

Introduction

Teams of pupils answer four rounds of general knowledge quiz questions. Each correct question answered wins a particular sum of 'money'. This is intended to be a fairly mixed set of general knowledge questions. Some more difficult questions are required so that the 'money' won gets taken away at regular intervals. There are 59 questions in the set. This should be enough for a game.

Running the activity

Choose 5 pairs or trios of pupils. This is to involve more people and to ensure the game does not drag on too long. Five teams will need four rounds to produce a winner. You will also need three officials: a banker, an assistant and a quizmaster (the teacher or a pupil). This is based on a well-known TV quiz, so pupils may know the rules well.

- The quizmaster chooses questions in turn from the three sections, solar system, outer space and exploration.
- The banker declares the amount of money on offer, starting with £50 and increasing at £50 increments. Before they are asked a question a team may elect to bank the money they have accumulated so far in that round. After money is banked the value of the next question drops back to £50 again. The amount of money increases as more questions are asked. If a question is answered incorrectly the money built up and not banked is lost.
- Tokens can be used as money.
- The banker keeps a record of how much money has been banked.
- The assistant keeps a tally chart of who has the most correct and wrong answers. There is a table for this at the end of the file.
- The timekeeper times ten seconds per answer and two and a half minutes per round, including question-asking time.
- A team has 10 seconds (a long time) to answer.
- They vote out the weakest link in each of the first three rounds.

In the final round: The remaining two teams are asked five questions each, and the highest score wins. Use a 'first-to-answer' question in the event of a tie. The winners get a small prize.

Safety

Not applicable.

More ideas

There will be more sets of questions in all of the *Fun-Size* sections of CD ROMs produced by ASE for Science Year.

Learning outcomes

Recap the Solar System.

Where the activity fits in

Anywhere. It is intended to provide interesting facts to generate further questions and discussion from pupils.

Skills

Vocabulary, recall, knowledge and understanding, team-work.

Solar system

1. How many Earths would fit across the diameter of the Sun - 8, 110 or 650?
110
2. How many years does it take Pluto to orbit the Sun -24, 248 or 2,480 years?
248 years
3. Is Mars bigger or smaller than Earth?
Smaller
4. How long does it take the Sun's light to reach Earth - 0.8 seconds, 25 seconds or 8 minutes?
8 minutes
5. Is it true that you can see the Great Wall of China from space?
No, this is not true.
6. How many men have walked on the Moon – 6, 12 or 24?
12 (all American)
7. Mars is covered in a fine green dirt so light that it hangs in the air. True or false?
False. There is a dust that hangs in the air, but it is red, not green.
8. Which planet, when viewed through a telescope, shows phases like the Moon – Venus, Mars or Saturn?
Venus (Mercury does too).
9. How many moons are there orbiting Mars?
Two
10. What are Io, Europa, Ganymede and Callisto?
Four moons of Jupiter (and characters from Roman myths).
11. What blocks out the Sun's light during an eclipse?
The Moon
12. How strong is the Moon's gravity – 1/6, 1/3 or 1/2 of Earth's gravity?
1/6 Earth's gravity

13. How many moons does the planet Venus have – 0, 1 or 2?

None

14. Which planet has its axis tilted over so it orbits on its side – Mercury, Uranus or Pluto?

Uranus

15. Which planet was **thought to be** furthest from the Sun in the 1980s and '90s?

Neptune, until 1998

16. What is the temperature on Venus – 100°C, 200 °C or 400 °C?

400 °C

17. Which planet is nearest to the Sun?

Mercury

18. Where is the Sea of Tranquillity?

On the Moon

19. When was Jupiter's Red Spot first noticed – 1664, 1801 or 1910?

1664

20. Which planet is covered with clouds of sulphuric acid – Venus, Mercury or Jupiter?

Venus

21. What is the average temperature on Mars: -5 °C, -50 °C or -150 °C?

-150 °C

22. Which planet is famous for its rings?

Saturn

23. Which planet is so light it can float on water – Jupiter, Saturn or Uranus?

Saturn (its density is 7/10 that of water)

24. What are Saturn's rings made of – dust and rocks, ice or dry ice?

Mostly ice

25. How long is it between one full Moon and the next – 26.5, 27, 28 or 29.5 days?

29.5 days

26. Which planet has the most moons – Jupiter, Saturn or Neptune?

Saturn

27. If the moon is 'waxing' are the crescents getting fatter or thinner?

Fatter (the Moon is getting fuller)

Outer space

28. Does a comet's tail point towards or away from the Sun?

Away from the Sun

29. How hot is the surface of the Sun: 6 thousand °C, 6 million °C or 6 billion °C?

6 thousand °C

30. What year will Halley's comet next return to our Sun – 2045, 2062 or 2086?

2062

31. What gas is the Sun mostly made of – hydrogen, helium or oxygen?

Hydrogen

32. How far does light travel in one second – 30,000 km, 300,000 km or

3,000,000 km?

300,000 km

33. A neutron star is so dense that 1 cubic cm weighs – 10 tonnes, 1,000 tonnes or 10 million tonnes?

10 million tonnes

34. What is an exploding star called?

A supernova

35. Alpha Centauri is the star system closest to our own. Is it 4 light years away, 40 light years away or 400 light years away?

4 light years

36. Where on Earth would you be if you could see the Pole Star on the horizon?

You would be on the Equator

37. What does the word 'nebula' literally mean?

Clouds – nebula is Latin for a cloud

38. About how many stars are there in our galaxy – 1 million, 100 million or 100,000 million?
100,000 million

39. Who was the first astronomer to use a telescope to study space?
Galileo (1564-1642)

40. Which is the brightest star in the night sky?
Sirius

41. How many stars can you see with the naked eye on a dark night – a few hundred, a few thousand or a few million?
A few thousand

42. How many stars can you see during the day?
One – the Sun

43. What shape is our galaxy – like a cigar, a ball or a disc?
Like a disc

Exploration

44. Who developed the first modern rocket – the USA, the USSR or Germany?
Germany

45. What is the name of Europe's rocket – Orion, Argos or Ariane?
Ariane

46. Does a refracting telescope use lenses or mirrors?
Lenses

47. Who was the first man to orbit the Earth?
Yuri Gagarin

48. What was the name of the space shuttle that exploded in 1986?
Challenger

49. What year did the first man step on to the Moon?
1969

Link Record Card

	Team 1 Names	Team 2 Names	Team 3 Names	Team 4 Names	Team 5 Names
Round 1 Right answers Wrong answers Banked					
Round 2 Right answers Wrong answers Banked					
Round 3 Right answers Wrong answers Banked					
Final Round 1 2 3 4 5					

Q19 What is the 'red spot' in Jupiter's atmosphere?

A18 Red

Q20 What are the rings of Saturn made from?

A19 A huge storm

Q21 The nearest star to us

A20 Ice crystals and dust

Q22 The force that makes things fall
towards the centre of a planet

A21 The Sun

Q23 Our Moon causes these movements
of the sea

A22 Gravity

Q24 The wind causes these movements
of the sea

A23 Tides

Q13 Why do some things sink?

A12 They have an upthrust greater than their weight. This makes them go up.

Q14 Why do parachutes fall slowly?

A13 The total amount of water they push out of the way is less than their weight.

Teachers' Notes for Use

These notes for use consist of two parts: some of the theory behind the development of the resource and a **How To Use** section. There is no need to read these sections in that order. If you want to start immediately, go straight to **How To Use**.

