

Science B Biology B Chemistry B Physics B

Gateway Science Suite

Skills Assessment Support Booklet

Skills Assessment Support Booklet
'Can-Do' Tasks
Science in the News
for use with

- Science Unit B625
- Biology Unit B635
- Chemistry Unit B645
- Physics Unit B655

This Edition of the Skills Assessment Support Booklet has been updated to reflect the changes made to the Science in the News Level of Response Grid (October 2008).

Rationale

This booklet is designed to provide a supporting framework for the Skills Assessment component of the Gateway Suite.

The booklet should be read in conjunction with the information contained in the Science specification, J640, Unit B625.

This Skills Assessment is also one of two options contained within the Gateway Separate Sciences Specifications:

- Biology (J643 – Unit B635)
- Chemistry (J644 – Unit B645)
- Physics (J645 – Unit 655)

Teachers are able to use this style of Skills Assessment for candidates following courses leading to any or all of the Gateway Separate Sciences.

Teachers are free to make a choice:

- on an individual candidate basis
- on an individual teaching group basis
- on a whole centre basis

for one, or more than one, of the Gateway Separate Science Courses.

Teachers should note that the Skills Assessment outlined in this booklet does NOT apply to candidates being entered for Additional Science (J641) within the Gateway Suite.

Further advice, guidance and support on all aspects of the Gateway Specifications is available by joining a local Cluster Group of centres which are also using the Gateway Science Suite.

Contact details are available from the Hills Road Office of OCR.

Interchange

OCR is committed to producing an on-going improvement programme to ensure that teachers are able to obtain support materials more quickly and conveniently using electronic systems. Interchange allows teachers to download a variety of internal Skills Assessment materials when needed.

The system is 'secure' and designed only for use by teachers and not by candidates.

A nominated science teacher at each centre can be given the appropriate login by the Examinations Officer.

Further details of the system are given in Section E (page 41).

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Section A: *General Introduction*

The Skills Assessment component of the Gateway Science Suite represents an innovative form of internal assessment of candidates' skills for a GCSE course.

The two Pilot schemes commissioned by OCR in the period 2003 – 2006, leading up to the start of the new GCSE courses, provided a useful knowledge base about both the management and assessment of these Skills by teachers and the views of the candidates following the Pilot courses.

The feedback from the participating centres provided any necessary refinements to the Skills Assessment before the final version of the Gateway Specifications were approved by QCA (and AACAC in Wales and CCIE in Northern Ireland) for teaching from September 2006.

It is recognised that some of the candidates, after having followed a course leading to a GCSE in Gateway Science or the separate sciences, will never have any more formal science education. For this reason the Internal Assessment needs to focus on aspects of some of the 'lifelong' skills which will be useful for them as citizens.

The total of **60 marks** (33.3% overall weighting) for the Skills Assessment reflects the importance attached to the development and assessment of the relevant skills.

The Skills Assessment consists of two elements:

- an appropriate selection of 'Can-Do' Tasks [**24 marks**]
- a research report based on the development of a Science in the News topic [**36 marks**].

Detailed guidance on each of these elements follows in **Section B** and **Section C**.

Section D provides illustrative exemplar material for Science in the News.

Section E gives details of the way in which teachers can gain access to the OCR Interchange system for rapid, effective and immediate access to many of the documents supporting both teachers and candidates in connection with the Skills Assessment component of the Gateway Science Suite.

Section F provides some additional notes for the guidance of teachers in the teaching, learning and assessment of candidates. It also includes a completed Candidate Record Card, a completed Science in the News cover sheet and a completed Centre Authentication Form.

Section G provides examples of completed Skills Assessment Forms.

Section B: 'Can-Do' Tasks

2.1 Frequently asked Questions on 'Can-Do' Tasks

Do I have to assess all candidates on the same 'Can-Do' Task and do I have to do it at the same time?

No. You can assess as many candidates at a time as you wish. You do not need to walk around with a clip-board trying to assess each candidate. Some 'Can-Do' Tasks produce a product which you can collect in, and then award marks later.

Can candidates work in pairs or groups when being assessed?

No. When being assessed on a 'Can-Do' Task, a candidate must work individually.

Do I have to produce evidence for moderation?

No. It is important that teachers keep a careful record of the 'Can-Do' Tasks. You do need to keep information about the 'Can-Do' Tasks, recording dates when particular 'Can-Do' Tasks were successfully completed by each candidate can be useful. This information can be recorded on individual Candidate Record Cards, in teachers' mark books or an electronic mark book. An electronic mark book can be used as a central recording system for the whole department, making it easy to track progress across classes. An electronic mark book can be downloaded from the website OCR Interchange.

Can I start 'Can-Do' Tasks before Year 10?

Yes. 'Can-Do' tasks can start at any time. When started in the lower school they can be motivating and develop positive attitudes towards Science. All that is needed is that the achievement of each task is recorded correctly and the records kept secure.

Can a candidate do more than 8 'Can-Do' Tasks?

Yes. There is no limit to the number of 'Can-Do' Tasks a candidate can attempt. Only the best 8 marks will count but a candidate can do many more.

Can a candidate score one or two marks for attempting but not achieving a 3 mark task?

No. Each task must be completed successfully and completely. If a 3 mark task is attempted but not fully achieved, other marks should be counted instead.

Can 'Can-Do' Tasks from OCR Certificate of Achievement count for OCR Gateway Science?

Yes. There are some common 'Can-Do' Tasks and some linked 'Can-Do' Tasks (in which there is an element of progression from Entry Level to GCSE) and any of these types may be used. However teachers will need to note that the tariff of both the common tasks and the linked tasks are different.

Can the ‘Can-Do’ Tasks from OCR Gateway Science count for Gateway Separate Sciences?

Yes. With the proviso that they are tasks that are appropriate for that Science e.g. ‘I can read a domestic electricity meter’ would be appropriate for Physics but would not be appropriate for Biology and Chemistry.

I have some candidates with physical handicaps which make practical tasks involving equipment impossible. Can they do ‘Can-Do’ tasks?

Yes. Select any tasks that they might be able to do e.g. ICT tasks.

Should I involve candidates in the assessment of ‘Can-Do’ tasks?

Yes. This reinforces the primary point of actively involving the candidates in their own assessment. Candidates will appreciate being given a list of the appropriate tasks. They may then be able to inform the teacher when they think they can do them. The decision about whether the task has been achieved is the teacher’s. The teacher should record this and not the candidate. However a candidate may wish to keep a record for their own use to show their progress through the course.

We have three teachers teaching OCR Gateway Science. Do all the teachers have to do ‘Can-Do’ tasks?

Ideally, yes. If the three teachers are doing Physics, Chemistry and Biology, ideally all three teachers should be involved in ‘Can-Do’ tasks. If, however, circumstances prevent this, the ‘Can-Do’ tasks can be completed by 1 or 2 teachers.

How should my Centre plan for ‘Can-Do’ Tasks?

Identify in the Scheme of Work places where ‘Can-Do’ Tasks can be incorporated, ensuring there are opportunities to complete at least 8 at an appropriate level.

A candidate brings a piece of ICT work into school that has been done at home. Is this sufficient evidence to award a mark for ‘Can-Do’ Tasks?

You must know that this is actually the work of the candidate. If it has been entirely done at home it could be the work of parents, siblings or other candidates. It can be credited only if you are sure it is the work of the candidate alone.

Can a candidate be provided with a worksheet, written instructions or oral instructions before attempting a ‘Can-Do’ Task?

Yes. The aim of the assessment is for the candidate to carry out successfully the steps involved in the task and not to recall previously taught information.

2.2 Introduction

‘Can-Do’ Tasks form a significant element in the assessment of candidates’ work in the Gateway Sciences. The maximum of **24** marks out of **60** represents 40% of the Skills Assessment and 13% of the overall assessment, a weighting which clearly demonstrates the importance given to them.

The assessment of ‘Can-Do’ Tasks is important for three main reasons:

- the tasks support and enhance a candidate's knowledge and understanding of the content of each of the Items since all of the tasks are clearly and demonstrably linked closely to the teaching and learning
- the tasks develop a candidate's manipulative and processing skills
- the tasks provide a method of ensuring that each candidate is made aware, at frequent intervals, of their progress through the course.

Of the three reasons, perhaps the third is the most important, since the use of frequent reminders of a candidate's positive achievement is a vital motivating factor, and will help to ensure that a candidate's overall attainment can be both maintained and maximised.

The use of 'Can-Do' Tasks is not an innovative feature of the Gateway Science Suite. The 'I-have-done-it' principle, used at frequent intervals, and applied as part of a 'drip-feed' approach to a GCSE course, has formed a part of previous examinations. It has been shown that the use of the tasks is welcomed by candidates, and found to be both a rewarding and an effective assessment tool by teachers.

2.3 Making candidates aware of 'Can-Do' Tasks

Making candidates aware of what they will be assessed on is part of the fundamental philosophy of the Gateway Science suite. It is essential, therefore, that candidates are made fully aware of the importance of the tasks. They should know which of the tasks have been selected by the teacher for use within the teaching group. Ideally candidates should be provided with a list of the tasks to be used during each part of the course.

Only a total of 8 of the 'Can-Do' Tasks are to be 'counted' as part of each candidate's assessment. However, it is fully expected that teachers will assess and record significantly more than this, and the element of progression from Basic (1 point) tasks through Intermediate (2 points) tasks to Advanced (3 points) tasks needs to be built into the selection.

