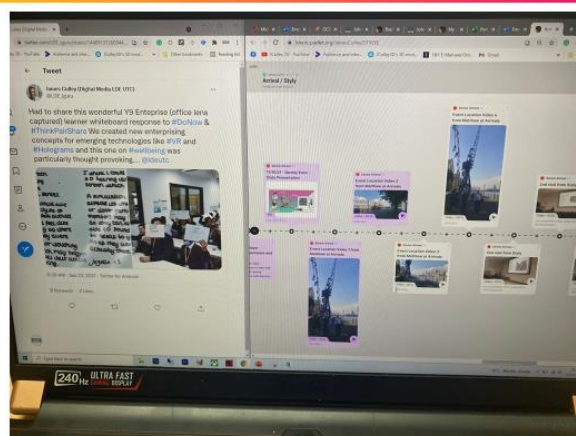
PAIR: Work with the person next to you to justify your answer. Use the following sentence starters in your explanation to each other:

The gradient is \_\_\_\_\_ because \_\_\_\_\_  
The equation of the line is \_\_\_\_\_ because \_\_\_\_\_  
You can find the gradient of the perpendicular line by \_\_\_\_\_

SHARE: I will pick anyone at random to explain and justify answers. You will need to use full sentences in your explanation and key words such as:

Gradient	Equation
Parallel	y-intercept
Perpendicular	reciprocal

## Literacy (TPS) IN DIGITAL MEDIA



Excellent practice shown in Maths; note the indication of the time limit, sentence starter, word bank and the general 'Chunking' and clarity of instructions.

# THINK. PAIR. SHARE.

In English, TPS tasks have been used to support the learners in analysing Shakespeare's Lady Macbeth.

## Literacy (TPS) IN ENGLISH

Key quote

Think: which do you think are the key words you should zoom in on and why might Shakespeare have chosen them?

"Oh full of scorpions is my mind"



dark predators fatal Chain of Being regicide "fired"

## Literacy (TPS) IN ENGLISH

"dearest partner in greatness"

"shalt be what thou art promised"

"too full of the milk of human kindness"

"Four spirits" in his ear"

1. Think: what precise aspect of Lady Macbeth does Shakespeare reveal here? Circle the key word that you think achieves this. Consider why. Annotate your sheet with your thoughts

"unsex me here"

"Come you spirits"

"take my milk for gall"

"Not heaven peep through the blanket of the dark"

"look like an innocent flower"

2. Pair using the following sentence construction "When the audience hear the word .... they think about ....". Be ready to share with the whole class ...

They have been interpreting the meaning of specific sentences from the text and discussing higher-level open-ended questions.

Note the use of **images** and **Visual stimulus** to support learners with thinking about their answers.

## Literacy (TPS) IN ENGLISH

Think - Pair - Share

3 MIN

Is there a difference between antagonists and monsters?  
Discuss!

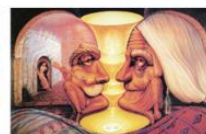


Use the following connectives in your explanation:

However  
Because  
Therefore



## Literacy (TPS) IN ENGLISH



What do these images have in common?  
How might they relate to Macbeth?

THINK - 60 seconds  
PAIR - 60 seconds  
SHARE

Use these words in your response:  
Implicit  
Whereas  
Because

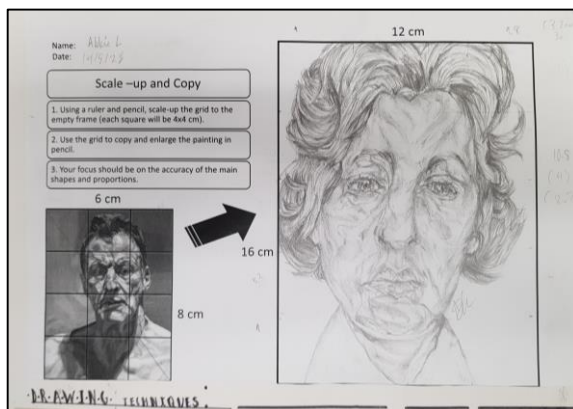


Also note the use of the good practice shown by adding a **clear time frame** and **word banks**.

