Qualification Accredited

OCR
Oxford Cambridge and RSA

ENTRY LEVEL CERTIFICATE

Teacher Guide

SCIENCE

R483
For first teaching in 2016

Support Booklet

Version 2

Contents

SECTION A
COURSE OUTLINE

OVERVIEW

This course has been designed to meet the needs of Key Stage Four students who are either not ready to, or cannot, cope effectively with the demands of Combined Science GCSE. These students will have some knowledge and understanding of science but need to build on this foundation to develop greater confidence in the subject.

A range of centres currently follow the course and include mainstream schools, special schools, secure units, EBD centres, residential units and FE colleges. The course was first certificated in 1998 and since then many thousands of students have benefited from the experience of a hands-on science course that is relevant to their needs.

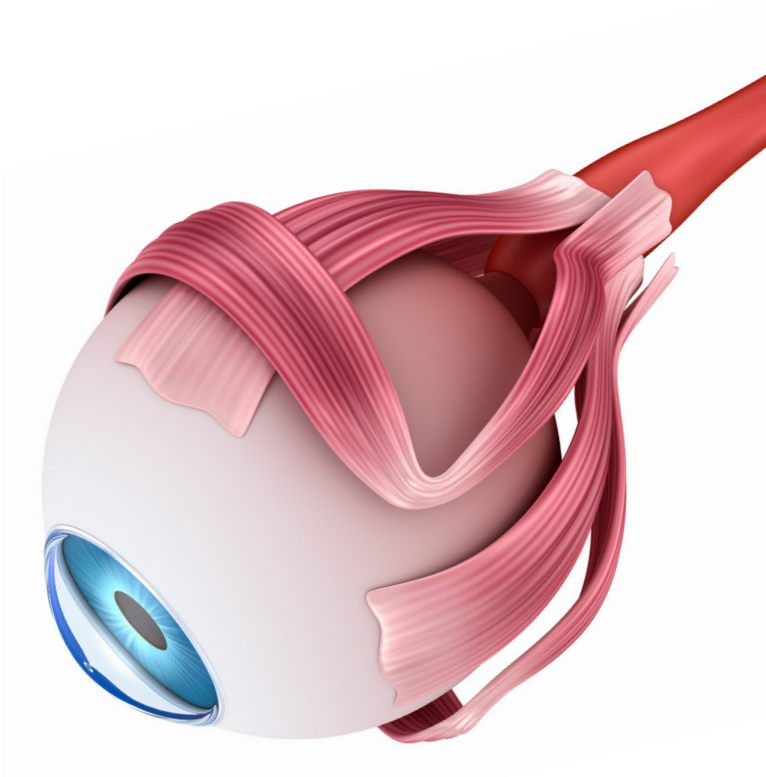
An important feature of Entry Level Science is that it is co- teachable with GCSE, not only for practical reasons in terms of the management of groups of students, but also to facilitate GCSE entry for some students towards the end of the course.

The course is very flexible: the content can be covered in any order and the practical activities can be selected by the teacher to best meet the needs of the students. The course can be started before Year 10, can be extended over more than 2 years and, if necessary, only part of the course needs to be taught.

The course content has been divided into 36 separate sections called items. There are equal numbers of Biology, Chemistry and Physics items. Each item can be covered in a short time period. It also permits a range of topics to be covered and allows topics to be revisited. There is an end-of-item test for each of the 36 items. Teachers can choose the most suitable time for students to take a particular test and then provide feedback to students on their performance. For each of the 36 items there are possible practical activities and, again, there is flexibility for teachers to choose which of these are most suitable for their students.

ENGAGING THE STUDENT

A key feature of the course is the regular assessment of a student's knowledge, understanding and practical ability using short written tests and classroom practical activities. This assessment is carried out by the teacher at regular intervals, allowing frequent and rapid student feedback. Experience shows that this approach allows plenty of opportunities for teachers to recognise their students' achievements and this in turn encourages student interest and develops students' confidence in the subject. In this way, Entry Level Science can act as a springboard for students, allowing them the possibility of progressing from Entry Level to either GCSE Combined Science or one of the separate sciences.



ASSESSMENT SUMMARY

There are three aspects that are assessed and can gain points during the course.