2.4 Listing of the 'Can-Do' Tasks

The lists of all the 'Can-Do' tasks are given on the following pages:

- Science: pages 9 to 11
- Biology: pages 12 to 13
- Chemistry: pages 14 to 15
- Physics: pages 16 to 17

2.5 'Can-Do' Tasks for Science

		Basic: 1 point 'Can-Do' Tasks	Date	Points
1	B1a	I can measure blood pressure.		1
2	B1a	I can measure breathing rate/pulse rate before and after different types of exercise.		1
3	B1d	I can measure my field of view.		1
4	B1d	I can use Ishihara colour charts to identify colour vision deficiency.		1
5	B1f	I can use ICT to produce a poster warning old people about hypothermia and telling them how to prevent it.		1
6	C1a	I can heat a solid substance safely.		1
7	C1a	I can test for carbon dioxide.		1
8	C1c	I can test whether a substance dissolves in a solvent.		1
9	C1h P1a P1d P2a	I can accurately measure the temperature in °C.		1
10	C1h	I can measure the mass of an object using an electronic balance.		1
11	P1c	I can design a demonstration to show a convection current.		1
12	P1e	I can draw a ray diagram to show the path of a ray of light along an optical fibre.		1
13	P1e	I can identify analogue and digital signals on equipment.		1
14	P1h	I can calculate the time I can safely spend in the Sun from knowledge of normal burn time and the SPF of a sun screen.		1
15	B2a B2b	I can use a simple key to identify some plants/animals.		1
16	B2b	I can classify some different organisms.		1
17	B2e	I can use a hand lens to observe a small animal.		1
18	B2f	I can identify a range of fossils.		1
19	B2f	I can use the internet to find out information about Charles Darwin.		1
20	B2h	I can use the internet to collect scientific information about extinct animals.		1
21	C2b	I can safely heat a sample of a chemical in a test tube.		1
22	C2c	I can mark on a map of the world ten locations of Earthquakes or Volcanoes.		1
23	C2e	I can distinguish, using experiments, between a sample of aluminium and iron.		1
24	C2h	I can measure the volume of gas produced in a reaction using a gas syringe.		1
25	C2h	I can measure the reaction time for a suitable reaction.		1
26	C2h	I can measure the volume of a liquid using a measuring cylinder.		1
27	P2a	I can use a voltmeter to measure voltage.		1
28	P2c	I can read a domestic electricity meter.		1
29	P2e	I can use a compass to find the direction of a magnetic field.		1
30	P2f	I can use ICT to produce a labelled model of our Solar System.		1

		Intermediate: 2 point 'Can-Do' Tasks	Date	Points
31	B1a	I can do an experiment on fatigue in finger muscles and record the results.		2
32	B1b	I can carry out simple food tests.		2
33	B1b	I can calculate a BMI and make a decision as to what it indicates.		2
34	B1c	I can collect data from various sources for a named disease and identify danger sites on a world map.		2
35	B1d	I can collect, present and analyse data to compare the sensitivity of different areas of my skin.		2
36	B1e	I can collect scientific information from a variety of sources to show the effects of drugs or smoking on the body and display or present the information.		2
37	B1f	I can carry out an experiment on skin temperatures down an arm or leg and plot the results on a graph.		2
38	C1e	I can test for unsaturation.		2
39	P1a P1d	I can use a thermogram to identify areas of different temperature.		2
40	P1b	I can use secondary sources, e.g. the internet, to compare the effectiveness of different insulating methods of different combinations of insulating materials.		2
41	P1c	I can plot an accurate line graph of a cooling curve.		2
42	P1g	I can send and receive a message in Morse code.		2
43	B2a	I can collect data using a sampling technique.		2
44	B2c	I can measure the rate of photosynthesis by counting the rate of bubble release from pondweed.		2
45	B2e	I can use ICT to make a poster to explain how a camel/polar bear is adapted to its habitat.		2
46	B2f	I can use ICT to prepare an information leaflet explaining why the fossil record is incomplete.		2
47	B2g	I can plot a population graph.		2
48	B2h	I can use the internet to collect scientific information about various endangered species.		2
49	C2a	I can make a sample of paint with thermochromic properties.		2
50	C2d	I can extract a sample of copper from a copper ore such as malachite.		2
51	C2d	I can purify a sample of impure copper using the electrolysis of aqueous copper sulphate.		2
52	P2b	I can use an oscilloscope to measure the maximum voltage of AC.		2
53	P2c	I can use meter readings to calculate the cost of using electricity.		2
54	P2d	I can describe how to handle radioactive sources safely.		2
55	P2e	I can use a plotting compass to map the magnetic field around a coil or magnet.		2
56	P2g	I can make a telescope from a pair of lenses.		2
57	P2h	I can use ICT to find out about the stages of a star's life cycle and put the stages in the correct order.		2

		Advanced: 3 point 'Can-Do' Tasks	Date	Points
58	B1b	I can carry out an experiment on enzyme action and record the results and conclusion.		3
59	B1h	I can use a genetics kit to show a monohybrid cross.		3
60	C1g	I can carry out an experiment to show that combustion of a hydrocarbon in a plentiful supply of air produces carbon dioxide and water.		3
61	C1h	I can do an experiment to find the energy output per gram of a liquid fuel.		3
62	P1a	I can carry out an experiment to find the energy needed to melt ice.		3
63	P1c	I can carry out an experiment to compare the performance of different insulating materials.		3
64	P1d	I can present a balanced argument in favour of or against the positioning of a mobile phone mast.		3
65	P1e	I can find the critical angle of glass/Perspex.		3
66	P1f	I can use information about transmitter location and frequencies to tune a radio.		3
67	B2a	I can investigate and compare different habitats.		3
68	B2b	I can present a report on the work of Carl Linnaeus.		3
69	B2c	I can test a leaf for starch.		3
70	B2h	I can use ICT to produce an information leaflet on one endangered species, showing reasons for its predicament and suggestions for its protection.		3
71	C2a	I can use a natural product to permanently dye a piece of cotton.		3
72	C2b	I can make and test samples of concrete for their strength.		3
73	C2e	I can carry out an investigation to find the optimum conditions for corrosion of a named metal.		3
74	C2g	I can measure the rate of a reaction that produces a gas.		3
75	C2h	I can investigate a reaction to find a suitable catalyst.		3
76	C2h	I can use experimental results such as volume of gas produced against time to determine the rate of reaction.		3
77	P2a	I can carry out an investigation to find out how the voltage produced by a photocell varies with distance from a light source.		3
78	P2b	I can use an oscilloscope to measure the frequency of AC.		3
79	P2c	I can find the energy transferred in an electrical circuit using an ammeter, voltmeter and a timer.		3
80	P2f	I can use data on sizes and distances to design a model of our solar system to fit inside the laboratory or onto the school grounds.		3

2.6 'Can-Do' Tasks for Biology

		Basic: 1 point 'Can-Do' Tasks	Date	Points
1	B1a	I can measure blood pressure.		1
2	B1a	I can measure breathing rate/pulse rate before and after different types of exercise.		1
3	B1d	I can measure my field of view.		1
4	B1d	I can use Ishihara colour charts to identify colour vision deficiency.		1
5	B1f	I can use ICT to produce a poster warning old people about hypothermia and telling them how to prevent it.		1
6	B2a B2b	I can use a simple key to identify some plants/animals.		1
7	B2b	I can classify some different organisms.		1
8	B2e	I can use a hand lens to observe a small animal.		1
9	B2f	I can identify a range of fossils.		1
10	B2f	I can use the internet to find out information about Charles Darwin.		1
11	B2h	I can use the internet to collect scientific information about extinct animals.		1
12	B5a	I can identify a fracture from an X-ray.		1
13	B5d	I can measure my peak flow.		1
14	B6c	I can collect gas from fermenting sugar and test it for carbon dioxide.		1
15	B6f	I can observe a living Daphnia under a microscope.		1
16	B6g	I can test a mock urine sample for the presence of glucose.		1
17	B6g	I can use a colour chart to determine how much glucose is in the mock urine sample.		1

		Intermediate: 2 point 'Can-Do' Tasks	Date	Points
18	B1a	I can do an experiment on fatigue in finger muscles and record the results.		2
19	B1b	I can carry out simple food tests.		2
20	B1b	I can calculate a BMI and make a decision as to what it indicates.		2
21	B1c	I can collect data from various sources for a named disease and identify danger sites on a world map.		2
22	B1d	I can collect, present and analyse data to compare the sensitivity of different areas of my skin.		2
23	B1e	I can collect scientific information from a variety of sources to show the effects of drugs or smoking on the body and display or present the information.		2
24	B1f	I can carry out an experiment on skin temperatures down an arm or leg and plot the results on a graph.		2
25	B2a	I can collect data using a sampling technique.		2
26	B2c	I can measure the rate of photosynthesis by counting the rate of bubble release from pondweed.		2
27	B2e	I can use ICT to make a poster to explain how a camel/polar bear is adapted to its habitat.		2

28	B2f	I can use ICT to prepare an information leaflet explaining why the fossil record is incomplete.		2
29	B2g	I can plot a population graph.		2
30	B2h	I can use the internet to collect scientific information about various endangered species.		2
31	B5a	I can identify the main bones and muscles in an arm.		2
32	B5b	I can construct a time line of discoveries about blood circulation using various sources.		2
33	B5b	I can display information using charts and graphs about heart disease in the world.		2
34	B5d	I can carry out an experiment to show the differing amounts of carbon dioxide in inhaled and exhaled air.		2
35	B5d	I can survey one industrial disease and present the information in a poster or leaflet.		2
36	B5e	I can investigate urine samples and correctly identify them.		2
37	B5e	I can perform rescue breaths using a model.		2
38	B5h	I can collect and display data to show height distributions in candidates.		2
39	B6a	I can follow instructions to produce a sample of yoghurt.		2
40	B6a	I can measure/record the pH of milk as it is converted to yoghurt using pH paper/pH meter/data logger.		2
41	B6e	I can identify some soil fauna and flora using keys.		2
42	B6e	I can do a simple experiment to show that life is present in a soil sample (using lime water or bicarbonate indicator).		2
43	B6g	I can immobilise an enzyme in an alginate bead.		2

		Advanced: 3 point 'Can-Do' Tasks	Date	Points
44	B1b	I can carry out an experiment on enzyme action and record the results and conclusion.		3
45	B1h	I can use a genetics kit to show a monohybrid cross.		3
46	B2a	I can investigate and compare different habitats.		3
47	B2b	I can present a report on the work of Carl Linnaeus.		3
48	B2c	I can test a leaf for starch.		3
49	B2h	I can use ICT to produce an information leaflet on one endangered species, showing reasons for its predicament and suggestions for its protection.		3
50	B6b	I can prepare a culture of bacteria on an agar plate using aseptic technique.		3
51	B6b	I can compare the effectiveness of different antiseptics using a culture of bacteria on an agar plate (by measuring and comparing the diameters of the halos).		3
52	B6c	I can make a slide of yeast cells, stain it and make a labelled drawing.		3
53	B6c	I can do an experiment to show how yeast activity is affected by temperature.		3
54	B6d	I can design a biogas digester and display the plans as a chart.		3
55	B6e	I can compare air content of two different soils.		3
56	B6g	I can compare the effectiveness of biological washing powder in removing different stains.		3
57	B6g	I can show that my bead contains an enzyme by showing its effect on a substrate.		3

2.7 'Can-Do' Tasks for Chemistry

Basic: 1 point 'Can-Do' Tasks			Date	Points
1	C1a	I can heat a solid substance safely.		1
2	C1a	I can test for carbon dioxide.		1
3	C1c	I can test whether or not a substance dissolves in a solvent.		1
4	C1h	I can accurately measure the temperature in °C.		1
5	C1h	I can measure the mass of an object using an electronic balance.		1
6	C2b	I can safely heat a sample of a chemical in a test-tube.		1
7	C2c	I can mark on a map of the world ten locations of Earthquakes or Volcanoes.		1
8	C2e	I can distinguish, using experiments, between a sample of aluminium and iron.		1
9	C2h	I can measure the volume of a gas produced in a reaction using a gas syringe.		1
10	C2h	I can measure the reaction time for a suitable reaction.		1
11	C2h	I can measure the volume of a liquid using a measuring cylinder.		1
12	C5a	I can measure the mass of a sample to the required level of precision.		1
13	C5b	I can measure changes in electrode mass.		1
14	C5c	I can measure amounts of liquid to the nearest division on a measuring cylinder.		1
15	C5d	I can read a burette to the nearest scale division.		1
16	C5e	I can measure the amount of gas produced in a reaction.		1
17	C5h	I can carry out a simple precipitation reaction.		1
18	C6a	I can identify samples of hydrogen and oxygen.		1
19	C6d	I can test for chlorine gas with damp blue litmus paper.		1