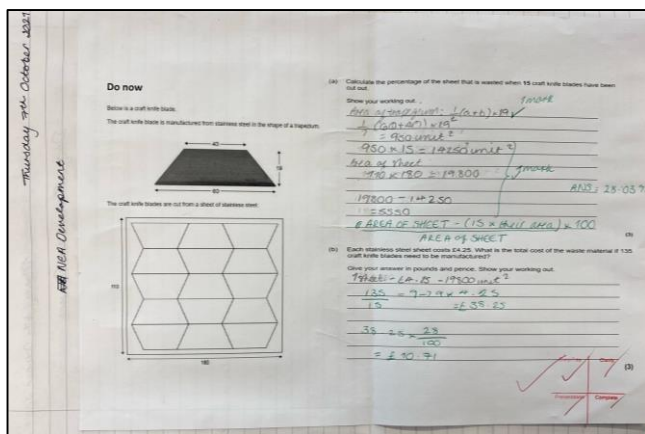
# NUMERACY ACROSS THE COLLEGE

Numeracy has been promoted across all subjects in the college and below are examples of work different departments:

In Art, Learners have been using the Grid Method to enlarge and copy artworks.



In Engineering, Learners have been calculating the wastage and cost of craft knife manufacturing.



In Science, Learners were calculating the mass, and particles quantities of different materials.

## Do Now (numeracy)

- What is the **mass** of 1mol of Neon? How many **atoms** are there in 1mol of Neon?
- How many **moles** of water in 108g of water? How many **molecules** of water? How many **atoms** are there?
- Calculate the mass of 4.5mol of  $\text{Li}_2\text{O}$
- How many **molecules** are in 23moles of oxygen gas?
- Grade 8 (1 SIMS point):** How many molecules are in 25g of  $\text{NH}_3$
- Grade 9 (5 SIMS points):** How many **ions** are in 100g of  $\text{Al}_2\text{O}_3$

In English, learners have been attaching different costs to different kind of sentences and words types to achieve an accumulated value.

Can you write me a paragraph worth £10 or more?

Personification	£2
Onomatopoeia	£1
Metaphor	£1
Simile	£1
Alliteration	£1
Hyperbole	£1
Sensory language	50p
Adjectives	25p

Use WOW words:

Impeccable - £0.80p  
(Perfect/ flawless)

Impertinent - £0.80p  
(rude/impolite)

Implicit - £0.80p  
(implied/indirect)

Use other vocabulary:

Trepidation - £0.65p  
(feeling of fear and anxiety)

Grotesque - £0.65p  
(deformed/ugly)

Aghast - £0.65p  
(horrified)

Moorsome - £0.65p  
(gloomy)

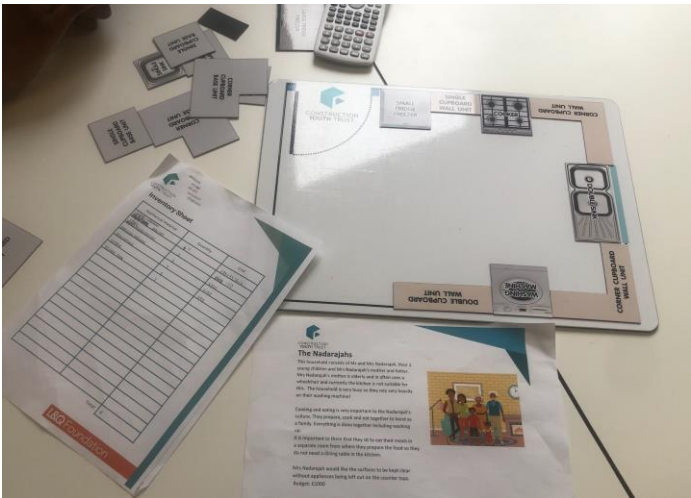
Choose a section from your story and re-write or Start new and write a new paragraph using as many descriptive devices as you can to create imagery in the reader's head

### SENTENCE STARTERS

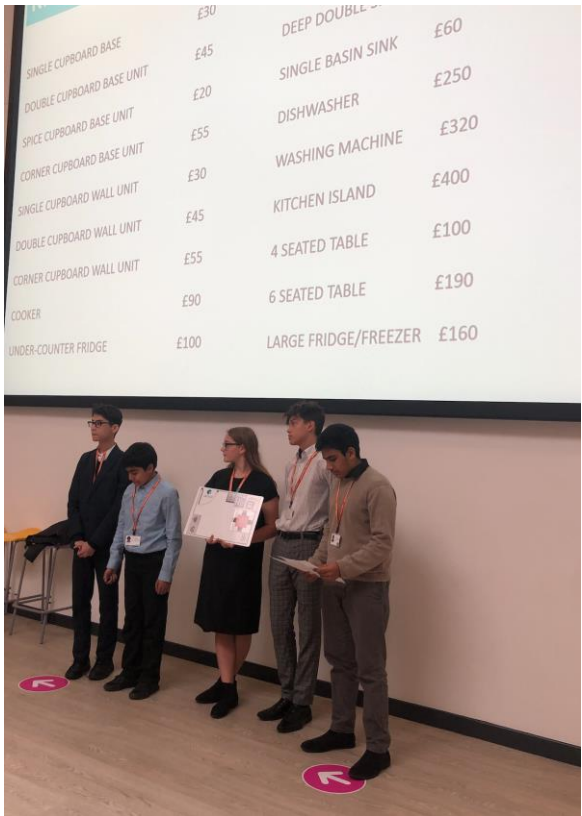
- Icy fingers gripped my arm in the darkness.
- The eyes in the painting follow him down the corridor.
- A shrill cry echoed in the mist