1. A maximum of **72 points** can be achieved from the written end-of-item tests, taken when the student has completed each of the items.
2. A maximum of **8 points** can be achieved from the can-do tasks, which are practical activities integrated with the normal teaching and learning of the course.
3. A maximum of **20 points** can be achieved from a practical task chosen by the teacher and closely linked to the teacher's Scheme of Work. Part of the task is completed under supervision and then assessed using defined performance descriptors.

The points obtained during the course are added together to give a final total points score.

MARKS TO POINTS CONVERSION

The frequent assessments mean that students will gain many marks throughout the course. To make the handling of a large number of marks easier, both for students and for teachers, these marks are converted into points. Each point represents 1% of the overall course.

The awarding of points acknowledges a student's progress in each of the three areas of the assessed work during the course. The number of points achieved determines the level of the certificate that can be awarded.

To keep track of a student's marks a paper-based Candidate Record Card can be downloaded from Interchange, and an interactive version is also available. Centre-devised record keeping systems are also acceptable, providing that the level of detail in the record is equivalent to that shown on the paper-based Candidate Record Card (see Appendix 1).

END-OF-ITEM TESTS (72 POINTS)

Each of the 36 items has an associated end-of-item test and students can use the results they obtain from all of these tests. There is an expectation that students will follow a balanced course, with approximately equal numbers of the tests selected from Biology, Chemistry and Physics items.

Each test has a total of 15 marks and the question paper is four A4 pages. These can be copied onto A3 paper so that folded booklets can be produced. Most students will complete a test in about ten minutes. It is not necessary for all students to take a particular test at the same time, but a student is only allowed to take a particular test on one occasion.

The tests must be taken under the direct supervision of the teacher and examination conditions are necessary. Each test can be taken only once.

Teachers are allowed to decide when each test is taken. Tests need to be kept under secure conditions both **before** and **after** the students have taken them.

Teachers may view the end-of-item tests before the teaching of the item starts. It may be important to let the Examinations Officer know this. Examples of end-of-item tests are provided in Section B.

UPDATING END-OF-ITEM TESTS

Unlike the previous course the end-of item tests will not be renewed each year. There will be two versions of the tests available on OCR Interchange of which either may be used. (All of version 4 of the tests will be available by September 2019).

The tests will remain available on Interchange for the duration of the R483 course.

All tests are required to be stored securely, both **before** and **after** students have taken them.

Unwanted tests should be treated as confidential waste and disposed of accordingly.

CAN-DO TASKS (8 POINTS)

A practical hands-on approach is fundamental to this Entry Level course and there will be many opportunities for students to demonstrate their skill at various simple practical tasks. Successful completion of these simple can-do tasks is a positive experience for students, helping to build their confidence. Frequent opportunities will arise during the course for students to attempt the can-do tasks.

The can-do tasks are based on the skills required for the new GCSE (9-1) courses to allow co-teachability.

There are 16 can-do tasks. For each task, 0.5 points can be awarded.

Teachers are free to devise the actual Can-do tasks to cover the skills areas detailed in the specification. Some suggested can-do-tasks can be found in **Appendix 4** of this document.

A listing of the can-do tasks is printed on the Candidate Record Card (see Appendix 1) and are found on page 88 & 89 of the specification

PRACTICAL TASK (20 POINTS)

Students are given a question linked to the topic they have studied and have to plan a procedure to enable them to answer the question.

After the student plans have been checked, the students collect data.

Students then work **individually**, **under supervision**, to process, display and interpret their data in order to answer the question given.

Finally, they comment on aspects of the procedure that have been used to collect the data.

The students' reports are assessed using five defined performance descriptors, each with a maximum mark of four. The total mark out of 20 is converted directly into points.

Students can attempt as many of these practical tasks as they want, but all the final marks must be taken from the same practical task.

CERTIFICATION

During the course students will be assessed on their progress and will start to accumulate marks. These marks will be converted to a **points** score. Attainment during the course is recognised by the award of Interim Certificates when a specific number of points has been gained. The Interim Certificates, which are awarded by the teacher, can be presented formally or informally to each student in a manner left to the discretion of the centre.