Intermediate: 2 point 'Can-Do' Tasks				
20	C1e	I can test for unsaturation.		2
21	C2a	I can make a sample of paint with thermochromic properties.		2
22	C2d	I can extract a sample of copper from a copper ore such as malachite.		2
23	C2d	I can purify a sample of impure copper using the electrolysis of aqueous copper sulphate.		2
24	C5a	I can investigate the mass changes during a thermal decomposition reaction.		2
25	C5b	I can set up a simple electrolysis circuit.		2
26	C5c	I can dilute a solution by a specified amount.		2

27	C5d	I can accurately deliver a known amount of liquid using a pipette.		2
28	C5h	I can prepare a dry sample of an insoluble salt by precipitation.		2
29	C6a	I can collect a sample of gas.		2
30	C6g	I can prepare a sample of a cold cream (emulsion).		2

		Advanced: 3 point 'Can-Do' Tasks	Date	Points
31	C1g	I can carry out an experiment to show that combustion of a hydrocarbon in a plentiful supply of air produces carbon dioxide and water.		3
32	C1h	I can do an experiment to find the energy output per gram of a liquid fuel.		3
33	C2a	I can use a natural product to permanently dye a piece of cotton.		3
34	C2b	I can make and test samples of concrete for their strength.		3
35	C2e	I can carry out an investigation to find the optimum conditions for corrosion of a named metal.		3
36	C2g	I can measure the rate of a reaction that produces a gas.		3
37	C2h	I can investigate a reaction to find a suitable catalyst.		3
38	C2h	I can use experimental results such as volume of gas produced against time to determine the rate of reaction.		3
39	C5b	I can set up an electrolysis experiment, controlling both current and time.		3
40	C5d	I can carry out a simple titration and get two consistent results within +/- 0.2cm ³ .		3
41	C5e	I can set up and perform an experiment to measure the amount of gas produced in a reaction.		3
42	C5h	I can identify an unknown ion by using a precipitation reaction and explain it using an ionic equation.		3
43	C6a	I can make a simple fuel cell (Nuffield sample scheme).		3
44	C6f	I can compare the hardness of two different water samples using soap solution.		3
45	C6f	(See below)		

* Further advice to OCR recommended that this task be deleted on grounds of H&S, but teachers are reminded that versions 1 and 2 of the 'Can-Do' listing for Chemistry did include this.

2.8 'Can-Do' Tasks for Physics

		Basic: 1 point 'Can-Do' Tasks	Date	Points
1	P1a/d P2a	I can accurately measure the temperature of an object in °C.		1
2	P1c	I can design a demonstration to show convection current.		1
3	P1e	I can draw a ray diagram to show the path of a ray of light along an optical fibre.		1
4	P1e	I can identify analogue and digital signals on equipment.		1
5	P1h	I can calculate the time I can safely spend in the Sun from knowledge of normal burn time and the SPF of a sun screen.		1
6	P2a	I can use a voltmeter to measure voltage		1
7	P2c	I can read a domestic electricity meter.		1
8	P2e	I can use a compass to find the direction of a magnetic field.		1
9	P2f	I can use ICT to produce a labelled model of our Solar System.		1
10	P5a	I can show two types of orbit of an artificial satellite on a world globe.		1
11	P5f	I can produce an interference pattern in a ripple tank.		1
12	P5g	I can project a visible spectrum onto a screen using a prism.		1
13	P5h	I can use a convex lens to project a real image onto a screen.		1

		Intermediate: 2 point 'Can-Do' Tasks	Date	Points
14	P1a/d	I can use a thermogram to identify areas of different temperature.		2
15	P1b	I can use secondary sources, e.g. the internet, to compare the effectiveness of different insulating methods of different combinations of insulating materials.		2
16	P1c	I can plot an accurate line graph of a cooling curve.		2
17	P1g	I can send and receive a message in Morse code.		2
18	P2b	I can use an oscilloscope to measure the maximum voltage of AC.		2
19	P2c	I can use meter readings to calculate the cost of using electricity.		2
20	P2d	I can describe how to handle radioactive sources safely.		2
21	P2e	I can use a plotting compass to map the magnetic field around a coil or magnet.		2
22	P2g	I can make a telescope from a pair of lenses.		2
23	P2h	I can use ICT to find out about the stages of a star's life cycle and put the stages in the correct order.		2
24	P6a	I can wire a simple series circuit, to include resistors, from a circuit diagram.		2
25	P6g	I can build a logic gate circuit using either an AND or an OR gate to perform a particular job.		2

		Advanced: 3 point 'Can-Do' Tasks	Date	Points
26	P1a	I can carry out an experiment to find out the energy needed to melt ice.		3
27	P1c	I can carry out an experiment to compare the performance of different insulating materials.		3
28	P1d	I can present a balanced argument in favour of or against the positioning of a mobile phone mast.		3
29	P1e	I can find the critical angle of glass/Perspex.		3
30	P1f	I can use information about transmitter location and frequencies to tune a radio.		3
31	P2a	I can carry out an investigation to find out how the voltage produced by a photocell varies with distance from a light source.		3
32	P2b	I can use an oscilloscope to measure the frequency of AC.		3
33	P2c	I can find the energy transferred in an electrical circuit using an ammeter, voltmeter and a timer.		3
34	P2f	I can use data on sizes and distances to design a model of our solar system to fit inside a lab or on to the school grounds.		3
35	P5b	I can perform an experiment with electrical or electronic equipment and then calculate the acceleration due to gravity.		3
36	P5g	I can measure the angles of incidence and refraction and use the values to calculate the refractive index of material.		3
37	P5h	I can construct my own refracting telescope.		3
38	P6b	I can design and construct a potential divider circuit to achieve a given output pd.		3
39	P6c	I can build a model dc electric motor.		3
40	P6d	I can build a model generator.		3
41	P6e	I can construct and explain a model high voltage power line.		3
42	P6f	I can build a full-wave rectification circuit.		3
43	P6h	I can build a logic gate circuit using at least two AND OR gates to perform a particular job.		3

2.9 Selecting Tasks for the Science Course

The analysis of the **80** tasks which are available as part of the Gateway Science course shows that **30** are Basic tasks, **37** are Intermediate tasks and the remaining **23** are Advanced tasks. Each task is clearly referenced to the specific item in the specification, and for some tasks there is more than one opportunity for a candidate to be assessed on their ability to demonstrate success. The actual set of tasks to be used will depend on:

- the likely attainment level of the candidates
- the size of the teaching group
- the resources available within the centre.

The choice of tasks selected by teachers will normally be spread across Biology, Chemistry and Physics tasks. There is, however, no requirement for the ones which are 'counted' for assessment purposes to reflect a balance.

2.10 Selecting Tasks for the Separate Science Courses

For candidates following the separate Science courses within the Gateway Science Suite teachers can opt to use **either** the Skills Assessment linked to Science **or** the Skills Assessment linked to Additional Science.

The option can be made on a candidate basis, a subject basis, a teaching group basis or on a whole school basis. There are, therefore, three further sets of 'Can-Do' tasks – linked to Biology, to Chemistry and to Physics.

2.11 Tariff of the tasks

The tasks are set at three different levels of complexity:

- **Basic** tasks, each worth **1** mark when they have been successfully completed, are simple one-step operations which should be accessible to the majority of candidates.
- **Intermediate** tasks, each worth **2** marks when they have been successfully completed are more complex tasks generally involving two stages, the second of which depends on success in the first stage.
- **Advanced** tasks, each worth **3** marks when they have been successfully completed, are more demanding tasks which involve a series of operations to be carried out successfully.

Each task has to be completed in its entirety before the marks can be awarded. A **3** mark task successfully completed is awarded **3** marks. If the task is not completed satisfactorily then **0** marks can be awarded. This 'pass-fail' concept does require teachers to be aware of the likely attainment level of their candidates and to ensure the appropriate selection of tasks.

2.12 Attempting a task on more than one occasion

Candidates are able to attempt any of the 'Can-Do' tasks on more than one occasion. For some of the tasks there will be many occasions during the course for a candidate to try again.

However, it is expected that a teacher will ensure that, by using an appropriate selection from the list of tasks, their candidates will generally succeed at their first attempt.

2.13 Progression

Teachers should note that an element of progression has been incorporated, whenever possible and convenient, within the listing of the 'Can-Do' tasks. Teachers are advised to consider this when selecting their list of tasks to be attempted by their candidates.

The progression can be between Basic and Intermediate, between Intermediate and Advanced, or even be a feature across all three levels of Skills competence.

For example, in the listing for Science there are links between:

- Task 15 I can use a simple key to identify some plants/animals. **[1 point]**
- Task 43 I can collect data using a sampling technique. **[2 points]**
- Task 6 I can investigate and compare different habitats. **[3 points]**

- Task 6 I can heat a solid substance safely. **[1 point]**
- Task 50 I can extract a sample of copper from a copper ore such as malachite. **[2 points]**

- Task 52 I can use an oscilloscope to measure the maximum voltage of AC. **[2 points]**
- Task 78 I can use an oscilloscope to measure the frequency of AC. **[3 points]**

There are other links, some of which may be explicit, and others in which a simpler skill is embedded within the framework of a higher level one, that teachers are encouraged to consider when making an appropriate selection of tasks for use with their own teaching groups.

2.14 Assessing

The assessment of 'Can-Do' tasks in previous GCSE examinations has clearly demonstrated that the successful assessment of the tasks is both convenient and manageable by teachers.

Initial fears on the part of some teachers about their having to continually monitor their candidates' progress, with the help of a detailed clipboard listing, and with large numbers of candidates having to be observed during all their practical lessons, have proved to be unfounded.

When candidates are being assessed on 'Can-Do' Tasks, it is important that they are working on their own.

The management of the tasks will depend on the following factors:

- the choice which is made from the listing
- the likely attainment level of the candidates
- the size of the teaching group
- the resources available within the centre.

It also needs to be stressed that:

- not all the candidates need to be assessed on the same task on the same occasion
- there is often more than one occasion when a particular task can be assessed
- for some tasks there is a tangible product available when the task has been completed.

By working out the number of candidates, the number of tasks selected for assessment, and the number of lessons available for the duration of the course, then a realistic plan of assessment can be built into a Scheme of Work.

Additionally, if the candidates are actually aware of the tasks to be assessed in a forthcoming series of lessons, then they will be able to actively remind teachers at appropriate times during lessons of the tasks which they are attempting.

