

# *Science*



**Tavistock**  
COLLEGE

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# *Exams*



Both have

- 6 exams in total
- Higher and foundation to choose between

Triple

- 2 exams for each subject
- Each exam is 1hr 45mins long

Double

- 6 exams for the double option
- Each exam is 1hr 15mins long

# *What assessments are involved?*



Focus on practical theory assessment in the exams

On average, 20% of content will be maths based

Biology – 10%

Chemistry – 20%

Physics – 30%

Questions are 'saw toothed'

- All questions start easier and then get harder
- Students must attempt the whole paper

# *Key dates*



<b>Exam</b>	<b>Date</b>	<b>Time</b>
Biology 1	15/05/2018	pm
Biology 2	11/06/2018	am
Chemistry 1	17/05/2018	am
Chemistry 2	13/06/2018	am
Physics 1	23/05/2018	pm
Physics 2	15/06/2018	am

# *Correct equipment*



- Black pens
- 30cm ruler
- Pencils
- Rubber
- Pencil sharpener
- Scientific Calculator
- Protractor



# *Revising*



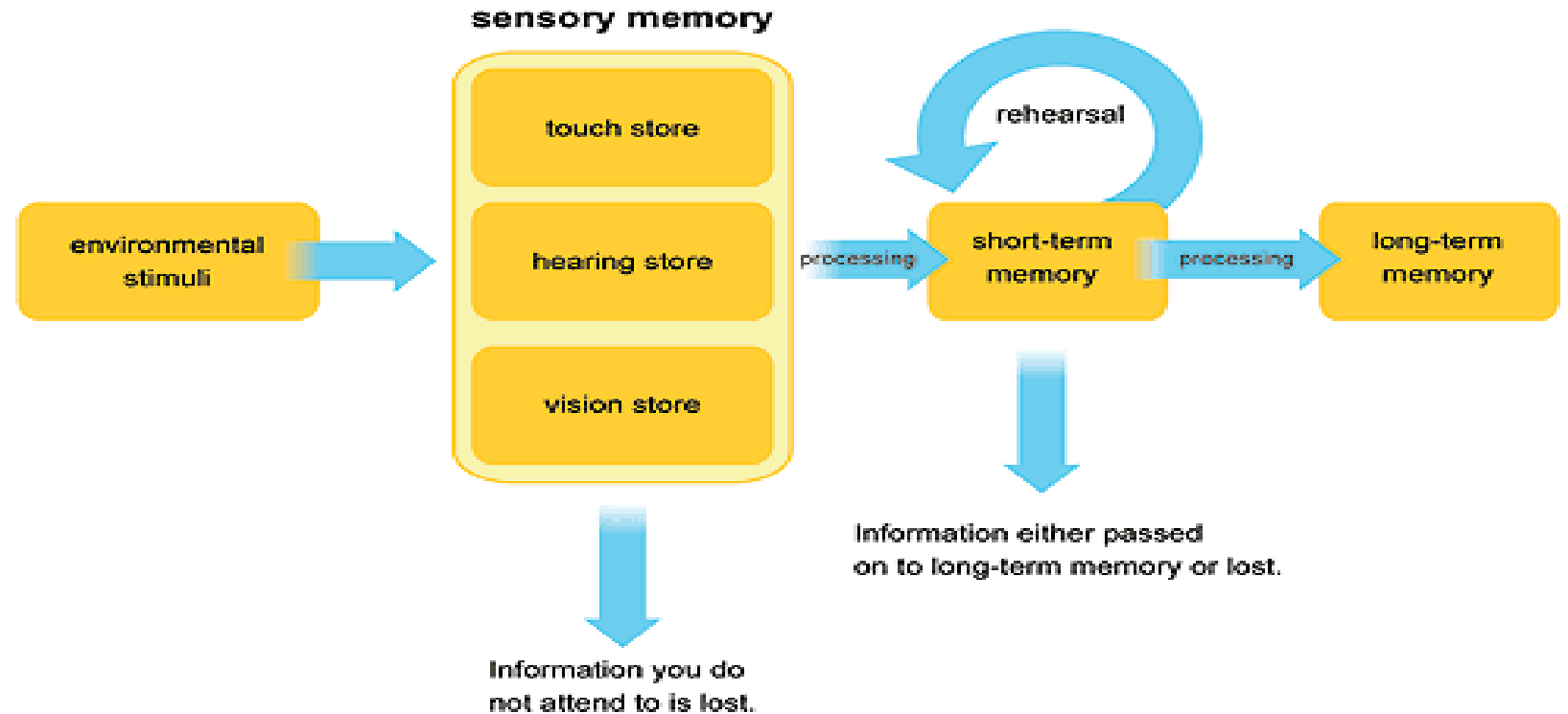
- It is important that this is regular in smaller doses – a prolonged revision session does not always help
- One day should be taken off from revision/school work each week
- Plan out to cover all the areas that are in their exam
- Find a method that works