Theory behind the resource

This resource is a set of memory maps* (provided as Mind Manager files and as graphics within Word documents), produced by The Learners' Co-operative Ltd, using Mind Manager software on a PC. The Learners' Co-operative has been developing classroom approaches based on modern learning theory since the early '90s. The main approaches which define the company's practice are: developing independent and co-operative learners; Colin Rose's six stage model of learning; structured and atomistic formative assessment linked to the setting of learning objectives; differentiation using Howard Gardner's multiple intelligences, with strategies to accommodate other aspects of learning style; infusing thinking skills (and taxonomies thereof) as described by workers such as Bloom & McGuinness, and learning tools (such as cognitive maps, derived from numerous sources); review of completed units to sustain recall and comprehension and theories of motivation [Covington].

Mind maps are an original idea of Tony Buzan. The Learners' Co-op has classified mind maps as a particularly structured form of radiant map. Other radiant map forms include spider diagrams, memory maps and burrs. Concept maps can have a radiant structure. All radiant maps are a subset of cognitive maps (as are concept maps, template maps and flow diagrams). Cognitive maps can be defined as: any [mostly non-linear] format which attempts to convey an individual's or groups' thinking.

*memory maps do not always obey ALL of Buzan's rules, so are slightly less demanding for the novice mapper

There are many reasons for using cognitive maps. These include their:

- greater brain friendliness, increasing motivation, engagement and retention;
- ability to be used for review, increasing recall;
- ability to show a large amount of material, helping holist learners to 'get the big picture' and all learners to see how different areas of scientific thinking relate to each other;
- capacity to facilitate creativity.

Adding images to the maps, and using appropriate imagery within the structure of a map, increases their visual impact and aids visual-spatial learning. Numbers (selected from appropriate data sources) can be researched and added to the maps to aid mathematical-logical learners. Key words can be integrated in ways that facilitate literacy objectives.

How to use the maps

The resource is based around three memory maps. These are:

Map	QCA Scheme of work Unit
food and digestion	8A
respiration	8B
microbes and disease	8C

[See figures 1, 2 and 3 below].