2.15 Professional judgement

Teachers are required to use their own professional judgement to determine whether or not a task has been successfully completed. **Partial success at a task cannot be credited:** success is gauged on a simple pass/fail principle. A candidate who successfully completes the scheduled task is then awarded, as appropriate, **3** points for an Advanced Task, **2** points for an Intermediate Task or **1** point for a Basic Task. If a candidate fails to complete a chosen task no marks are awarded. The candidate can attempt the same task on another occasion, when success might then be possible.

Assessing a candidate on Basic, **1** point, tasks is straightforward.

For example, Task 9 in Science: *'I can accurately measure the temperature in °C'* is possible in a variety of different contexts on frequent occasions during the course. In some cases the teacher will be able to observe the candidate undertaking the task as a routine part of a practical exercise. On other occasions the evidence might be obtained by consideration of a table of results incorporated into a report of a practical exercise.

An Intermediate, **2** point, tasks such as Task 35 in Science: *'I can collect, present and analyse data to compare the sensitivity of different areas of my skin'* would involve a candidate following oral or written instructions to undertake a practical task.

There would normally be a written outcome of the task. If the candidate had satisfactorily collected data from four or five different areas of skin, had been able to record the data in an appropriate format and had been able to analyse it either to establish a trend or to make a valid comment on

the differences, then the candidate would be credited with two points. However, if the candidate had been unable to record or analyse the data satisfactorily then **0** points should be awarded.

Advanced, **3** point, tasks, for example Task 63 in Science: *'I can carry out an experiment to compare the performance of different insulating materials'* would involve a candidate being able to follow oral or written instructions to perform a suitable experiment, to describe how it was carried out and to gather meaningful data from which an analysis could be made. To award **3** points for this task, the candidate would need to complete all parts of the task. Again, there would normally be tangible evidence which the teacher could use as a basis of making the judgement about the success or not of the candidate at the task.

2.16 Recording

Teachers need to maintain careful records of their candidates' attainment, not only for internal purposes within the centre, but also to ensure that there are clear records available at the time when the total marks for the Skills Assessment are submitted to OCR.

These records can be kept on individual Candidate Record Cards, in a teacher's mark book or the department may wish to set up a centralised system for recording all candidates' achievements in 'Can-Do' Tasks so that progress can be monitored easily. An electronic mark book, which can be used in this way, is available for download from OCR Interchange.

Candidate Record Cards will need to be completed for all candidates who are selected for moderation.

Candidate Record Cards are also available via Interchange. Once downloaded, the four A4 pages can be photocopied onto A3 paper (double-sided) to produce a folded A3 sheet. 'Can-Do' Tasks can be recorded on this sheet, but it can also be used as a wrapper for storing Science in the News tasks.

Section C: *Science in the News*

3.1 Frequently asked Questions on Science in the News

How many Science in the News tasks does a candidate have to complete for Gateway Science?

Just **one** from the Physics, Chemistry or Biology sections. If they do more than one, then the best mark counts. You cannot count marks for the separate Qualities from different Science in the News tasks.

My candidates have attempted a Science in the News but they didn't do very well. What can I do?

Make sure they understand what is required for the task. Candidates will not do well unless they are taught some of the skills needed:

- how to select relevant information from an article
- how to correctly reference the information from different sources
- how to process quantitative data and identify patterns
- how to evaluate the evidence
- how to relate the data to social, economic or environmental issues
- how to come to an answer to the question set and explain why

Give the candidates some feedback and then give them another task to do.

Can candidates draft and redraft Science in the News tasks?

No. Candidates are intended to submit their original piece of work. If this is unsatisfactory, for any reason, the candidate should attempt another task.

Can candidates do research in lesson time, and if so can they be given suitable stimulus material by the teacher?

Yes. Some candidates would not complete the research as homework. Doing no research would produce zero for Quality A but the candidate could score for the other five Qualities. You can arrange for research to be done in lesson time. If this is the case, you can provide a variety of resource material e.g. relevant newspaper and magazine articles, CD-ROMs, books, Internet addresses etc. There should be opportunities for candidates to choose their sources and not just be given the ones to use. Candidates could be invited to carry out a survey of people's views on the question asked. This could provide evidence for data handling.

Can candidates take Science in the News tasks to complete at home?

No. The final report has to be completed in lesson time under controlled conditions i.e. with the supervision of the teacher. The research needed to enable them to complete the report can be done without supervision. The candidate must attach all preliminary work to their final report.

Can I tell the candidates the results of my marking of the task?

Yes. This is important and provides formative feedback. You can report the results and tell the candidate where they could have done better, but the candidate must not then be given the opportunity to add to or improve the work. The candidate should also be told that this is a provisional mark subject to moderation.

What can candidates bring into class to help them do a Science in the News task?

The candidate can bring in any notes, pictures, charts or graphs etc to help them write their answer. **They must not bring in completed answers either electronically or in a written form.** If there is any attempt to do this the work should not be counted.

Can candidates word process their work?

Yes, but only during the supervision under controlled conditions. There is no advantage using a spellchecker as it can still lead to errors.

Can candidates use ICT to draw their graphs?

Graphs drawn using ICT must be as good as expected if graph paper and a pencil are used. The graph must be of a sufficient size, have labelled linear axes and the best line or curve drawn.

What should I do if there is evidence of candidates producing identical work?

If this is the case, neither candidate's work should be counted. If evidence of this comes up during external moderation it is possible that all GCSE results could be cancelled.

Are candidates able to copy sections straight from a book or the Internet?

Sections of work can be copied but this must be clearly referenced so that the source is clear. This can be achieved by using quotation marks for a different font. Copying too much irrelevant material out of another source will make the work too long.

Is there a time limit for candidates completing a Science in the News task?

No. This is up to you, but about an hour's writing up time should be sufficient for most candidates. However, if it carries over into another lesson all the work and the notes must be collected in.

I have low attaining candidates. I don't think they could do a Science in the News task without support. What help can they have?

It is quite reasonable to read the stimulus material and help them with any difficult scientific words. However, any guidance given should not direct the candidates to a particular answer. Remember the candidates will not be attempting a task until you have taught the relevant science. A candidate with special assessment needs, e.g. amanuensis, can have the same level of help when doing a Science in the News task. However, for a mark to be scored in Quality F (Quality of Written Communication) the writer must write exactly what the candidate says, including mistakes. A statement about whether this has been done should accompany the work.

Do I have to use the generic writing frame with my candidates?

No. The generic writing frame is intended for lower attaining candidates to help them structure their answer. It might hinder able candidates. You can, of course, give candidates just the headings from the writing frame.

How do I mark the candidates' work against the Level of Response grid?

Make sure you use the Level of Response grid for Science in the News and not the 'Candidate-speak' version.

For each of the six Qualities A – F there are three descriptions at **2** marks, **4** marks and **6** marks. Check the work matches **2** before moving on to **4**, and when it matches **4** consider whether there is a match to **6** marks. If in your professional judgement it matches **2** but does not completely match **4**, you should award **3** marks. When awarding **1**, **3** or **5** marks some brief annotation explaining the decision should be given. This will help the Moderator to support the mark. Internal standardisation within the Centre is essential.

Will the marking of Science in the News tasks be moderated?

Yes. A Moderator, appointed by OCR, will choose to look at a range of candidates' work. The work will sample all abilities and all teachers. They will check the marking against the Level of Response grid and adjust the Centre's marks if necessary to match the national standard. Any recommended change by a Moderator will be confirmed by at least one other Moderator working independently.

Can I write Science in the News tasks for my centre that reflect local issues?

Yes. This can be done but approval from OCR should be obtained before they are used. They should:

- set a question which has no definitive/unique answer
- provide some information for and against
- provide some data which candidates can process, establish trends and evaluate
- provide opportunities for the candidate to do some further research.

Further information and guidance is available from OCR.

Centres may prefer to use the bank of Science in the News tasks provided by OCR.

3.2 Introduction

This element of the Skills Assessment requires each candidate to undertake some research and then to produce a short report on a scientific issue which is clearly relevant both to the content of their science course and also to the way in which the issues involved may impact on their lives at the start of this century.

It is important to accept that some of the candidates will have completed their science education when their GCSE course finishes and it is vital that each of them is able/prepared to meet any challenges which issues present to them in later life.

Science in the News is intended as the main way the Gateway Science Suite delivers the requirement for 'How Science Works' in the National Curriculum.

The issues below are only three examples of the many aspects of science which will be important for citizens during the next half century:

- use of wind farms for energy production
- most effective use of the dwindling supplies of crude oil
- the extent to which stem cell research is permitted.

The candidates will need to be equipped to make sensible, rational and realistic decisions about such relevant issues.

There may be serious and prolonged public debate over some of these scientific issues. The final decisions which have to be taken may sometimes require finely-balanced judgements. These issues are sometimes presented in different ways by the media. For example, the various methods which can be used for the presentation of data in graphical format can easily affect how a particular issue is perceived. The use of an extended, diminished, truncated or partial display of the vertical axis of a graph can, at first sight, affect the impact of a news item. Some selective reporting of the data may also provoke an element of controversy.

It is, therefore, vital for candidates to be able to:

- undertake, for themselves, some research into these issues
- decide on the suitability, accuracy and or reliability of the evidence
- ascertain the impact on themselves, society and on their surroundings
- present their findings clearly
- come to their own justified conclusions about the issue.

The development and subsequent assessment of these skills, as an essential and integral part of the teaching and learning of a Science course, represent 'life-long' skills of permanent use to the candidates.

Teachers are reminded that the use of Science in the News topics is not solely confined to GCSE Gateway Science, but is also an option available for candidates following the separate Gateway Biology, Chemistry and Physics courses.

3.3 Listing of Science in the News topics

A Science in the News topic is provided within each of the Modules forming the course.

The table below shows the titles which are currently available. Additional titles will be made available in subsequent years.

Module	Title
B1	<i>'Should the use of cannabis be legalised?'</i>
B1	<i>'Should old people be allowed to drive?'</i>
B2	<i>'Should whale hunting be banned?'</i>
B2	<i>'Should farmers be allowed to use polytunnels?'</i>
C1	<i>'Should we stop giving crisps and chips to young children?'</i>
C1	<i>'Are supermarkets green enough?'</i>
C2	<i>'Are congestion zones a good idea?'</i>
C2	<i>'Should we recycle more copper from mobile phones?'</i>
P1	<i>'Should we spend time in the Sun?'</i>
P1	<i>'Is human activity responsible for increased global warming?'</i>
P2	<i>'Does the UK need new Nuclear Power stations?'</i>
P2	<i>'Are asteroids a threat?'</i>
B5*	<i>'Is there a bright future for children born with heart defects?'</i>
B5*	<i>'Cosmetic surgery – a life saver or image makeover?'</i>
B6*	<i>'Should we worry about Bird Flu affecting humans in the UK?'</i>
C5*	<i>'Should we ban salt from all processed food?'</i>
C6*	<i>'Is aspirin still a wonder drug, or is it over-rated?'</i>
P5*	<i>'How safe are mobile phones?'</i>
P5*	<i>'Will fitting a child safety seat save lives?'</i>
P6*	<i>'Do high voltage power lines pose a risk to health?'</i>

*These topics are only designed for use with candidates following the appropriate Separate Science course and who are being assessed on the 'Science' Skills rather than the 'Additional Science' Skills.