# YEAR 9 KITCHEN DESIGN PROJECT IN MATHS

Year 9 Learners worked in teams to design a kitchen that meet the needs and budget of the customer they were given in a project run by the Construction Youth Trust (CYT).



The Learners worked in groups of five to present their design, costs, and justifications to the CYT's representatives. The project was linked to the year 9's key concepts such as number calculations, shapes and geometry.




CONSTRUCTION  
YOUTH TRUST

## Cross-curricular ELP: National Nuclear Laboratory Employer Led Project in Science, Maths and English:


Last term, year 11 have been working on their employer led project in Science, Maths and English with the National Nuclear Laboratory (NNL).

### Science

In science, learners will be challenged to complete a series of tasks and present a report about radioisotopes based on NNL's Rob masterclass. Rob and the teachers will be awarding prizes for the best reports.





### Your Task



**3. In Science:**

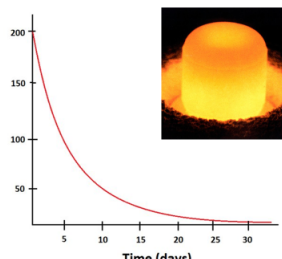
- You will complete a decay equation for **Strontium – 90** one of the waste products of nuclear reactors.
- You will use it's **half life** to calculate how much of a sample is remaining after a certain time.
- You will suggest suitable **safety precautions** when handling these materials and how to safely dispose of them

### Your Task

#### 1. In Maths (Thursday):

- You will be plotting graphs of an exponential decay to show how radioactive isotopes decay
- You will use these graphs to determine the half life of a radioisotope.




### Maths


In Maths, learners will be plotting graphs of exponential decays of radioisotopes and using them to determine half life.

### English

In English they will be researching and debating the following statement *“nuclear power is the only viable option for generating enough clean energy to meet demand in the future”* with best arguments also being awarded prizes.




### Your Task

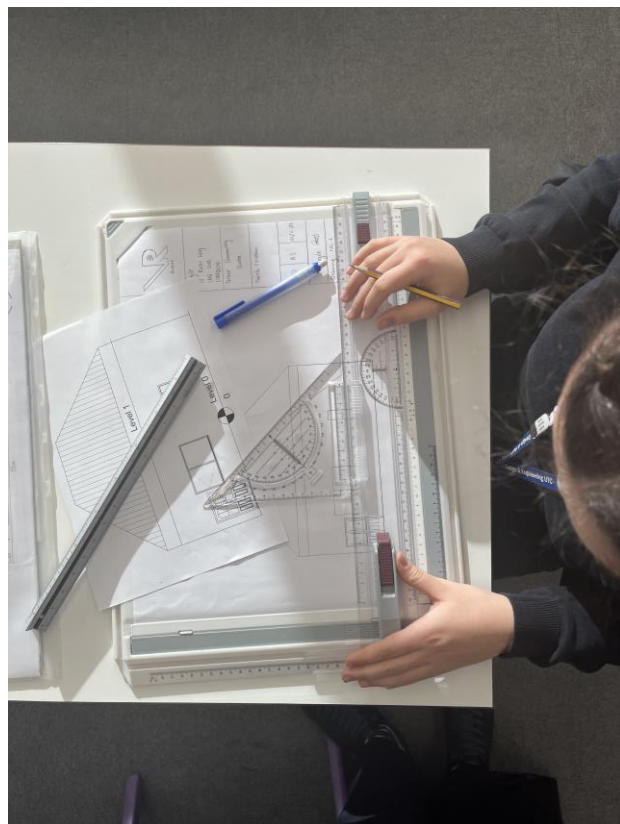


**2. In English (Friday):**

- You will research, prepare and take part in a debate on the following statement:  
*“nuclear power is the only viable option for generating enough clean energy to meet demand in the future”*
- Rob will help to decide the winning Teams



In Built Environment, Year 11 learners have been applying a combination of Oracy, Literacy and Numeracy skills in designing their own architectural drawings.