Figure 1: Food & Digestion

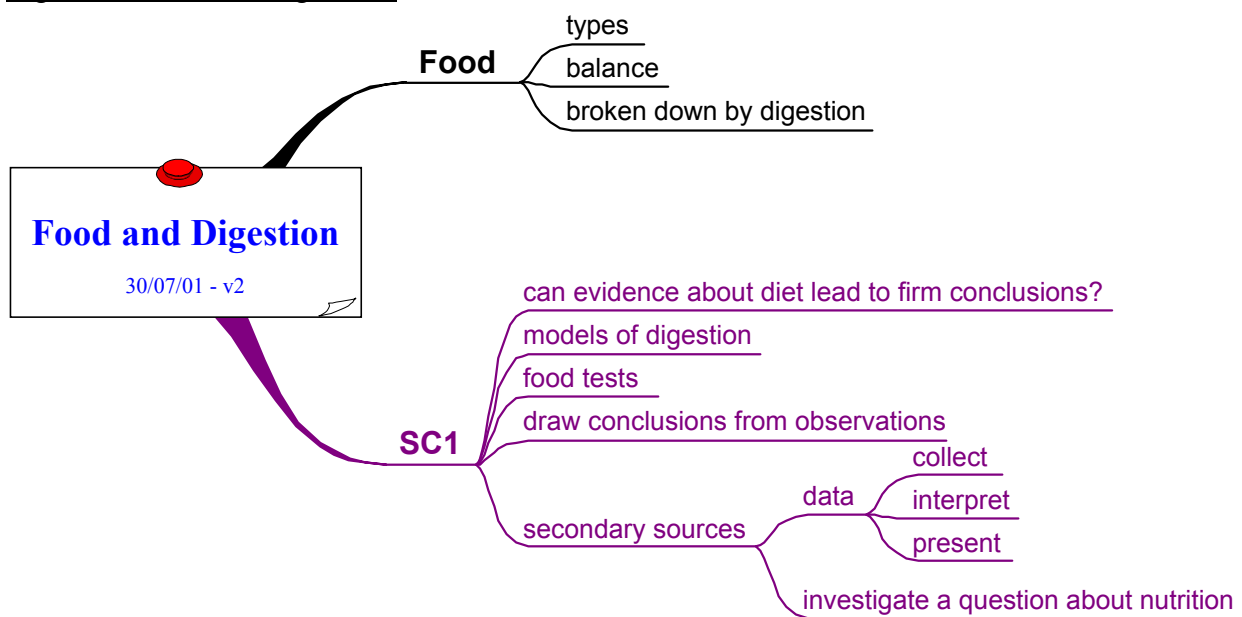


Figure 2: Respiration

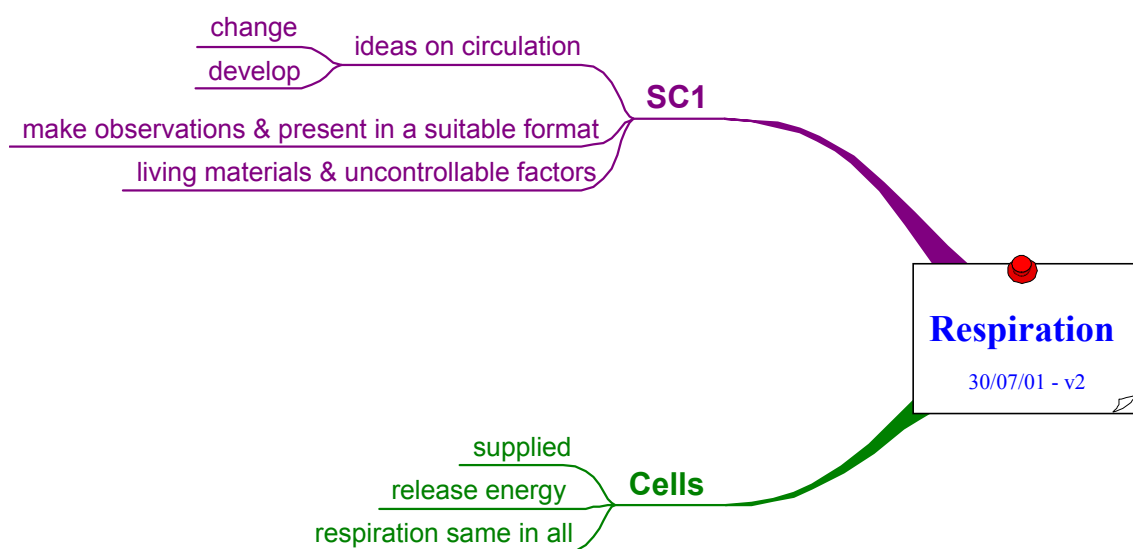


Figure 3: Microbes & Disease

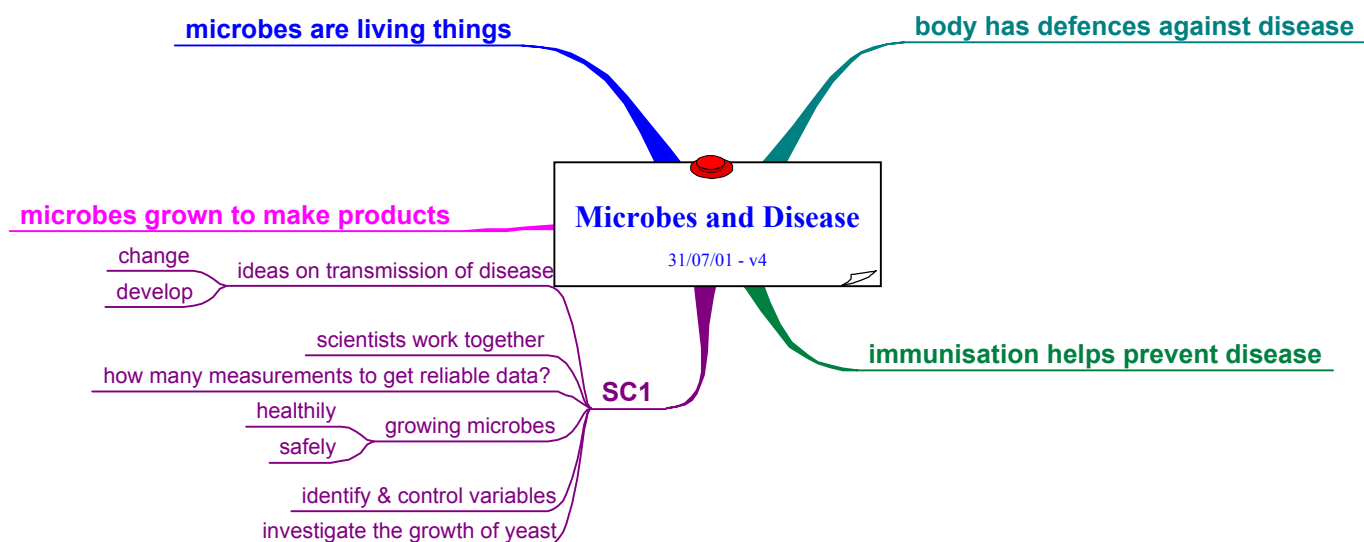
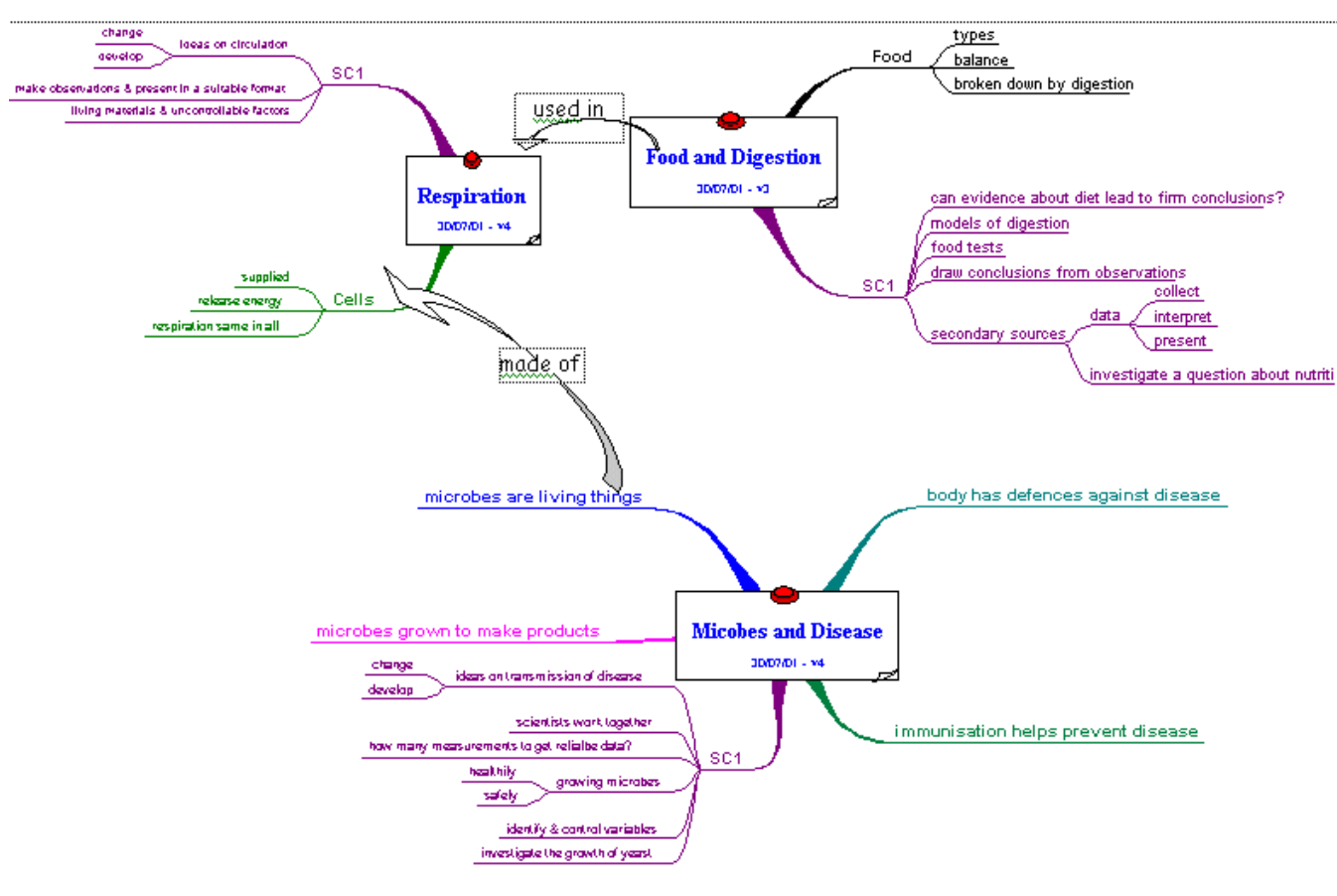


Figure 4: Linked maps [showing the three maps above with two links].



The word file, **Linked Maps**, contains the three maps on one page as above. Here the memory maps are linked with an arrow structure and link statements as in concept maps.

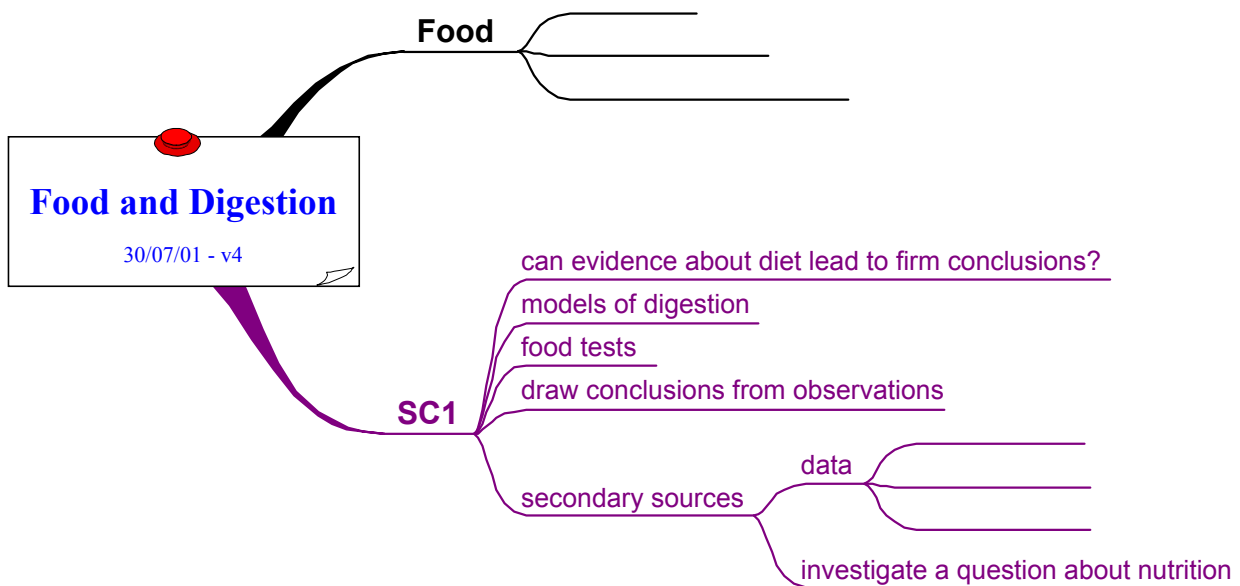
This chunking of information can be useful in helping learners organise and assimilate new ideas and in increasing retention – initially in short-term memory and subsequently, with appropriate review, in long term memory. Whatever size of chunk you are deploying, from burr upwards, it can be used as an advanced organiser for learners, particularly holists, to build their work around. It can be dispensed individually or to groups (or projected for class use), can have clip art added to it and be blown up as a poster for display. As you work on the various areas pictures, numbers, icons etc can be added to the desktop resource or poster. If you have Mind Manager software you can access the raw files and edit them as you fit. We would very much hope that any such edited files would be submitted appropriately to the resource base being developed through Science Year.