It should be noted that each of the topics is provided in the form of a question, and it is expected that candidates will attempt to answer the question.

Candidates will be expected, having undertaken their research, to make a decision about the question and to provide justification for the decision they have made in the light of their research and the information in the stimulus material.

The nature of the decision taken by each candidate is relatively unimportant: what is vital is the stated justification for the decision.

The possibility that some of these titles may cease to be a matter of public debate has been recognised and it is planned to have a 'rolling programme' of replacement of the titles during the lifetime of the specification. However, providing the topic is still a subject of public debate or the issue is undecided, a candidate's report will still be acceptable as part of the Skills Assessment whether or not the original topic is still listed.

Centres are free to seek approval for candidates to attempt other topics which are not listed. In such cases the Centre should contact the appropriate Qualifications Manager for further guidance.

However, in the first year or so of operation of the specification, Centres are strongly advised to use the topics listed, each of which has some additional support material.

3.4 Weighting

The allocation of a total of **36** marks to this assessment, and which represents 60% of the total Skills Assessment component for Science, is indicative of its importance.

3.5 Number of Topics to be attempted

A candidate can attempt any number of topics during the course, but only one of them is 'counted' for assessment purposes.

Evidence is emerging that many Centres are developing their Schemes of Work in such a way as to allow candidates to attempt two topics.

However, before attempting the first topic, teachers need to make sure that their candidates are aware of the Skills which are needed and which will be assessed. (Further information about this aspect is given later in this booklet. See pp 33, 34.)

One of the topics may be undertaken during the first part of the course and it will serve to develop the candidates' skills, to allow the teacher to provide detailed and formative feedback, and to allow correction of any weaknesses which are apparent.

This first report will not be used for assessment purposes but will enable the candidate to enhance their attainment on the second report, which is likely to be a more accurate reflection of the candidate's maximum attainment. This second report is intended to be the one submitted for assessment purposes.

3.6 Preparing candidates

A. Linking with the content of the Item

The Science in the News Topics have been clearly linked to the teaching of an Item within the Module so that there is integration of the teaching and learning of the subject content of the Item and the production of a report. It is essential that teachers do ensure that the relevant content has been covered by their own Scheme of Work before candidates attempt to start their Topic. The Skills Assessment is not a 'bolt-on' piece of work to be attempted in isolation.

B. Linking with the Skills element

Teachers should be aware that simply telling candidates to ‘...go away and find out about...’ without any previous preparation will prevent there being a satisfactory match between their likely attainment level and the actual performance they achieve.

Consequently, teachers will need to decide (depending on the likely attainment level of their candidates) the extent to which previous teaching and learning has enabled each candidate to:

Quality A	
	make effective use of the index of a book
	select appropriate written source material
	use a search engine to obtain suitable evidence from the World Wide Web
	select other relevant information from suitable sources
	appreciate the need to reference the sources they have used and to show where the information is used
Quality B	
	appreciate the advantages of presenting their quantitative data in a clear tabular format
	be able to process quantitative evidence including abstraction and manipulation of data
	present their evidence clearly and logically
	record their data to an appropriate degree of significance
	be able to display their data in a suitable graphical format
	be able to decide the most appropriate line to use in graphical displays
	be able to determine and comment on the trends and patterns shown in their evidence
	use pictorial evidence in support of their work
	able to process quantitative evidence
	appreciate the significance of anomalies
Quality C	
	be aware of the likely quality of their evidence
	be able to cross-link their evidence to other sources
	be able to decide if their evidence is sufficiently reliable
	be able to appreciate the uncertainty in scientific evidence
	be aware of the methods used by scientists to validate evidence
	make comparative judgements about the significance of different pieces of evidence
	appreciate that some evidence may show bias
Quality D	
	be able to relate their evidence to the social/economic/environmental issues involved
	be able to appreciate that scientific ideas may change over time
	be aware that the judgements on some topical issues are finely balanced
	appreciate that both sides of an argument may be justified
	appreciate that no human activity is entirely risk-free
	be aware that for many issues there is a balance between the costs and the benefits
	recognise that decisions on some moral or ethical issues will present a dilemma
Quality E	
	be able to give an answer to the question with suitable justification
	be able to write a suitable conclusion summarising their evidence
	be able to justify their conclusion by clearly linking it to their evidence
Quality F	
	be able to communicate their findings in an appropriate format using suitable language
	be able to spell, punctuate and utilise appropriate grammar in their response
	be able to use appropriate scientific and/or technical terminology

It is likely that some of these aspects will have been covered to an adequate degree in the teaching and learning in previous Key Stages. Teachers may wish to undertake an audit, across the whole curriculum, of the extent to which these underpinning skills have already been sufficiently developed.

Discussions based around the development of an understanding of the 'Candidate-speak' version of the defined Levels of Response will provide additional clarification of many of the points listed.

3.7 Producing the report on a Topic

A. Preparing candidates

Candidates:

- should be given the stimulus material and use it to plan their research
- should be given about a week to research the Topic
- may carry out research during lesson time, undertake it at home, in an ICT room or in a library
- may use any resource they wish for their research
- do not need to be supervised whilst they are undertaking their research
- should be made aware of the requirement to clearly reference their sources in the final report.

B. What candidates can prepare in advance.

A candidate may bring any of the following into the final supervised session:

- a prepared list of the references they are using to write their report which must be attached as an appendix
- any prepared diagrams, tables, charts or graphs that they have produced when processing data to illustrate points (the original data source should also be submitted to provide evidence that they have manipulated the data in some way)
- articles they want to use when writing their report. Candidates need to be reminded that if they bring in too much material it may hamper the writing of their final report
- any notes they have produced to help them structure their report.

All material prepared in advance must be clearly identified and available as hard copy attached to the end of the report. Candidates are not allowed to bring in any material in an electronic format for use in the supervised session.

C. The supervised session

Candidates are expected to be working independently to complete their reports and working in silence will help them concentrate on the task i.e. they work under controlled conditions.

The report should be no longer than 800 words, but in many cases candidates will complete their report using fewer.

It is expected that the supervised session will last about an hour but the time can be extended for candidates who have misjudged how long it will take them to complete their work or for candidates who work very slowly. It is probably best for candidates to complete the work in one supervised session but if for some reason, such as timetable constraints, the work needs to be done in two sessions then all the candidates' work should be collected in at the end of the first session and handed out again at the start of the second.

When a candidate has finished the Science in the News report, they should hand it in together with all the background notes they brought into the supervised session attached to the back of their final report, together with the original Science in the News stimulus.

Candidates must not take copies of their final report, either as a hard copy or in electronic format, from the supervised session.

Some candidates may need to be provided with a Writing Frame to guide them in the production of their final report. A suitable generic Writing Frame is downloadable with each topic using the Interchange facility available from OCR. Teachers are free to devise writing frames which they consider to be more suitable for their own candidates, but will need to ensure that such writing frames are entirely context-free. The use of a writing frame which is not context-free often reduces the marks which can be awarded to candidates since the prompts which are given can remove the element of personal judgement needed to be made by the candidate.

Teachers should also be aware that for higher-attaining candidates a Writing Frame can easily reduce their marks since such candidates will be constrained by the limitations imposed by the number of lines provided for the answers. Lined paper is advisable for such candidates.

Candidates should not be allowed an opportunity to correct, augment or redraft their work. If the performance of a candidate is lower than expected then another, different Science in the News report can be completed. Feedback given after the first report should help to improve performance. In order to allow feedback to be given to candidates, once a candidate's report has been marked, it can be handed back temporarily to the candidate in lesson time, at the discretion of the teacher. This report should then be collected back at the end of the lesson and kept securely.

3.8 Assessment

The assessment of a candidate's performance on a task is related to six different Qualities, each of which is clearly defined at a **two mark standard**, at a **four mark standard** and at a **six mark standard**.

Levels of Response at the two, four and six mark standards are very broadly linked to the performance likely to be expected from candidates working at or around GCSE grades F, C and A

respectively, but teachers are advised that this alignment should be regarded as general guidance rather than being a defined and fixed linkage between response levels.

Within the Skills Assessment differentiation by outcome is essential and this will be achieved in Science in the News Reports.

Only the highest attaining candidates are likely to attain the six mark standard in all the assessed Qualities. Teachers must, therefore, ensure that there is a secure match to all aspects before an award of six marks in any Quality.

Teachers use professional judgement to match a candidate's work to the appropriate standard. Where a response exceeds one standard but does not reach the next higher standard, an intermediate mark is awarded.

A teacher's judgement on each of the performance statements should be based on a holistic consideration of what has been written. Evidence for the award of a mark in any of the Qualities to be assessed can come from any part of a candidate's report and consequently an atomistic approach should be avoided.

3.9 Levels of Response

Science in the News: Levels of Response grid

Quality Assessed		0	1	2	3	4	5	6
A	Approach to the task Mark /6			Some research is carried out; some information is collected from at least one suitable source.		The information provided is used to plan their research; information is collected from more than one suitable source and used in the report. All sources are fully referenced.		Makes good use of the information provided to structure a balanced report; information is relevant, detailed and logically presented.
B	Analysis of the data Mark /6			At least one trend / pattern is identified and outlined correctly.		The main trends / patterns are described correctly and there is some evidence of correct processing of quantitative data.		The main trends / patterns are described correctly with reference to the quantitative data. These data have been further processed to reveal additional information and/or detect anomalies.
C	Evaluation of the data Mark /6			A comment has been made about the quality of the evidence.		There is a comparison of the reliability of the various forms of evidence, including an attempt to identify which evidence is most/least reliable.		There is detailed consideration of the evidence showing a good understanding of the relative merits of the evidence gathered in terms of both reliability and validity.
D	Relating to the data Mark /6			An attempt has been made to relate some of the data/ information to the impact on people or the environment.		The report shows some understanding of the social, economic or environmental issues as they relate to the task.		The report shows a clear understanding of the social, economic or environmental issues as they relate to the task with an understanding of the science involved.
E	Justifying a conclusion Mark /6			A conclusion is given with justification based on at least one piece of evidence.		A considered conclusion is given with justification based on the significance of more than one piece of evidence.		A considered conclusion is given with a well-argued justification based on careful analysis of the relative significance of more than one piece of evidence.
F	Quality of written communication Mark /6			Spelling, punctuation and grammar are of generally poor quality; little or no relevant scientific or technical vocabulary is used.		Spelling, punctuation and grammar are generally sound. Appropriate scientific or technical vocabulary is used.		Spelling, punctuation and grammar show very few errors. The report shows full and effective use of relevant scientific and technical terms.