For example, the early certificates could be presented by the class teacher during a lesson whilst the later certificates could be presented by Heads of House, Year or School during an assembly. It may be appropriate for the Head Teacher to present a certificate to a student who rarely receives such praise. For some students the receipt of an Interim Certificate may be the only occasion during Key Stage Four when they can receive public recognition of their achievement.

The points obtained by each student during the course are recorded so that they can be used for Final Certification. When students have been entered for Final Certification, following OCR entry procedures, each student's points total will need to be submitted to OCR so that a Final Certificate at **Entry 1**, **Entry 2** or **Entry 3** can be awarded. This will follow moderation of the centre's marks.

INTERIM CERTIFICATES

Students achieving a total of 15, 30, 45, 60 or 75 of the available 100 points are eligible for **Bronze, Silver, Gold, Platinum and Diamond** Interim Certificates respectively.

These certificates can be downloaded from the Entry Level Tests section of OCR Interchange.
https://interchange.ocr.org.uk/
A student achieving 15 points can be awarded a **Bronze Certificate** and then go on to get a **Silver Certificate** by accumulating another 15 points, making a total of 30 points. Further certificates are awarded for every additional 15 points.

Many teachers actively encourage students to monitor their own progress as a fundamental part of the recognition of achievement. A student who is aware, for example, that 28 points have already been achieved is likely to make the additional extra effort in order to obtain a **Silver Certificate** in the shortest possible time.

INTERIM AWARDS

Interim Bronze Award

Students gain an Interim Bronze Award when they have accumulated a total of 15 points.

This total can be obtained in a variety of ways, but is likely to be obtained early in the course before a Practical Task has been attempted. This total could be obtained from a student who gained 1 or 1.5 points from each of around ten end-of-item tests and had demonstrated success in three or four of the can-do tasks.

Interim Silver Award

Students gain an Interim Silver Award when they have accumulated a total of 30 points.

This level of award demands a more sustained effort on the part of a student.

Typically they will have gained about 20 points from around fifteen end-of-item tests and demonstrated success in a number of can-do tasks. In the practical task the student might be able to plan to collect some useful data, be able to collect and process it, and then to make realistic comments on the suitability of the procedure used to collect it.

However, since the level of attainment is determined solely by the accumulation of points, a wide variety of competence in the separate components is possible.

Interim Gold Award

Students gain an Interim Gold Award when they have accumulated a total of 45 points.

This level of award represents a consistent effort over a period of time.

A student might have obtained high marks for more than fifteen end-of-item tests, demonstrated success in half of the can-do tasks and demonstrated their capability in a practical task, scoring marks for each aspect.

Again, since the credit is based on the simple aggregation of points from a variety of activities, there are many possible ways for students to achieve the Gold Award.

For some Entry Level students, the gaining of this level of award represents a challenging target.