All of the provided maps can be used as starting points; even the most complete maps can have images added, either directly to the starter or by redrafting with reference to the starter. Most can have further detail and examples added at the ends of branches. If Mind Manager is available, this can be done in software. Some of the provided maps have had words removed, as in figure 5; these maps are particularly useful for quick formative assessment or review. The reduced map can be used:

- at the start of a topic to find out what pupils know;
- after some teaching to see the common understandings and misconceptions;
- subsequently, for review.

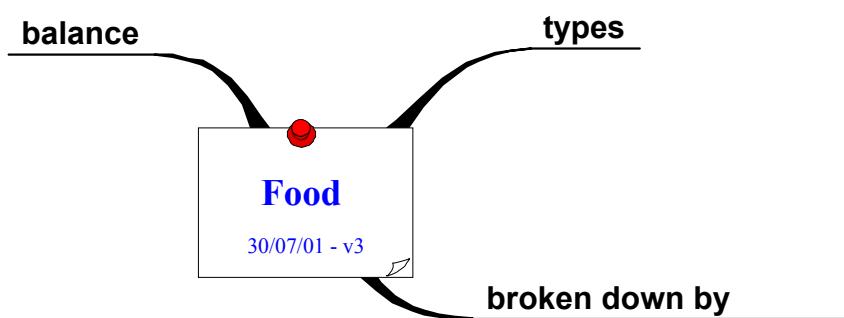
If a learner produces a map at the beginning of a unit and one after some teaching and learning, these can be compared by both yourself and the learner to look at the assimilation and developing understanding of new ideas.

Figure 5: a partially reduced map



Mind Manager can turn the branches of a mind map into a burr:

Figure 6: A burr for food



Burrs can be used to collect more information on the subject [maybe by using secondary sources]. Information can be added to branches either by hand or by using the Mind Manager software. The cells burr can be used to build work from Year 7 work on cells [QCA Unit 7A].

Once they are clear about burrs, learners can be provided with just the centres as starting points, eg:



The use of burrs at the start and end of units can be a useful literacy tool, revealing how the understanding of key terms has developed.

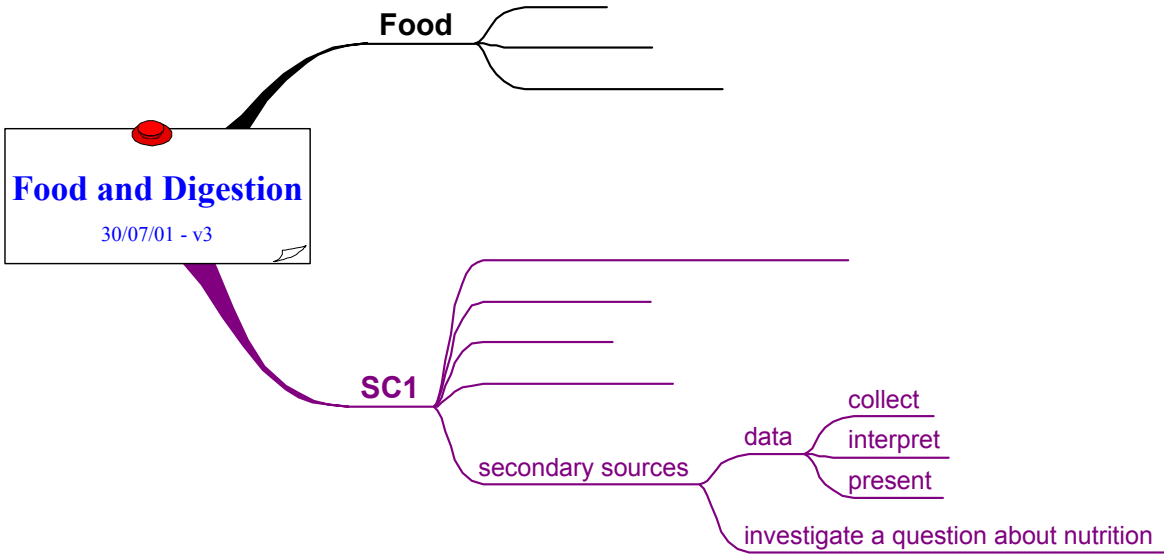
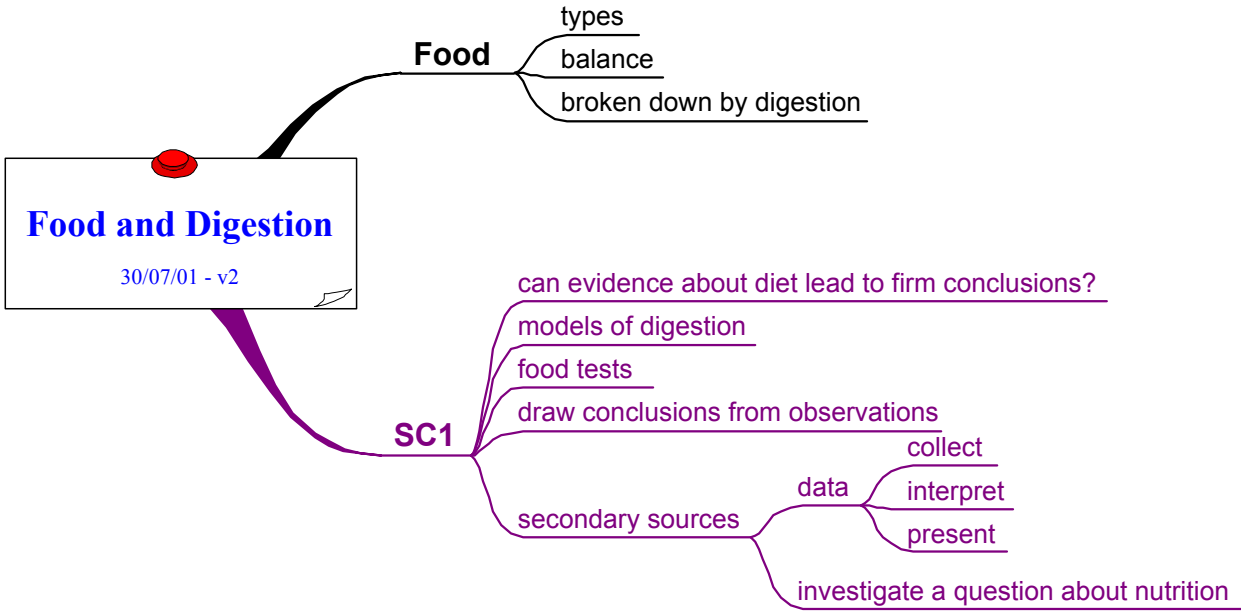
Open task: synthesise an entirely new mind map – for example, a map with **cells** as the central idea. The pdf file, **10 steps for MM**, provides student instructions for open task / aide memoire for completing / editing / redrafting tasks.