Total Marks Awarded

Additional guidance in matching each of the Qualities

Quality A Approach to the task

Candidates need to show in their report where the information/data they have collected has come from.

- If there is no referencing, then more than 2 marks is difficult to match.
- If there are complete references, in the text and in the bibliography, from more than one source (which could be a minimum of 2 sources) then a match to 4 could be made.
- In addition to explicit and detailed references, both at appropriate points in the text and also in their bibliography, and evidence that the candidate has made good and effective use of both of their source materials, then 5 or 6 marks could be awarded.

Quality B Analysis of the data

Processing of data requires candidates to produce charts, or graphs or work out averages.

- For an award of 2 marks a candidate will be required to identify one trend or pattern.
- The abstracting or explaining of data from a table could allow access to 4 marks.
- The manipulation/conversion of figures to percentages (or vice-versa), or the use of statistics, also allows consideration of a match to 4 marks.
- Detailed further processing that leads to the discovery of new information or reveals anomalies is a match to 6 marks.

Quality C Evaluation of the data

- A reference to the quality of the data allows a match to 2 marks.
- A candidate who makes a comparison of the relative reliability of different sources could be awarded 4 marks.
- For an award of 5/6 marks, a candidate needs to give data to back up the decision of whether it appears to be biased or unbiased, and also to make specific references to the validity of the data [For example, in terms of type/size/age of a survey used].

Quality D Relating the data to issues

- For an award of 2 marks a candidate would be expected to make a simple valid reference to one issue which emerged from the data.
- A match to 4 marks requires a candidate to make more than one reference to the issues arising from the data.

- A secure match to 6 marks requires a candidate to make detailed and explicit references relating to the social/economic/environmental issues associated with the task and to the underpinning science involved.

Quality E Justifying a conclusion

- A match to 2 marks requires the candidate to answer the question posed by the task and to use, at some point in the report, the word ‘...because...’.
- A candidate who uses the word ‘...because...’ in referring to two items of information gained from either the stimulus material or from their own research can be considered to match to 4 marks.
- The award of 6 marks requires a candidate to make a comparison of at least two items of evidence, and to explain which is the more important of them.

Quality F Quality of written communication

- If the candidate’s report is readable but contains no linking to the science, then an award of 2 marks might be possible.
- An award of 4 marks requires a candidate to communicate effectively and use some relevant scientific or technical words in the correct places in their report.
- An award of 6 marks can only be supported if the candidate produces a well-structured report, in terms of sentence and paragraph construction, and also makes clear and effective links to the underpinning science associated with the task.

3.10 Obtaining copies of the Topics

Each of the Topics is available electronically using OCR Interchange. Teachers can download the Topics to be attempted by their candidates. The stimulus material is provided in colour but if no colour printer is available then a black and white printer can be used. The stimulus material is designed to be photocopied onto A3 paper so that a folded document (4 x A4 pages) can be produced.

In order to reduce printing costs, especially if the stimulus material is to be used by more than one group at different times then laminating and numbering the printed sheets may be useful.

Teachers should ensure that the copies are collected in from candidates when the Topic has been completed.

3.11 Communicating the results of a candidate's report

Teachers are actively encouraged to inform candidates of the marks they have obtained in any report.

'Feedback' to a candidate which points out important features of the report which the candidate has produced, including any areas where an improvement is possible is important and is another factor which will encourage motivation. However teachers should note that redrafting of a report which is to be 'counted' for assessment purposes is not permitted. (See detailed notes below).

3.12 Redrafting of candidates' reports

Although redrafting of work is an assessed skill in some other GCSE subjects it does not form part of the Science in the News topic. **The version produced in the final supervised session is the one which the teacher is required to assess.**

If there is any residual concern about the matching of the report to the expected attainment level of the candidate, for example in errors, omissions, a lack of clarity or a failure to match any of the performance statements, then the report should not be 'counted' for GCSE purposes.

In such cases, additional formative feedback should be given to the candidate, who can subsequently undertake another Science in the News Topic taken from another module, which can then be formally assessed.

3.13 'Candidate-speak' Level of Response grid

The active involvement of candidates in an knowledge of their own assessment is fundamental. Before tackling a Science in the News topic candidates need to be thoroughly prepared so that they understand what is expected of them.

A version of the Level of Response grid has been produced in which the formal statements linked to each of the Qualities have been reworded to make them more accessible to the candidates. Teachers are strongly recommended to devote some lesson time to familiarise their candidates with these statements.

Teachers should **not** to use the 'Candidate-speak' version of the Levels of Response for actual assessment. The 'Candidate-speak' versions are simply provided to help the candidates to understand what is required to match each quality.

The statements below show you what the teachers will be looking for when marking your work.
 Your teachers will look at six different qualities in your final report. They will use a scale of **1–6**.
 Your mark is a total out of **36**. **6** is the highest mark for each factor.

Quality Assessed	2	4	6
‘What am I going to do, and how am I going to do it?’	I can do some research and collect some information for myself.	I can collect useful information of different types from different sources to help me with my research and I can fully reference this information.	I am able to collect sufficient relevant and detailed information from a variety of sources and can sort the information out logically.
‘What does the evidence I have collected actually mean?’	I can identify a trend in the information I have collected.	I can identify trends in the evidence I have collected and I can show that I can process it correctly.	I can identify all the trends in the evidence I have collected and I can also say which pieces of evidence do not fit the patterns.
‘How good is the evidence I have collected?’	I can make a comment about the quality of my evidence.	I can say which parts of my evidence are most reliable and which are not very reliable.	I can make detailed comments on the relative reliability of the evidence I have collected.
‘What is the importance of the information to the world around me?’	I can say how the information I have collected is important in our lives.	I can write about the impact of the information on the social, economic or environmental issues of the task.	I can say how my information is related to the social, economic and environmental issues and I can link these to the scientific principles involved.
‘Can I come to a conclusion about the question I was asked?’	I can use one piece of my information and link it to my conclusion.	I can justify my conclusion by reference to several pieces of information.	I can make a detailed and well-argued conclusion based on a detailed consideration of all the evidence I have collected.
‘How well have I presented my report?’	My report is clear enough for other people to understand what I have written about.	I can produce my report in good English and can use some scientific words correctly.	I can produce my detailed report in a clear and correct format using technical terms which are correct and appropriate.

My total mark for this ‘Science in the News’ topic (out of 36)
 [Ask your teacher if it would help you if you did another one.]

3.14 Moderation and moderation procedures

A sample of a Centre's assessed Science in the News topics will be externally validated by a moderator appointed by OCR. The moderator will review a sample of the judgements made by the teachers at the Centre to ensure that these are correctly aligned to common standards. The judgements made by the teachers will be adjusted, if necessary, to conform to the agreed standards.

Each teacher involved in the preparation of candidates is required to sign a Centre Authentication Form. This form will need to be included in the material sent to the moderator.

The marks awarded for the Science in the News report, together with the marks awarded for the 'Can-Do' Tasks, should be submitted to OCR by 15th May in the year in which the Skills assessment is required using the appropriate forms prepared by OCR.

A copy of these forms should also be sent to the appointed moderator, who will select the sample to be considered. The number of portfolios to be sampled will be based on the number of candidates entered, but will be up to a maximum of **20** from each centre. The moderator will sample across the whole range of marks and from all the teachers involved. Centres will need to send this sample to the moderator within a specified time-period.

The internal standardisation of the judgements made by all of the teachers involved in the preparation of candidates for the examination is vital. The marks awarded by a Centre will form a single order of merit. It is therefore essential that this listing is valid and reliable. For this reason there must be clear evidence from the Centre that steps have been taken to ensure that each of the teachers is using a common interpretation of the Level of Response grid.

Centres will need to inform their moderator of the methods which have been used to ensure this.

If a moderator experiences difficulties in validating the judgements made for the initial sample of work requested from the Centre, then additional samples may be required.

The candidates' work will be returned after moderation and detailed comments on the overall quality of the work submitted will be sent to the Centre at the time the results are issued.

3.15 Authentication of candidates' work.

The QCA 'Code of Practice for the conduct of GCSE Examinations' requires that every teacher involved in the internal assessment of Skills has to ensure that each piece of assessed work can be authenticated with confidence as being the work of the candidate who submits it. This is particularly important when candidates have undertaken some of their work not under the direct supervision of their teacher.

A teacher may have some residual concerns about the extent to which the response does not represent the work of a particular candidate. For example, should there be evidence that too much help has been given or that a candidate has simply copied work directly from another candidate, then that piece of work should not be 'counted' for assessment purposes.

In such circumstances the candidate can usually be asked to produce another Science in the News Report.

If teachers do discover cases of deliberate plagiarism this should be dealt with using the centre's own disciplinary procedures.

If malpractice is not discovered by the centre but is later suspected by a moderator then OCR's malpractice procedures will be implemented. If there has been malpractice then penalties will be applied to all candidates involved.

3.16 Resubmitting a Science in the News Report

A candidate may resubmit a Science in the News report on a subsequent occasion for Science or as an element of the Skills Assessment for Biology, or Chemistry, or Physics, depending on the subject matter.

The marks confirmed by the moderator when the piece was first submitted cannot be 'carried-forward', but teachers will be able to remark it in the light of any comments made by the moderator and it will be re-moderated when it is re-submitted.

3.17 Record keeping. Sending the sample to the moderator

For each candidate in the sample requested by the moderator the following need to be prepared:

- The best Science in the News report completed by the candidate with a candidate coversheet attached showing the marks for each of the six Qualities and the total mark, out of **36**, for the whole report.
- A Candidate Record Card showing which 'Can-Do' tasks the candidate has achieved and the total mark out of **24** for the 'Can-Do' tasks.
- The front cover of the Candidate Record Card, filled in to show the mark, out of **24**, for the 'Can-Do' tasks and the mark, out of **36**, for the Science in the News report. The total mark, out of **60**, should be recorded and checked against the mark submitted to OCR on the original mark sheets.

The Science in the News report should be placed inside the Candidate Record Card (which acts as a wrapper) and the candidate's work is then ready for despatch.

In addition to the candidates' work, a Centre Authentication form CSC160 needs to be signed by any teachers who moderated the work and sent to the moderator. Without this authentication form, candidates' GCSE results will not be released.

An example of a completed Science in the News coversheet, Candidate Record Card and Centre Authentication form can be found in Section G.

The documents used for moderation are updated on a yearly basis and may be subject to modification. Each year, instructions and updated forms will be sent to centres and it is advisable to use the latest versions of the forms and check instructions for any changes to procedures.

3.18 Annotation

The QCA Code of Practice for GCSE Examinations' requires teachers to show how the marks have been awarded and one convenient way of meeting this requirement is by hand-written annotation on each candidate's report.