*REVISION  
TECHNIQUES*



# *The Statistics*

- 63% material is forgotten after 7 days.
- 88% material is forgotten after 6 weeks.
- Reading notes and text books leads to a mere 10% retention.





# *Be Organised*



- Where?
  - Sit at a desk – somewhere designed for study
- What?
  - Make task specific & realistic
- How?
  - Like > Less favoured > Like
- When?
  - Alert – times of the day...
- Why?
  - Review
- Filing System
- Notes
  - Less is more
  - Concise

# *Make a timetable*

- Know your topics and subtopics - use of the specification/ road maps
- Plan when you are going to study – timetable – fit it around your hobbies etc
- Use short bursts and rewards (TV, chocolate etc)



# *Revision Activities*



- Thinking maps
- Key words – bare necessities
- Flash Cards
- Podcasts
- Family and Friends Test
- VAK – Learner
- Highlight
- Chant/Rap
- Exam Questions and Mark Scheme
- Write your own Q's
- Mnemonics
- Big questions

# *CUE CARDS....*

*What makes a GREAT cue card?*

## Enzymes key words

- Enzyme
- Substrate (key)
- Lock and key
- Denature
- Specific active site (lock)
- Active site – changes shape
- Rate of reaction
- optimum

## Diffusion

High concentration to low – requires no energy

Examples

Oxygen into blood, Carbon dioxide out of blood

## Osmosis

Move of water from high to low concentration across semi permeable membrane

Example

Water moving to a potato – increases size/ mass

## Active Transport

Move of ion from an area of low concentration to an area of high concentration – process requires energy

Energy from respiration (aerobic = more energy)

Anaerobic in water logged soil

Nitrate ions use for amino acid

# Photosynthesis

Structure	Plant Cell	Animal Cell
Cell membrane	yes	yes
Cell wall	yes	no
Mitochondrion	yes	yes
Chloroplast	yes	no
Nucleus	yes	yes
Vacuole	yes	no

Light energy (sunlight)

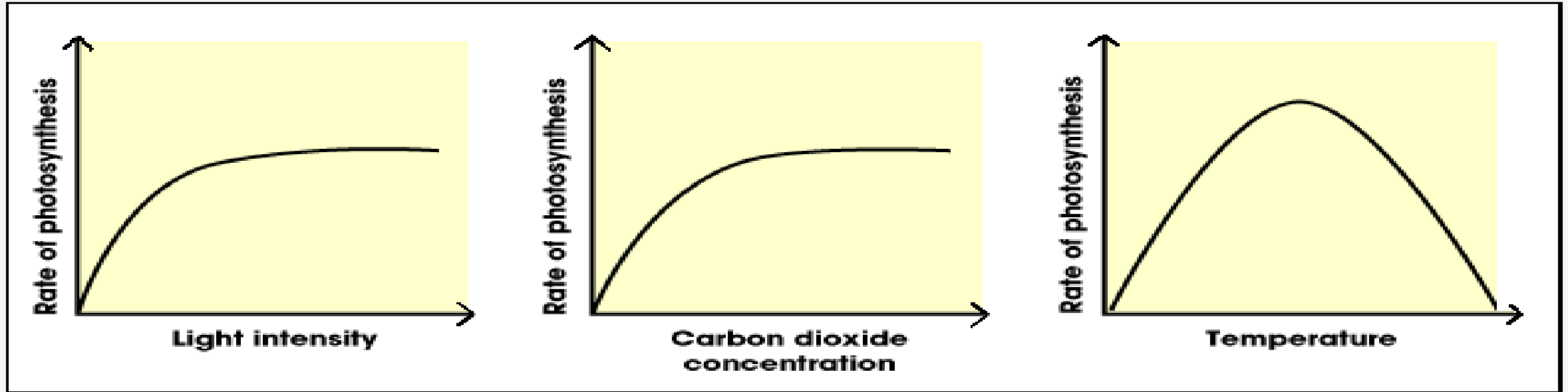
- **Photosynthesis** is a chemical reaction that happens in the chloroplasts of plant cells.
- It produces glucose for use by the plant, and oxygen as a waste product.