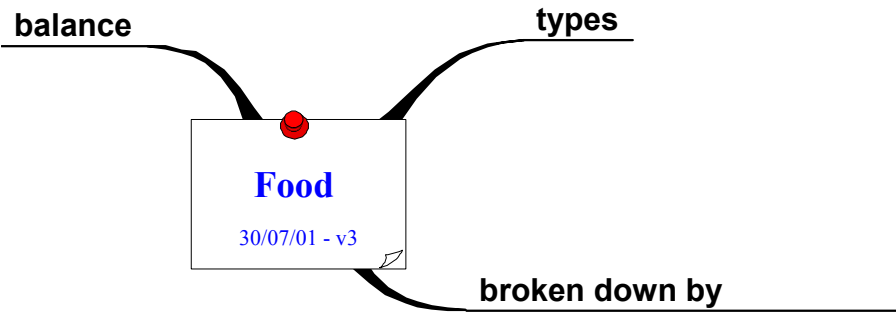
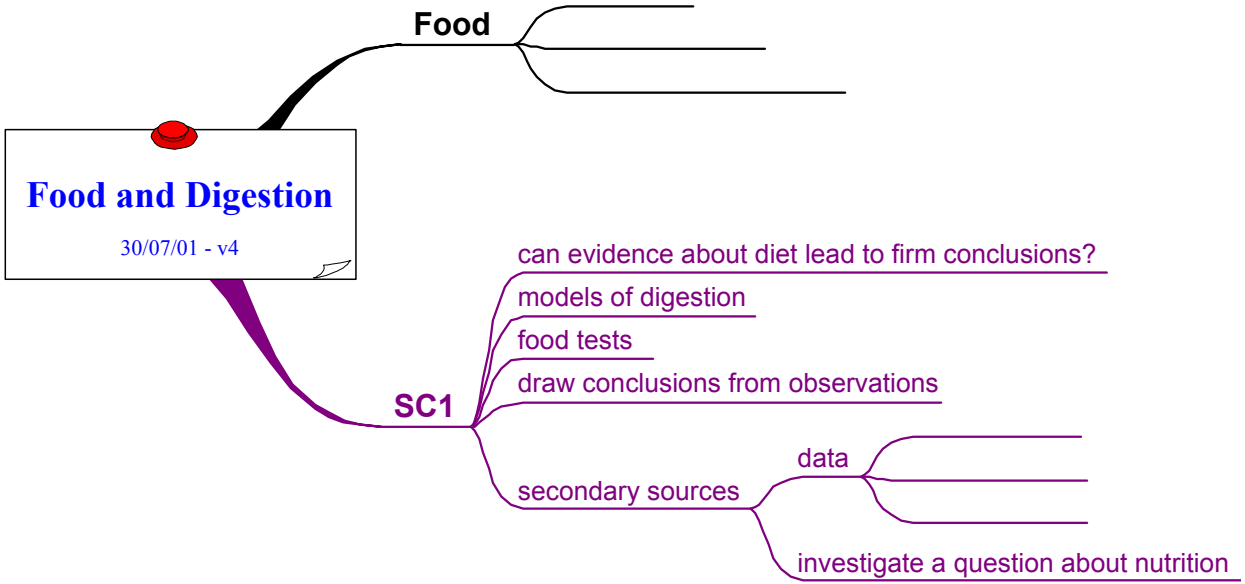
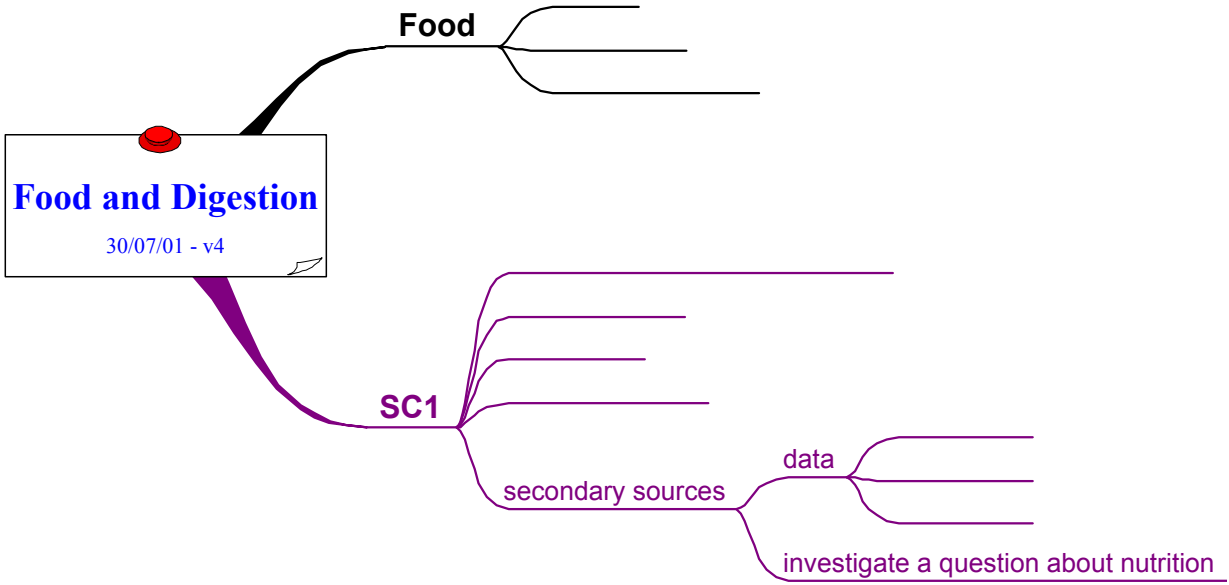
Increasing the challenge and openness of tasks after learners have become familiar with the ideas of radiant maps such as mind maps and burrs is a healthy way to avoid over-dependence on the scaffolds and can reveal whether mapping skills have been developed, consolidated or improved.