Teachers could indicate the mark awarded for each Quality in the form of, for example, B5, in the margin together with any other comments if this is required to support their judgement.

Annotation is always valuable since moderators are able to gain further information about the reasons why a particular performance statement has been matched. Annotation is especially important if marks of **1**, **3** or **5** have been awarded, since this can indicate clearly why the teacher considered that '...a candidate's performance was better than 4 but not sufficient for 6...'.

Moderators always welcome detailed annotation since this inevitably helps them to '...go along with the Centre's judgements...' if any of the decisions appear to be finely balanced.

Annotation is especially important for lower-attaining candidates who may have some difficulty in expressing themselves clearly and succinctly.

The use of annotation by teachers to support oral comments made by lower-attaining candidates is acceptable.

Section D *Examples of tasks and candidates responses*

Please note that Section D has been removed from this version of the Skills Assessment Support Booklet. Teachers can, however, find a full copy of the booklet with this section included on Interchange.

Section E *Using OCR Interchange*

All stimulus material for the Gateway skills assessment can be obtained from OCR Interchange.

OCR Interchange is a secure extranet enabling registered users to administer qualifications online. Your Examinations Officer is probably using OCR Interchange to administer qualifications already. If this is not the case, then your Centre will need to register. For information on registration see the notes in the next section.

Your Examinations Officer will be able to:

- download the relevant documents for you by adding the role of 'Science Coordinator' to their other roles or
- make you a New User (Science Coordinator role) so that you can access the GCSE Gateway Sciences pages and download documents when you need them.

The website address for Interchange is:

<https://interchange.ocr.org.uk>

When you are logged in you will see a screen with a bright purple band down the left-hand side. Click on the SUBJECT SPECIFIC menu item and from the drop-down list select Controlled Materials. You will then see a screen like the one below.

The screenshot shows the OCR Interchange website interface. At the top, there is a dark blue header with the OCR logo (Recognising Achievement) on the left, the text "OCR Interchange" in the center, and a "Logout" button on the right. Below the header is a purple navigation menu with the following items: MENU, WELCOME, INTERCHANGE ADMIN, USEFUL DOCUMENTS, SUBJECT SPECIFIC (highlighted), and TRAINING & SUPPORT. Under "SUBJECT SPECIFIC", "Controlled Materials" is selected. The main content area is white and contains the following elements: a breadcrumb trail "You are here: Home > Science Coordinator Materials > GCSE Gateway", a title "Science Coordinator Materials", three tabs: "Entry Level", "GCSE Gateway" (selected), and "GCE AS/A2", a paragraph of text stating that Gateway stimulus materials are confidential and should only be made available to students as hard copy for a limited period of time, and a list of four links with "More detail" dropdown arrows: "Science in the News", "Research Study", "Data Tasks", and "Can Do Tasks". Below this is a "Page Notes" section with text about zip extractors for Windows XP/Vista and Windows 95/98/2000/ME/NT. At the bottom, there are links for "Contact Us", "Terms of use", "Copyright © 2006 OCR", and "Download Free Adobe Acrobat Software".

There are four separate drop-down menus:

- Science in the News
- Research Study
- Data Tasks
- Can Do Tasks

These are accessed by clicking on the appropriate 'More Detail'.

The stimulus materials for each type of skills assessment are provided as pdf documents which can be downloaded. These documents are in colour but can be printed using either a colour or a black and white printer.

The teacher who has downloaded these materials is responsible for ensuring that any pages labelled **confidential** are stored securely so that students do not have the opportunity to access them.

It is intended that the circulation of the stimulus material is limited to those students who are currently undertaking a particular assessment task. These materials should be photocopied and issued to students at the start of the task so that they can do advanced preparation e.g. research for Science in the News. This material must then be collected from the students after the final supervised session, when they have completed the report. Numbering the documents may help to keep track of them.

Registering for Interchange

If your Examinations Officer is not already a registered user of Interchange then he/she will need to register before the Gateway stimulus materials can be downloaded.



This is a straightforward process:

- Go to the website – <https://interchange.ocr.org.uk>
- The first page has a New User section
- Click on Sign Up to access the OCR Interchange Agreement Form 1
- Download this document and fill in your details
- Return form by post to OCR Customer Contact Centre, Westwood Way, Coventry, CV4 8JQ or fax the form back to 024 76 851633
- OCR will then contact the Head of Centre with the details needed for the Examinations Officer to access OCR Interchange.

Adding a new user with the role of Science Coordinator

To add a new user and set their level of access to OCR Interchange:

1. Click **Add/Edit Users** to display a list of all current users at your Centre.
2. Click on **Add New User**.
3. Enter user details as described in the table below:

User Name	Minimum of 2 characters.
Password	Minimum of 7 characters. Must be a combination of upper and lower case and numbers.
Surname	Minimum of 2 characters.
Forename	Minimum of 2 characters.
Email Address	You must enter a valid email address for all users.

4. Click on the **Roles** tab to set the user role and determine the user's level of access to OCR Interchange.
5. Select the **role** of Science Coordinator on the left-hand side of the screen. With the role of Science Coordinator you will be able to view and download stimulus materials.
6. Click the **greater than arrow (>)**. The role now appears on the right-hand side of the screen, indicating it has been selected.
7. Click the **User** tab.
8. Click **Add**.

You will receive notification on screen if your new user was added successfully or not. Errors are indicated by a red asterisk (*) and are detailed on screen.

Please note that it usually takes 20 minutes for the new user to be able to access OCR Interchange.

Section F *Additional guidance for teachers*

Assessing the Quality, Reliability and Validity of Evidence

The terms reliability and validity in the context of Science in the News should be judged with the help of the guidance below. Please note these terms are applied differently in the Data Task.

2-mark Description

The Performance Description is:

‘A comment has been made about the quality of the evidence.’

In principle, a candidate at this level does need to show a simple appreciation that not all the evidence which is produced during research is of the same *‘quality’* – it may be good/bad/indifferent/suspect/limited/not much use/excellent/useful/questionable/ biased/ limited/partial/spurious etc

The following list of comments typify the type of comment which teachers could consider for a match but final decisions about *“match/no match”* would need to be made in the context of the whole piece of work produced by a candidate. Consequently, these statements represent broad general guidance rather than defined statements.

‘I got a lot of information from the BBC website, so it must be OK.’

‘I got enough data to make sure I could use it safely.’

‘One of the websites was bad, so I didn’t use what I found out there.’

‘One of the websites was out of line with the other two.’

‘The survey used 12000 people all over the world so it must be accurate.’

4-mark Description

The Performance Description is:

“There is a comparison of the reliability of the various forms of evidence, including an attempt to identify which evidence is most/least reliable.”

If a candidate makes some detailed comments about the reliability of their evidence, in terms of (for example) the size of the data base used in the source, whether or not the evidence is recent or historic, whether their sources are based on nationally-known organisations, whether if any statistics used are based on peer-reviewed academic research, whether the sources are government-based or internationally agreed. Candidate could also provide detailed comments on the presence or absence of bias in their sources.

However, for an award of 4 marks, rather than 3, the candidate does also need to attempt to comment on the relative reliability of the sources used in their report.

For example:

'In my report I collected evidence and statistics from three different websites and I think that all three of them were reliable ones. One was from UNESCO which is a United Nations one, one was from a government report published in 2004 and the third one was based on a large charity dealing with Cancer Support. I think that all of them are reliable, but the Cancer Support one could be slightly less reliable because their job as a charity is to raise money for Cancer victims and this might affect what they write.'

6-mark Description

The Performance Description is:

“There is detailed consideration of the evidence showing a good understanding of the relative merits of the evidence gathered in terms of reliability and validity”

If there is a 'secure' match to the 4-mark standard, then consideration of an award of five or six marks is dependent on a candidate referring in clear and explicit terms to the relative 'strength' of the evidence collected and whether it is sufficient both in quantity and quality to enable a confident conclusion to be drawn.

For example:

'All of the sources I used are reliable ones, as I explained in the previous paragraph. Also because they are based on very large samples collected over the last ten years, and all them are saying the same sort of thing, I think that they are trustworthy. Because they all come to the same conclusions, I think that I have researched enough to come to a correct and valid answer to the question.'

Section G Examples of completed Skills Assessment Forms

For each candidate in the sample requested by the moderator the following need to be prepared:

- The best Science in the News report completed by the candidate with a candidate coversheet attached showing the marks for each of the six Qualities and the total mark, out of **36**, for the whole report.
- A Candidate Record Card showing which 'Can-Do' tasks the candidate has achieved and the total mark out of **24** for the 'Can-Do' tasks.
- The front cover of the Candidate Record Card filled in to show the mark, out of **24**, for the 'Can-Do' tasks and the mark, out of **36**, for the Science in the News report. The total mark, out of **60**, should be recorded and checked against the mark submitted to OCR on the original mark sheets.

The Science in the News report should be placed inside the Candidate Record Card (which acts as a wrapper) and the candidate's work is then ready for despatch.

In addition to the candidates' work, a Centre Authentication form CSC160 needs to be signed by any teachers who moderated the work and sent to the moderator. Without this authentication form, candidates' GCSE results will not be released.

Centre Name	Bash Street School
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Centre Number	33517	Candidate Number	1234
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Candidate Name	Richard Bowles
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The Moderator appointed by OCR will require a completed copy of this Skills Assessment Record for each of the candidates whose work is required for moderation. The assessed Science in the News report and cover sheet should be enclosed within this Skill Assessment Record for each of these candidates.

Centres will need to keep adequate records of the attainment of all of their candidates for GCSE Gateway Science, and may use this form as a means of keeping records. However, centres are free to devise and develop their own record-keeping systems, providing that such a system will (if required by OCR for moderation purposes) allow each candidate's performance in all of the Can-Do tasks and for the assessed Science in the News report to be verified by a Moderator.