Year 13 are using subject-specific terminology when investigating SWOT analysis of the site.

The learners were presenting their work to the class, practicing Oracy Skills.




# LEARNERS RESPONDING TO FEEDBACK

In the Design Department, Learners have been **responding to feedback** and marking by correcting and re-doing their work in **green pen**. Learners in **Built Environment** (top image), and **Product Design** (bottom images), year 13 Learners have been in have been re-writing the answers to their assessment questions in **response to marking**.

London Design & Engineering

LDEUTC Construction and the Built Environment  
Prior knowledge Assessment  
Answer all questions

5. Identify the forces acting on the supported beam and explain each.



i) - more it bending taking place - the load on the beam is quite heavy but the support to keep it in place is not very strong. 2 forces are pinned against each other creating tension, leading to the bending of the beam. (3 marks)

ii) the supported beams carry all weight of the beam and beams however and there is a lot of stress placed on them, although they would still have the other part of the beam which relates back to the force of the bending. (3 marks)

6. Define the following key terminologies used in the field of Construction.

i) Curing  
a. often L&O  
the act of using light to harden a liquid ~~after~~ prolonged drying. It is ~~used~~ used to make it ~~stronger~~ stronger and is often used for things like concrete. (1 mark)

ii) Cyclic loading  
the constant movement and addition of load on a certain region over when the force is constantly changing too. (1 mark)

iii) Necking  
when a material deforms permanently, stretching and breaking a thinner neck-like shape. (1 mark)

Green Pen.

Question 4) Strength is the malleability and durability of a material - it is the force applied on something creating pressure and tension before plastic deformation or cracking. It is a necessary role for many of the property because if a material is weak, what is created with it could be damaged.

Question 5 - ii) Supported beams - Supporting beams carry have tension within them, the pressure added by the mass being allowing the carrying beams to bend all while preventing going through the creeping property.

Date/Title: \_\_\_\_\_  
Clarity: \_\_\_\_\_  
Presentation: \_\_\_\_\_  
Complete: \_\_\_\_\_  
(Total 4 marks)

How can a property impact on material choice?

A property can impact on material choice through the other 3 by and the nature of the building is going to have the other 3. The factors considered when of materials can affect the property's safety. For example, if a material has a high amount of stiffness which is the elastic modulus of a material, it will be hard to replace it should be able to return to its original shape after a load or high amount of stress and the preferred for stability and security.

Friday 20<sup>th</sup> September 2022

The resistance materials can be broken into four mechanical properties.

Electrical conductivity and how the rate at which each passes from one side of a material to the other.

- a. rate at which electrical conductivity will resist the flow of electricity and act as a insulator.
- Materials that are good at conducting electricity are called conductors.

Thermal conductivity - a material's ability to conduct heat.

- the higher the conductivity the more efficient materials are at conducting heat.
- measured using the four heat (W/mK).

Thermal resistance - ability to resist heat passing from one side to the other.

Green Pen.

Green Pen.

Q1. Name a ferrous metal and give two reasons why hardening has been used to improve function in a specific product.

Steel is a ferrous metal. The hardening process is used to improve the strength of the metal. The hardening process is used to improve the strength of the metal. The hardening process is used to improve the strength of the metal.

Q2. Name three ferrous and three non-ferrous metals by completing the table below.

Ferrous metals	Non-ferrous metals
Carbon Steel	Aluminium
Stainless Steel	Brass
Cast Iron	Copper

Q3. For one of the metals you have named in part (a) give a suitable use.

Use: Stainless Steel

Q4. Give two reasons why this metal is suitable.

Reason 1: It is a good conductor of heat and will perform the function.

Reason 2: It is very hard so it won't get damaged or scratched - it is durable.

Q5. Name two reasons why hardening has been used to improve function in a specific product.

Reason 1: It is a good conductor of heat and will perform the function.

Reason 2: It is very hard so it won't get damaged or scratched - it is durable.

Q6. Name two reasons why hardening has been used to improve function in a specific product.

Reason 1: It is a good conductor of heat and will perform the function.

Reason 2: It is very hard so it won't get damaged or scratched - it is durable.

Page 2 of 2

# RETRIEVAL PRACTICE IN SCIENCE

In **Science**, **Retrieval Practice** is embedded into the routine of every lesson; year 13 learners complete year 12 recap booklets as their **Do Now** and mark them at the start of each lesson, and then go through anything they want to be re-taught with the teacher.