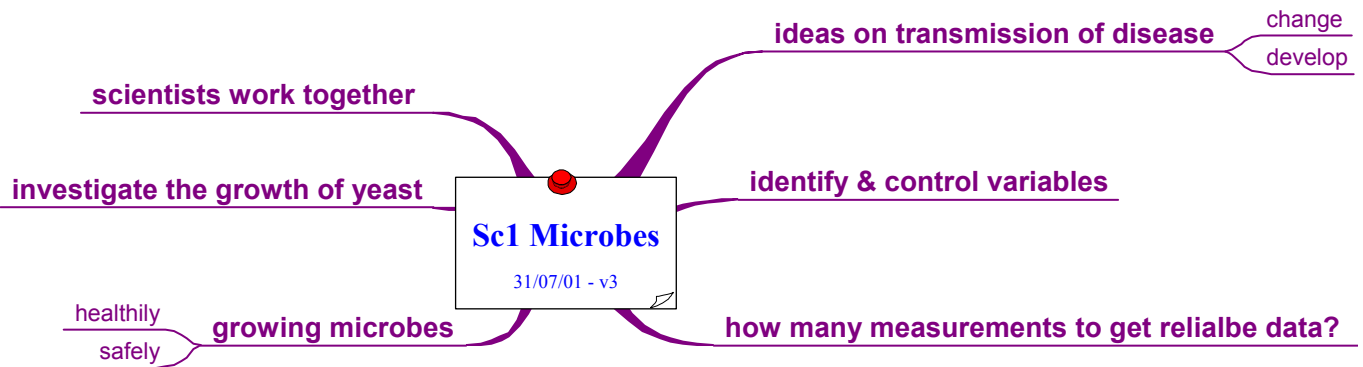
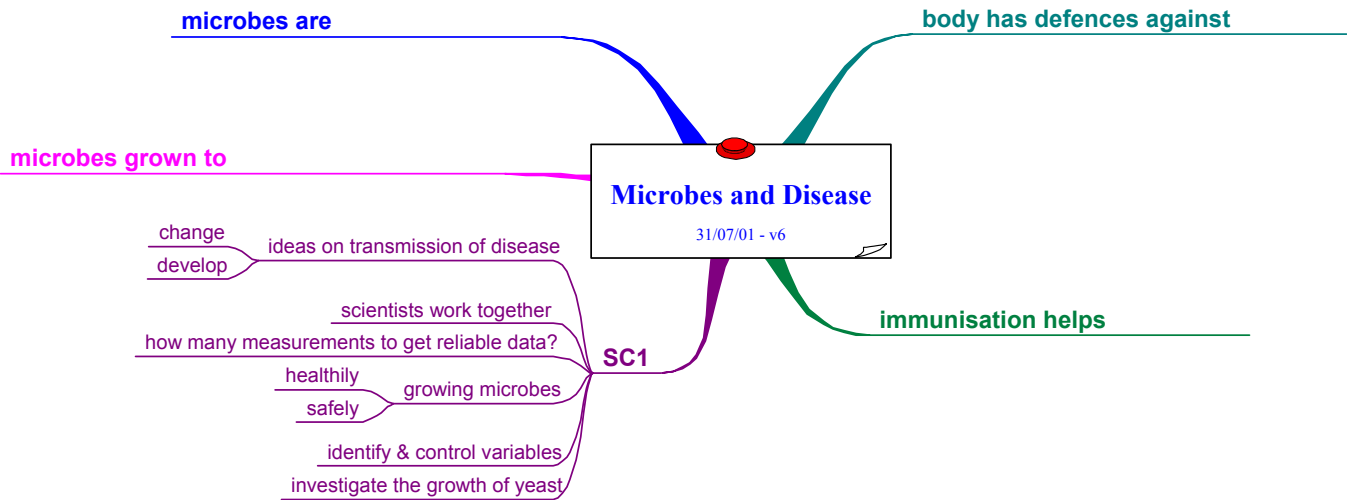
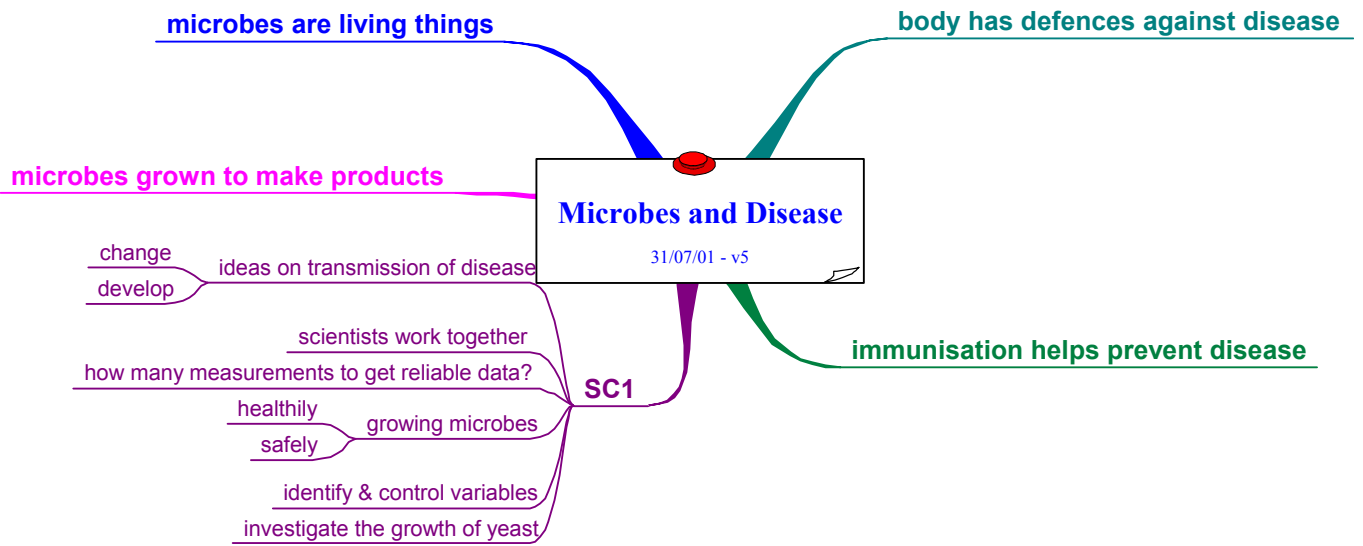
Further information on mapping techniques and other learning tools can be obtained from the Learners' Co-op web site: www.learnersco-opltd.co.uk.

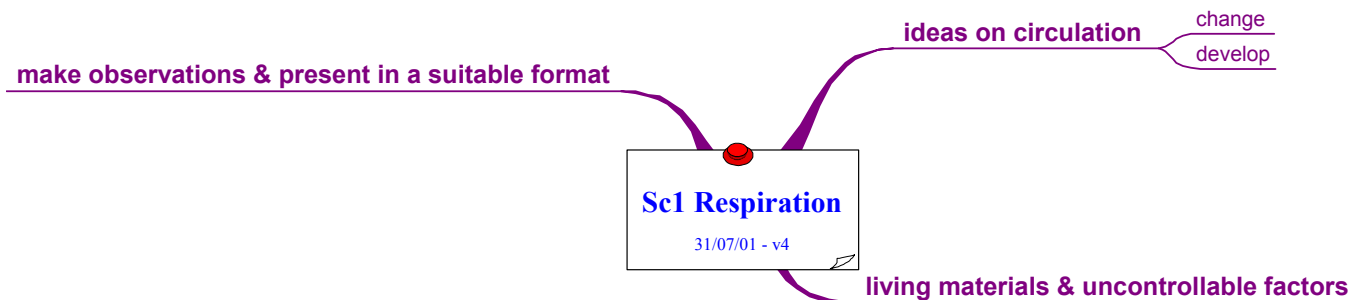
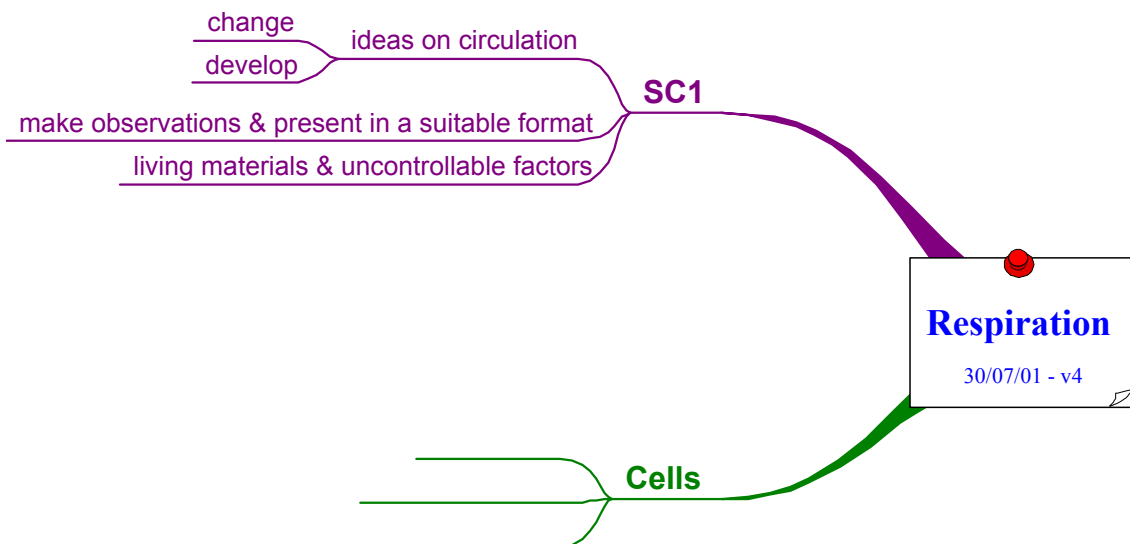
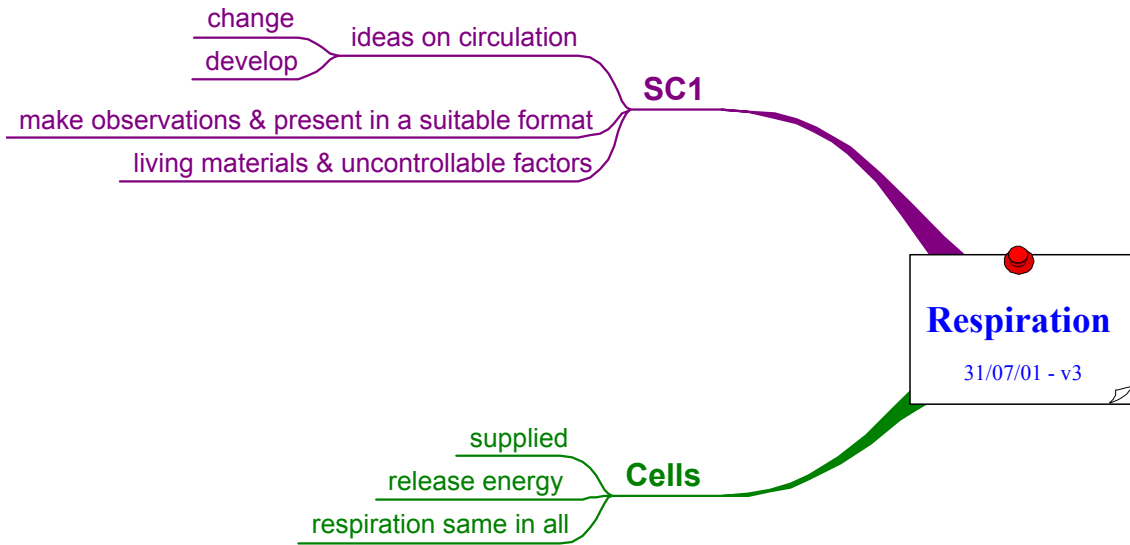
10 Steps for Memory-Mapping:

- 1 Get / brainstorm the list of words you will build your map with;
- 2 Draw the first draft of your map in pencil so that you can get it checked and easily make any corrections that are needed ;
- 3 Draw a central picture that sums up the topic for you;
- 4 Divide the topic into sub-topics - what are the main ideas (the Basic Ordering Ideas) in the topic?
One branch for each B.O.I.;
THEN sub-divide each of these main ideas > detailed examples at the ends of the branches;
- 5 Continue adding branches as necessary - if there is a way to link the main idea of the branch to how it looks - use it!
- 6 Use pictures / images / diagrams / visual codes as often as you can, either to replace words or to emphasise words –
ICONISE IDEAS ;
- 7 Print words to make them STAND OUT (lower case is better for many readers); try to use key words only - this makes it easier to build up branches without using the whole page almost straight away;
- 8 Use colour:
3 or 4 colours in main image
1 (or 2) colours for each branch;
- 9 Use your map for regular review of the work;
- 10 Add to or redraft your map when you do later work that revisits or builds on the ideas in the map - or if you experience something in your own life which links to the work.



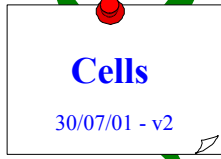






release energy

supplied



respiration same in all

Teachers' Notes for Use 2

These notes for use are intended to build on the notes accompanying the maps for “*Who Am I?*” (provided on this CD as late resources for CD1). The theory behind the resources is covered in those notes. The section on How to Use the maps in those notes is intended to introduce the use of the radiant maps provided on the Science Year CDs; what follows below is intended to build on that introduction.

How to use the maps 2

The resources for the second CD are based around three memory maps. These are:

Map	QCA Scheme of work Unit	
Forces and their effects	7K	
Gravity and Space	9J	
Year 5 / 6 Review Work	5A 5C 5F 6E	Keeping Healthy Gases around Us Earth, Sun and Moon Balanced and Unbalanced Forces

[See figures 1, 2 and 3 below].