Summary of Skills Assessment Attainment

Can-Do Tasks	Mark out of 24	22
Science in the News Report	Mark out of 36	26
Transfer this total to the MS1 form and submit by May 15 th in the year of entry for this unit	Total mark out of 60	48
Name of teacher completing this form	A Laddumatty	
Date of completion and submission of marks	10 th May	Year 2007

Candidate Name: Richard Bowles				
		Basic: 1 point 'Can-Do' tasks	Date	Pt
1	B1a	I can measure blood pressure.		1
2	B1a	I can measure breathing rate/pulse rate before and after different types of exercise.	3 Oct 06	1
3	B1d	I can measure my field of view.		1
4	B1d	I can use Ishihara colour charts to identify colour vision deficiency.		1
5	B1f	I can use ICT to produce a poster warning old people about hypothermia and telling them how to prevent it.		1
6	C1a	I can heat a solid substance safely.	3 Sep 06	1
7	C1a	I can test for carbon dioxide.		1
8	C1c	I can test whether a substance dissolves in a solvent.	6 Oct 06	1
9	C1h P1a P1d P2a	I can accurately measure the temperature in °C.	8 Sep 06	1
10	C1h	I can measure the mass of an object using an electronic balance.	8 Nov 06	1
11	P1c	I can design a demonstration to show a convection current.		1
12	P1e	I can draw a ray diagram to show the path of a ray of light along an optical fibre.		1
13	P1e	I can identify analogue and digital signals on equipment.		1
14	P1h	I can calculate the time I can safely spend in the Sun from a knowledge of normal burn time and the SPF of a sun screen.		1
15	B2a B2b	I can use a simple key to identify some plants/animals.	7 Nov 06	1
16	B2b	I can classify some different organisms.		1
17	B2e	I can use a hand lens to observe a small animal.		1
18	B2f	I can identify a range of fossils.		1
19	B2f	I can use the internet to find out information about Charles Darwin.		1
20	B2h	I can use the internet to collect scientific information about extinct animals.		1
21	C2b	I can safely heat a sample of a chemical in a test tube.	8 Dec 06	1
22	C2c	I can mark on a map of the world ten locations of Earthquakes or Volcanoes.		1
23	C2e	I can distinguish, using experiments, between a sample of aluminium and iron.		1
24	C2h	I can measure the volume of gas produced in a reaction using a gas syringe.		1
25	C2h	I can measure the reaction time for a suitable reaction.		1
26	C2h	I can measure the volume of a liquid using a measuring cylinder.		1
27	P2a	I can use a voltmeter to measure voltage.	3 Oct 07	1
28	P2c	I can read a domestic electricity meter.		1
29	P2e	I can use a compass to find the direction of a magnetic field.		1
30	P2f	I can use ICT to produce a labelled model of our Solar System.		1


		Intermediate: 2 point 'Can-Do' tasks	Date	Pts
31	B1a	I can do an experiment on fatigue in finger muscles and record the results.		2
32	B1b	I can carry out simple food tests.		2
33	B1b	I can calculate a BMI and make a decision as to what it indicates.	7 Dec 06	2
34	B1c	I can collect data from various sources for a named disease and identify danger sites on a world map.		2
35	B1d	I can collect, present and analyse data to compare the sensitivity of different areas of my skin.		2
36	B1e	I can collect scientific information from a variety of sources to show the effects of drugs or smoking on the body and display or present the information.		2
37	B1f	I can carry out an experiment on skin temperatures down an arm or leg and plot the results on a graph.	12 Dec 06	2
38	C1e	I can test for unsaturation.	9 Jan 07	2
39	P1a P1d	I can use a thermogram to identify areas of different temperature.		2
40	P1b	I can use secondary sources, e.g. the internet, to compare the effectiveness of different insulating methods of different combinations of insulating materials.		2
41	P1c	I can plot an accurate line graph of a cooling curve.		2
42	P1g	I can send and receive a message in Morse code.		2
43	B2a	I can collect data using a sampling technique.		2
44	B2c	I can measure the rate of photosynthesis by counting the rate of bubble release from pondweed.		2
45	B2e	I can use ICT to make a poster to explain how a camel/polar bear is adapted to its habitat.		2
46	B2f	I can use ICT to prepare an information leaflet explaining why the fossil record is incomplete.		2
47	B2g	I can plot a population graph.		2
48	B2h	I can use the internet to collect scientific information about various endangered species.		2
49	C2a	I can make a sample of paint with thermochromic properties.		2
50	C2d	I can extract a sample of copper from a copper ore such as malachite.	8 Feb 07	2
51	C2d	I can purify a sample of impure copper using the electrolysis of aqueous copper sulphate.		2
52	P2b	I can use an oscilloscope to measure the maximum voltage of AC.	11 Apr 07	2
53	P2c	I can use meter readings to calculate the cost of using electricity.	9 Mar 07	2
54	P2d	I can describe how to handle radioactive sources safely.		2
55	P2e	I can use a plotting compass to map the magnetic field around a coil or magnet.		2
56	P2g	I can make a telescope from a pair of lenses.		2
57	P2h	I can use ICT to find out about the stages of a star's life cycle and put the stages in the correct order.		2

		Advanced : 3 point 'Can-Do' tasks	Date	Pts
68	B1b	I can carry out an experiment on enzyme action and record the results and conclusion.	6 Dec 06	3
59	B1h	I can use a genetics kit to show a monohybrid cross.		3
60	C1g	I can carry out an experiment to show that combustion of a hydrocarbon in a plentiful supply of air produces carbon dioxide and water.	7 Feb 07	3
61	C1h	I can do an experiment to find the energy output per gram of a liquid fuel.	7 Jan 07	3
62	P1a	I can carry out an experiment to find the energy needed to melt ice.		3
63	P1c	I can carry out an experiment to compare the performance of different insulating materials.		3
64	P1d	I can present a balanced argument in favour of or against the positioning of a mobile phone mast.		3
65	P1e	I can find the critical angle of glass / Perspex.		3
66	P1f	I can use information about transmitter location and frequencies to tune a radio.		3
67	B2a	I can investigate and compare different habitats.		3
68	B2b	I can present a report on the work of Carl Linnaeus.		3
69	B2c	I can test a leaf for starch.	3 Apr 07	3
70	B2h	I can use ICT to produce an information leaflet on one endangered species, showing reasons for its predicament and suggestions for its protection.	1 Dec 06	3
71	C2a	I can use a natural product to permanently dye a piece of cotton.		3
72	C2b	I can make and test samples of concrete for their strength.		3
73	C2e	I can carry out an investigation to find the optimum conditions for corrosion of a named metal.		3
74	C2g	I can measure the rate of a reaction that produces a gas.		3
75	C2h	I can investigate a reaction to find a suitable catalyst.		3
76	C2h	I can use experimental results such as volume of gas produced against time to determine the rate of reaction.		3
77	P2a	I can carry out an investigation to find out how the voltage produced by a photocell varies with distance from a light source.	8 Feb 06	3
78	P2b	I can use an oscilloscope to measure the frequency of AC.		3
79	P2c	I can find the energy transferred in an electrical circuit using an ammeter, voltmeter and a timer.		3
80	P2f	I can use data on sizes and distances to design a model of our solar system to fit inside the laboratory or onto the school grounds.		3

Determining the total attainment on this component

Choose the best **eight** highest scoring 'Can-Do' Tasks which have been successfully completed.
Put a ring around each of the **eight** Tasks which have been chosen.

		Number of Tasks	Points
Basic Tasks	1 point	-	
Intermediate Tasks	2 points	2	4
Advanced Tasks	3 points	6	18
Totals		/8	22 /24

Transfer this total to the box on Page one 

Science in the News Title Should Whale Hunting Be Stopped?

Centre Number 33517 **Candidate Number** 0123

Candidate Name Richard Bowles

Quality Assessed		Number of Marks						
		0	1	2	3	4	5	6
A	Approach to the task /6			Some research is carried out; some information is collected from at least one suitable source.		The information provided is used to plan their research; information is collected from more than one suitable source and used in the report. All sources are fully referenced.	✓	Makes good use of the information provided to structure a balanced report; information is relevant, detailed and logically presented.
B	Analysis of the data /6			At least one trend / pattern is identified and outlined correctly.		The main trends/patterns are described correctly and there is some evidence of correct processing of quantitative data.	✓	The main trends/ patterns are described correctly with reference to quantitative data. These data have been further processed to reveal additional information and/or detect anomalies.
C	Evaluation of the data /6			A comment has been made about the quality of the evidence.		There is a comparison of the reliability of the various forms of evidence, including an attempt to identify which evidence is most/least reliable.	✓	There is detailed consideration of the evidence showing a good understanding of the relative merits of the evidence gathered in terms of both reliability and validity.
D	Relating the data to issues /6			An attempt has been made to relate some of these data/ information to the impact on people or the environment.		The report shows some understanding of the social, economic or environmental issues as they relate to the task.	✓	The report shows a clear understanding of the social, economic or environmental issues as they relate to the task with an understanding of the science involved.
E	Justifying a conclusion /6			A conclusion is given with justification based on at least one piece of evidence.		A considered conclusion is given with justification based on the significance of more than one piece of evidence.	✓	A considered conclusion is given with a well-argued justification based on careful analysis of the relative significance of more than one piece of evidence.
F	Quality of written communication /6			Spelling, punctuation and grammar are of generally poor quality. Little or no relevant scientific or technical vocabulary is used.		Spelling, punctuation and grammar are generally sound. Appropriate scientific or technical vocabulary is used.		Spelling, punctuation and grammar show very few errors. The report shows full and effective use of relevant scientific and technical terms. ✓

26

Total Mark Awarded

/36

Centre Authentication Form

OCR Advanced GCE GCSE Entry Level

One copy of this form must be completed for **each** unit or coursework component and signed by the appropriate person(s). The completed form **must** accompany the coursework or portfolios submission to the moderator/examiner or be inspected by the visiting moderator for Entry Level, GCSE, GNVQ, VCE and GCE qualifications.

It is now a requirement of the Code of Practice that this authentication form is signed.
'Authentication of candidates' work – *The internal assessor must present a written declaration that the candidates' work was conducted under the required conditions as laid down by the specification.'*

Centre Name Centre No

3	3	5	1	7
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Specification or Unit title

Qualification or Unit number/component code

B	6	2	5		
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Session Year

2	0	0	7
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Moderated unit
 (Please tick box if yes)

In this case this form must accompany the sample posted to the moderator or inspected by the visiting moderator

or

Examined unit
 (Please tick box if yes)

In this case this form must accompany the packet of coursework which is posted to the examiner or assessed by the visiting examiner.

(Please tick box if yes)

*Signature(s) of internal assessor(s) – i.e. person(s) responsible for carrying out internal assessment and/or supervision (in the case of examined coursework) of work:
 I/We the undersigned confirm that the candidates' work was conducted under the required conditions as laid down by the specification.*

Signature:.....A Laddumatty.....Print name:.....A LADDUMATTY

Signature:.....P Wade..... Print name:.....P WADE.....

Signature:..... Print name:.....

Please continue on a separate sheet if required.

In order to support internal assessors in authenticating their candidates' work an example of a standard Candidate Authentication Statement is provided on the OCR Website (www.ocr.org.uk). Alternatively centres may wish to continue to use their own internal arrangements for candidate authentication, but these must provide equivalence to the standard Candidate Authentication Statement.

Notes

In the case of private candidates or distant tutored candidates, the centre must ensure that:

- The tutor/teacher has acquainted themselves thoroughly with the general standard of candidates' work before accepting coursework for Internal Assessment. Work submitted by candidates that is atypical or inconsistent with their general standard may raise concerns over authenticity
- sufficient on-going regular monitoring of the candidates' examination coursework has taken place.

Centres are reminded that they must comply with restrictions that may apply to entries e.g. the exclusion of Private candidates from a specification.