Interim Platinum and Diamond Awards

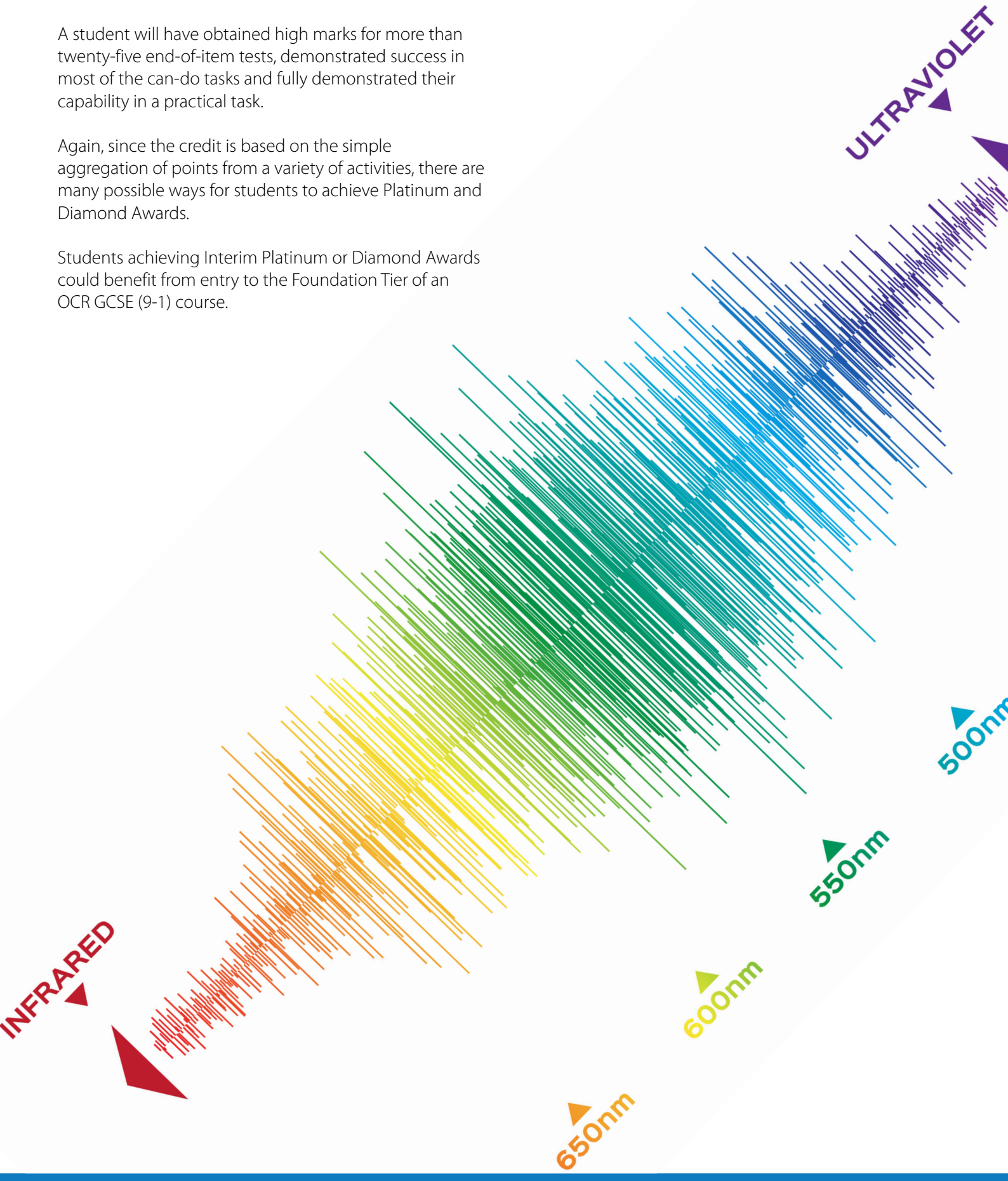
Students gain an Interim Platinum or Diamond Award when they have accumulated a total of 60 or 75 points respectively.

These levels of award represent a considerable amount of achievement gained by a consistent effort over a significant length of time.

A student will have obtained high marks for more than twenty-five end-of-item tests, demonstrated success in most of the can-do tasks and fully demonstrated their capability in a practical task.

Again, since the credit is based on the simple aggregation of points from a variety of activities, there are many possible ways for students to achieve Platinum and Diamond Awards.

Students achieving Interim Platinum or Diamond Awards could benefit from entry to the Foundation Tier of an OCR GCSE (9-1) course.



SECTION B
END-OF-ITEM TESTS

END-OF-ITEM TESTS AND MARK SCHEMES

The end-of-item tests account for 72 points which students can gain during their progress through the course. It is essential that all teachers mark the tests consistently and accurately.

All marking must be done in red ink/biro and acceptable answers need to be indicated using a tick (√). All answers that are wrong or are too vague should have a cross (X) against them. Omissions should be indicated by the use of the (^) sign. All responses given by the student should show clearly that the teacher has considered the answer given.

It is not necessary to total the mark for each question, as required for GCSE marking.

In rare cases the students may give an answer that is not provided on the mark scheme. If the teacher considers that the answer is worth the mark, then it should be awarded. In such cases the test paper and mark scheme should be annotated so that an external moderator can understand why the mark has been awarded if the work is part of the moderation sample.

A consistent approach is used for any rubric infringements which occur when students are answering multiple response questions. In general, a student is rewarded for the number of correct answers required in the question. Each additional incorrect attempt results in the loss of one mark (minimum mark = 0).