## Y13 Do Now Retrieval Booklet 1

- 1(a) This question is about cyclic organic compounds.  
The table shows some information about cycloalkanes.

Cycloalkane	Skeletal formula	Boiling point / °C
Cyclopropane		-33
Cyclopentane		-49
Cyclohexane		81

These cycloalkanes are members of the same homologous series and have the same general formula.

- i. What is meant by the term *homologous series*?

.....  
.....  
..... [2]

- ii. State the general formula for these cycloalkanes

..... [1]

- iii. Explain the increase in boiling points of the cycloalkanes shown in the table.

.....  
.....  
..... [2]

© OCR 2021. You may photocopy this page.

Page 1 of 63

Created in ExamBuilder

- b). In the presence of ultraviolet radiation, **cyclohexane** reacts with bromine.

A mixture of cyclic organic compounds is formed, including  $C_6H_{11}Br$ .

- i. Complete the table below to show the mechanism of the reaction between bromine and cyclohexane to form  $C_6H_{11}Br$ .  
Include all possible termination steps in your answer.

Step	Equation
Initiation	.....
Propagation	..... .....
Termination	..... ..... .....

[5]

- ii. The initiation step involves homolytic fission.

Explain why the initiation step is an example of *homolytic fission*.

.....  
..... [1]

- c). The reaction between cyclohexane and bromine in (b) also forms  $C_6H_{11}Br$ .

- i. Write an equation, using molecular formulae, for the reaction of cyclohexane and bromine in the presence of ultraviolet radiation to form  $C_6H_{11}Br$ .

..... [1]

- ii. Name **one** of the structural isomers of  $C_6H_{11}Br$  formed in the reaction between cyclohexane and bromine.

..... [1]

© OCR 2021. You may photocopy this page.

Page 2 of 63

Created in ExamBuilder

- 2(a) 1-Bromobutane,  $CH_3CH_2CH_2CH_2Br$ , reacts with methoxide ions,  $CH_3O^-$ , by nucleophilic substitution.

1-Iodobutane also reacts with methoxide ions.

Indicate, by placing a tick in one of the boxes, how the use of 1-iodobutane would affect the rate of reaction compared with that of 1-bromobutane.

1-Iodobutane does not change the rate	<input type="checkbox"/>
1-Iodobutane increases the rate	<input type="checkbox"/>
1-Iodobutane decreases the rate	<input type="checkbox"/>

Explain your answer.

.....  
..... [1]

- b). Suggest how the methoxide ion can act as a nucleophile.

.....  
..... [1]

- c). Using the ' curly arrow ' model, suggest the mechanism for this reaction.

Show any relevant dipoles.

.....  
..... [3]

- d). The ethanoate ion,  $CH_3COO^-$ , acts as a nucleophile when reacting with 1-bromobutane in a substitution reaction.

Draw the skeletal formula and give the name of the organic product formed in this reaction.

skeletal formula

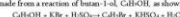
name of product ..... [2]

© OCR 2021. You may photocopy this page.

Page 3 of 63

Created in ExamBuilder

- e). 1-Bromobutane ( $M_r$  136.9) can be made from a reaction of butan-1-ol,  $C_4H_9OH$ , as shown in the equation below.



- i. Calculate the atom economy for the formation of 1-bromobutane in this reaction.

atom economy = ..... % [1]

- ii. Suggest a reagent, other than a different acid, that could be used to improve the atom economy of making 1-bromobutane by the same method.

..... [1]

- iii. A student prepares a sample of 1-bromobutane.

5.92 g of butan-1-ol are reacted with an excess of sulfuric acid and potassium bromide. After purification, 9.72 g of 1-bromobutane are collected.

Calculate the percentage yield.

Give your answer to **three** significant figures.

percentage yield = ..... % [3]

- 3(a). Hydrogen iodide,  $HI$ , is a colourless gas that can be made from the reaction of hydrogen,  $H_2$ , and iodine,  $I_2$ .

This reversible reaction is shown in **equilibrium 3.1** below.



The activation energy for the forward reaction is 173 kJ mol<sup>-1</sup>.

Complete the enthalpy profile diagram below for the forward reaction in **equilibrium 3.1**.

On your diagram:

- Label the activation energy,  $E_a$ .
- Label the enthalpy change of reaction,  $\Delta H$ .

© OCR 2021. You may photocopy this page.

Page 4 of 63

Created in ExamBuilder