Equations for photosynthesis:

- Carbon dioxide + Water  $\rightarrow$  Glucose + Oxygen (word equation)
- $6\text{CO}_2 + 6\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$  (Balanced Symbol equation – A\*)
- Light energy is absorbed by chlorophyll in the **chloroplasts** for photosynthesis to happen.
- Plants use light energy to make food (glucose – stored as starch)
- Chlorophyll is use to absorb sun light
- Large surface area = more photosynthesis

# *Factors limiting photosynthesis*

**Three** factors can limit the speed of photosynthesis - light intensity, carbon dioxide concentration and temperature. Water is NOT a limiting factor



Limiting factor is either –  
CO<sub>2</sub> or Temperature

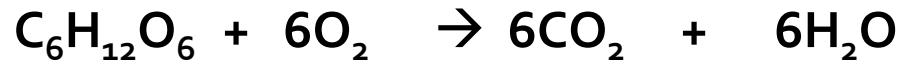
Limiting factor either – Light  
or Temperature

Limiting factor is temperature  
– see enzymes – denature...

## AEROBIC RESPIRATION

Uses oxygen – releases more energy

**glucose + oxygen → carbon dioxide + water (+ energy)** (word equation)



(Balanced Symbol equation)

Energy is shown in brackets because it is not a substance. Notice that:

Energy is used to growth and repair (including fruit formation in plants)

Glucose and oxygen are used up

Energy use for growth and repair

Takes place in mitochondria

## ANAEROBIC RESPIRATION

Anaerobic respiration involves the **incomplete breakdown of glucose**.

The waste product is ***lactic acid*** rather than carbon dioxide and water:

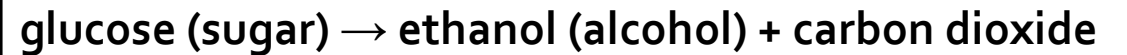


### **Fermentation**

**Fermentation** is the production of **ethanol**. It occurs when **yeast** breaks down sugars in the absence of oxygen.

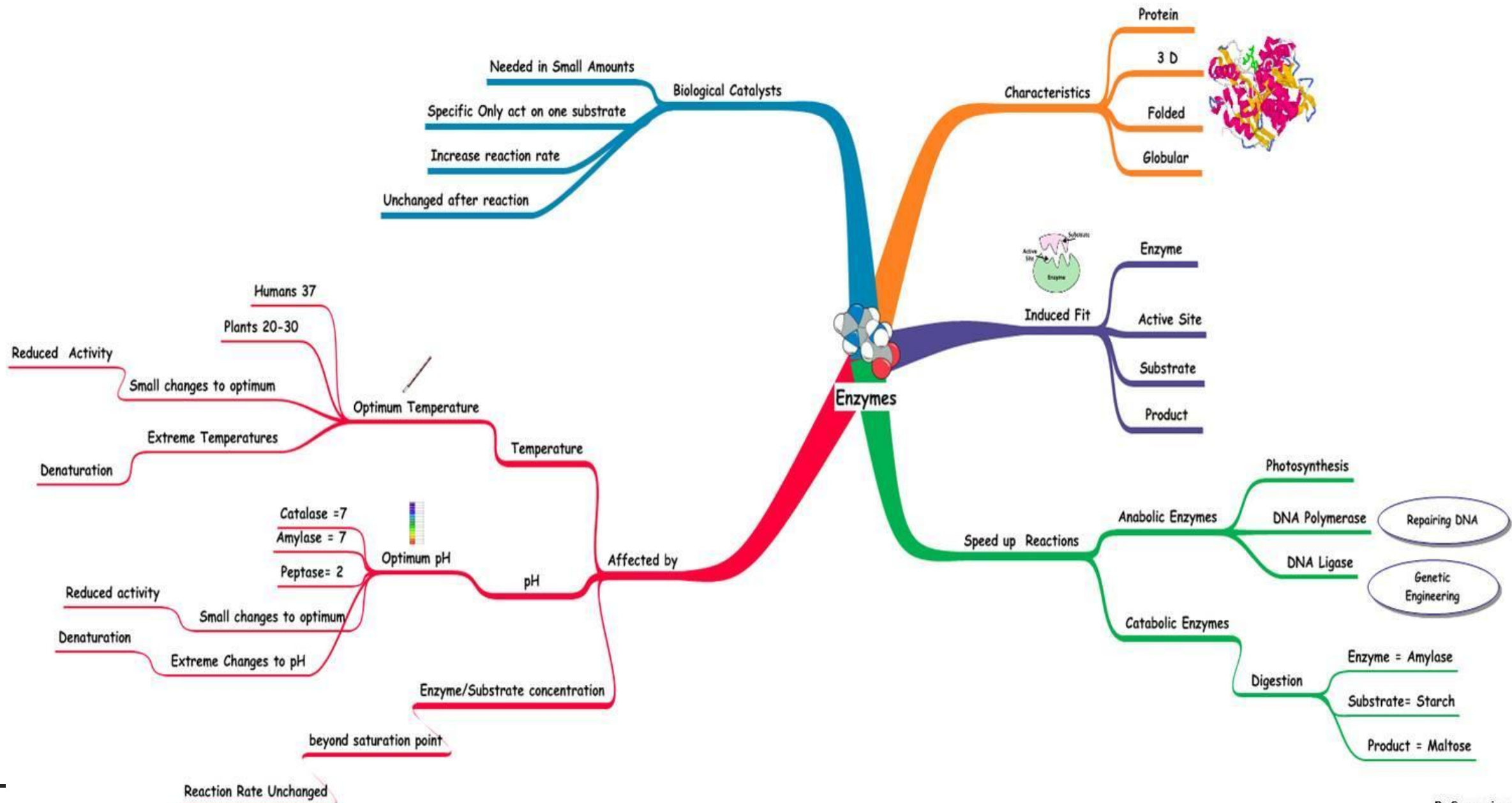
Fermentation is used to make alcoholic drinks, such as beer and wine.

Carbon dioxide gas is also produced during fermentation:

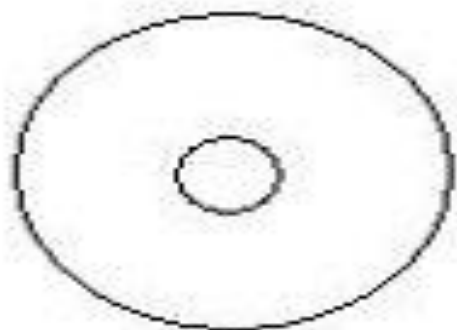


Fermentation is an example of **anaerobic respiration** in yeast.