Figure 1: Forces and Their Effects

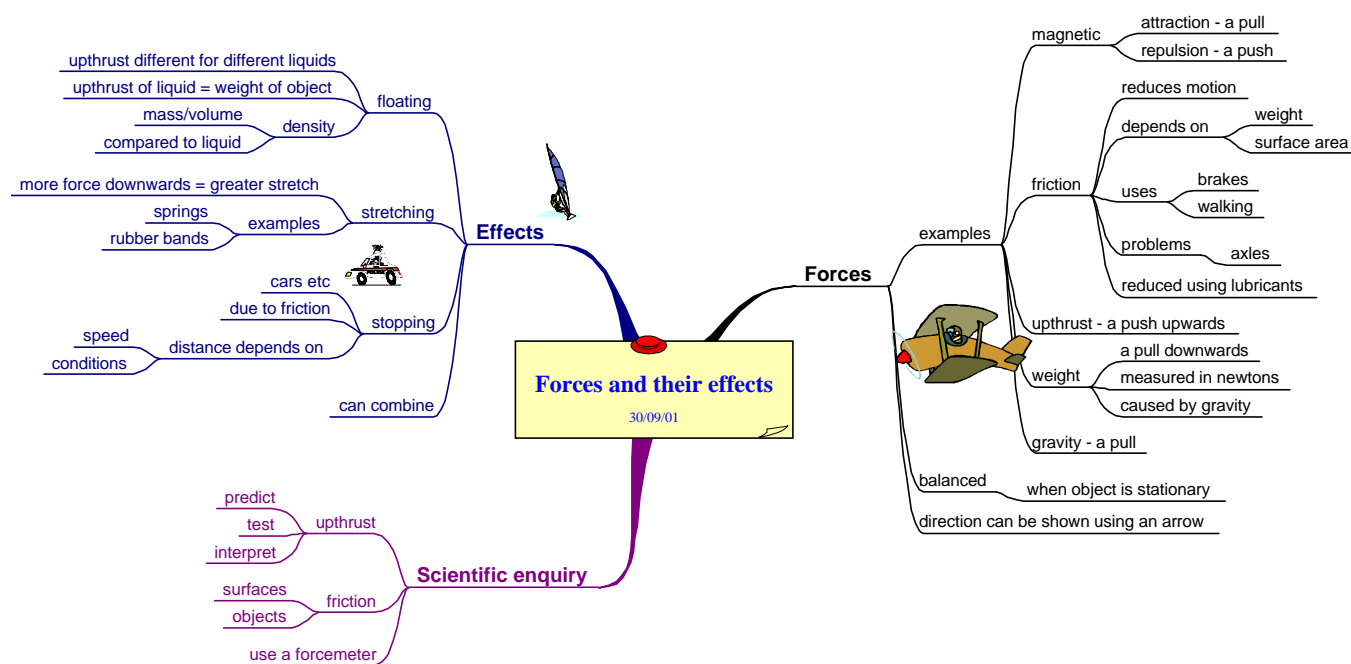


Figure 2: Gravity and Space

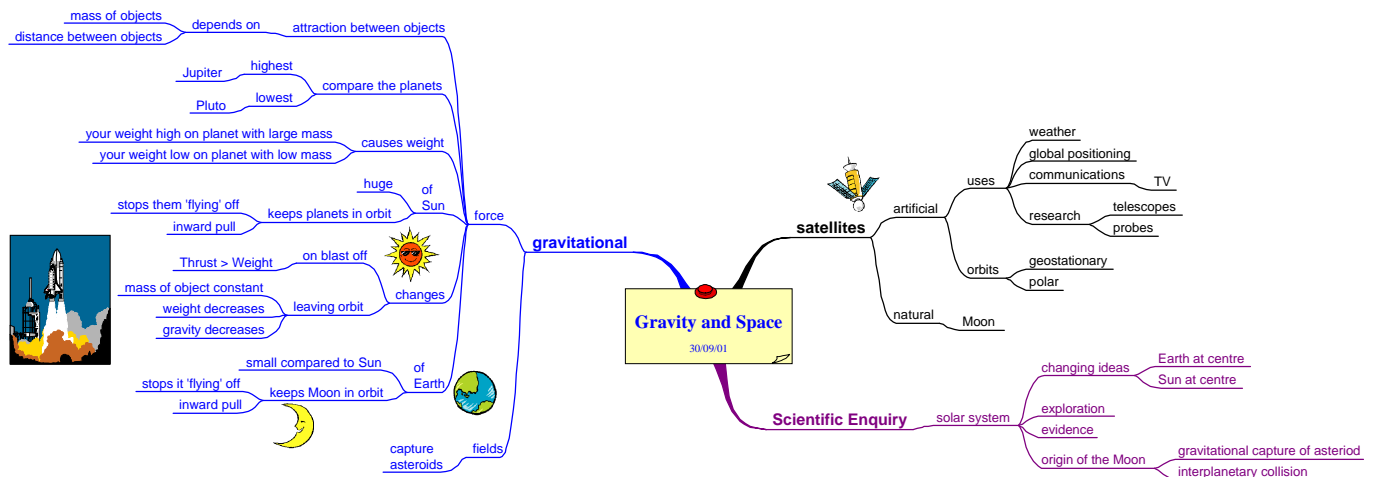
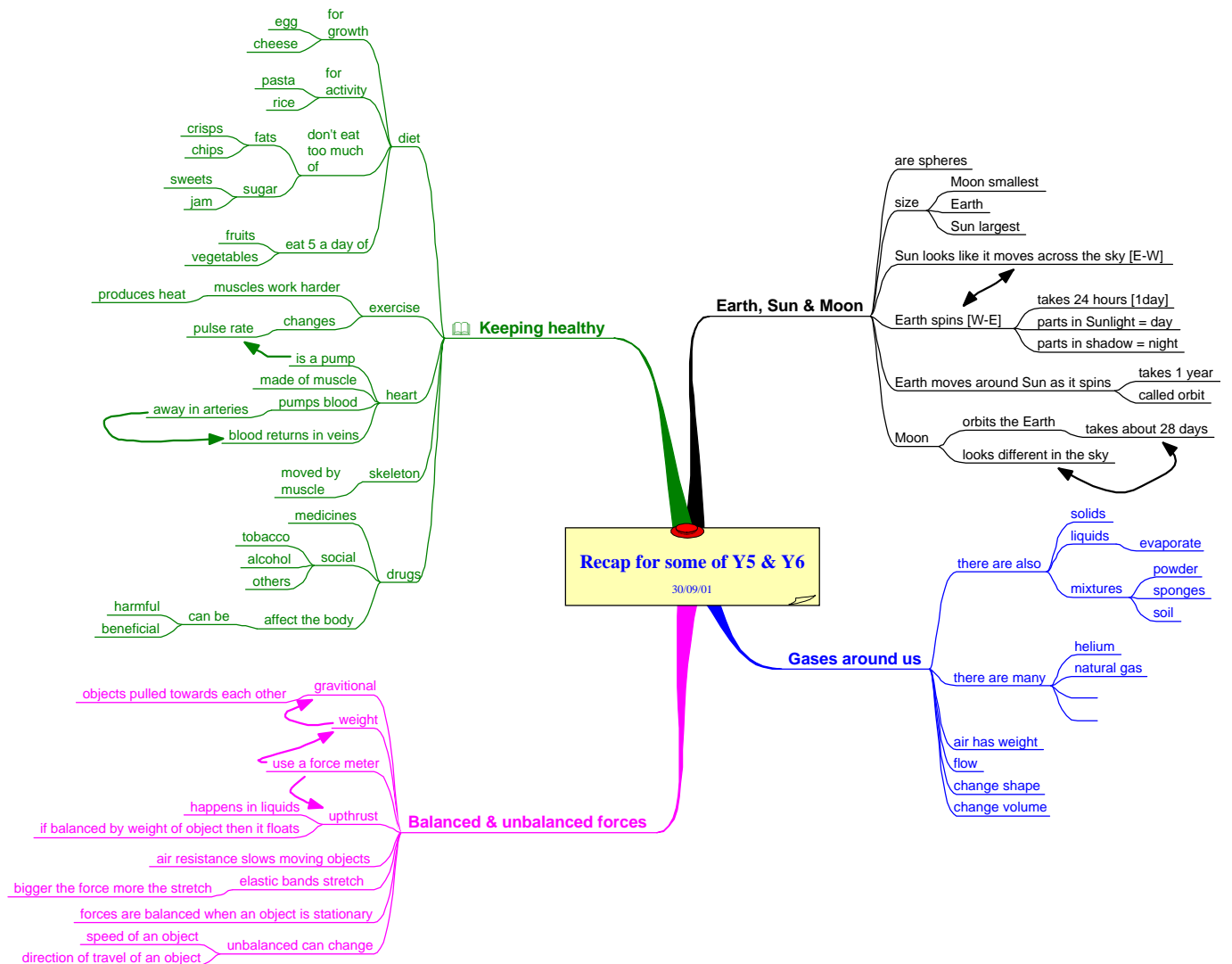



Figure 3: Y 5 – 6 Review Work



The idea of chunking information was introduced via **Linked Maps** in the resources for the “Who am I?” CD.

The sets provided for this “Is There Life Out There?” CD are intended to exemplify this notion in a more concrete fashion. The provided maps range from burrs (a good starting point for introducing mapping techniques), to skeletons (maps requiring some completion), to starters (map limited to essential detail necessary for student completion), to “finished” maps – which can still be visually enhanced or used as starting points (pre-structured) for more artistic variants. Alternatives to some starters and skeletons, without reference to Scientific Enquiry, have been provided to provide additional choice about which resource to use with a class / selected students.

The challenge to learners, when developing these maps, reflects this continuum to some extent:

	Burr	Skeleton	Starter	Map
Challenge	Create or add to provided burr *	Complete as indicated	Add to starter to produce map	Students create their own maps from <i>tabla rasa</i> or build from provided wordlist - use provided map as teacher reference
Cognitive Demand	Generally consistent with the capacity of working memory (Miller’s magic 7). Demand can be tightly focused as linguistic / visual / mathematical-logical.			The learner has to integrate several aspects of higher order thinking and utilise a good level of knowledge and understanding in order to successfully create a map.

Further variation can be introduced by your use of the Mind Manager software, if it is available, to edit the provided maps in order to generate alternates. Even if you can only access the maps as graphics extracted from the provided Word documents, you still have the option (certainly with the simpler maps) of simply using these as a starting point for your own thinking, when determining what to put on board / screen / poster for your learners.

* For Burrs: Create = brainstorm wordlist

- Add:
- more spokes (associations)
 - more detail
 - icons – to create visual burr
 - data – to create number burr