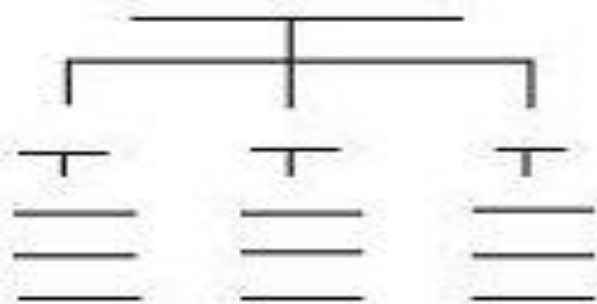


Circle Map



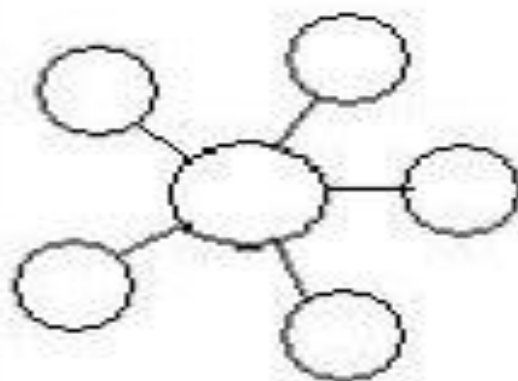
FOR DEFINING

Tree Map



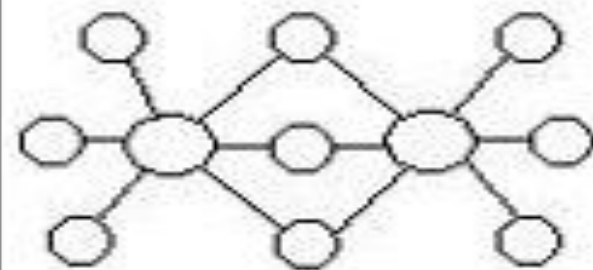
FOR CLASSIFYING

Bubble Map



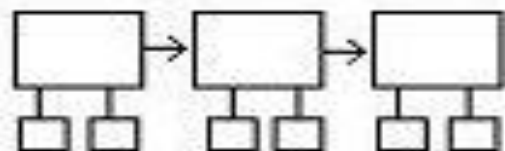
FOR DESCRIBING

Double Bubble Map



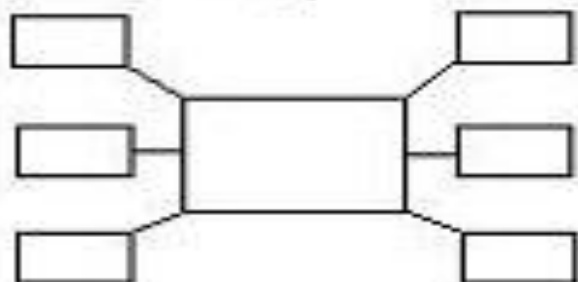
FOR COMPARING

Flow Map



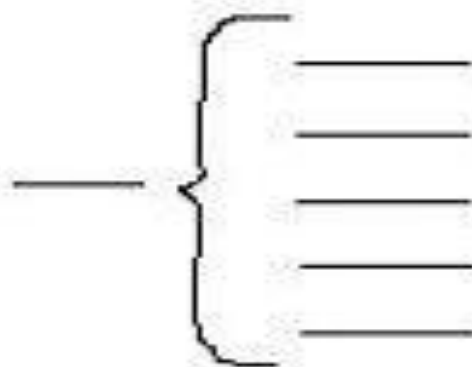
FOR SEQUENCING

Multi-Flow Map



FOR CAUSE AND EFFECT

Brace Map



WHOLE TO PARTS

Bridge Map



FOR ANALOGIES

# *After a one hour memorising session:*



- 10 minutes later revise the topic for 10 minutes
- 1 day later revise the topic for 5 minutes
- 1 week later revise the topic for 2-5 minutes
- 1 month later revise the topic for 2-5 minutes
- Before exams revise the topic as required.
- **Each time knowledge is reinforced; it enters deeper into the long-term memory and becomes more stable.**

# *TEST*

- What percentage of material is forgotten after 7 days?



63%



# *Key Messages*



- Encourage 45mins revision each evening
- Make sure students have the equipment they need
- Make sure that students are in for their exams!

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# *Kerboodle*

- Students can login and see the online textbook at [www.kerboodle.com](http://www.kerboodle.com)
- Students will be given their passwords after half term
- The organisation code is qv1