END-OF-ITEM TEST MARKING

Converting the marks to points for each test means that any minor differences in judgments, occurring when teachers interpret the defined mark scheme in the light of what their own students have written, can be smoothed out.

The tests are designed to be accessible to students and even the lowest-attaining student can gain some of the marks.

Evidence has shown that candidates welcome (and even enjoy) taking their tests at regular intervals during the course.

The overwhelming majority of students expect immediate feedback on their performance in the tests and teachers are strongly advised to make arrangements to provide this, since this tends to enhance both student motivation and attainment.

EXAMPLE END-OF-ITEM TESTS

Three marked specimen tests are included, and each test is accompanied by the corresponding mark scheme. The tests have been annotated at appropriate places to illustrate particular points.

Please note:
If a scribe is used (or any special help is given), this needs to be indicated on the front of the end-of-item test to which it applies.

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Entry Level Certificate
Science R483/version 1
Test EL B10 Extinction

Time allowed: 15 minutes

You may use:
- a calculator

First name	Megan
Last name	D'Ucles
Centre number	2 0 6 7 8
Candidate number	1 8 1 2

INSTRUCTIONS
- Use black ink.
- Complete the boxes above with your name, centre number and candidate number.
- Answer **all** the questions.
- Write your answer to each question in the space provided.
- Do **not** write in the bar codes.

INFORMATION
- The total mark for this paper is **15**.
- The marks for each question are shown in brackets **[ ]**.
- This document consists of 6 pages.

Raw mark	**3–5**	**6–8**	**9–11**	**12–15**
Points	**0.5**	**1**	**1.5**	**2**

FOR TEACHER'S USE	
Raw mark /15	14
Points /2	2

603/0226/4

R483

Turn over

2

1 Look at the picture of a crocodile on a river bank.

(a) Answer **true** or **false** to each sentence about crocodiles.

(i) Crocodiles have **not** changed very much over thousands of years. T [1]

(ii) Crocodiles are dinosaurs. F [1]

T and F are acceptable. The student's meaning is clear.

(b) The picture shows a crocodile species that lives in Australia.

What is meant by the term **crocodile species**?

Put a tick (✓) in the box next to the correct answer.

crocodiles that all look the same	☐
crocodiles that are all the same size	☐
crocodiles that can breed with each other	X
crocodiles that live in the same place	☐

[1]

X is acceptable if the student's meaning is clear.

(c) Crocodiles compete with each other for space along the river.

Write down **two** other things animals compete for.

1 habitat

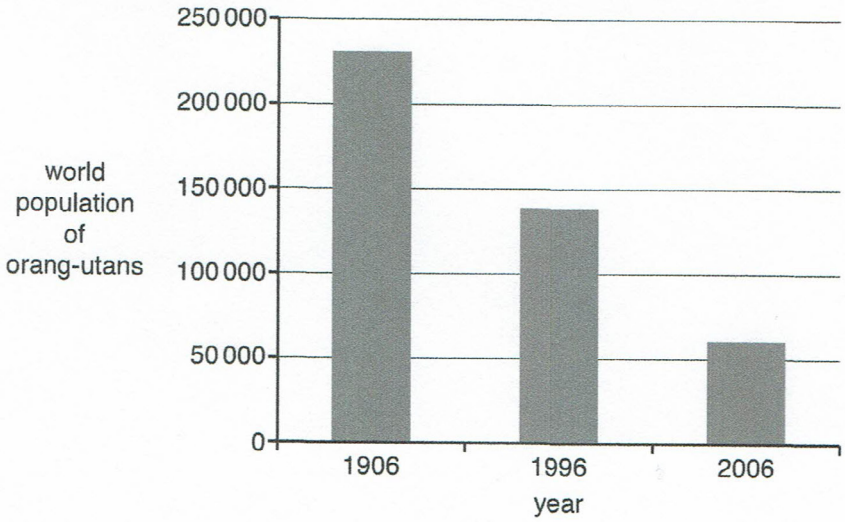
2 prey [2]

= food

The script has been annotated to show that the teacher has accepted an alternative answer.

2 Look at the picture of an orang-utan.

The chart shows the world population of orang-utans in three different years.



(a) What has happened to the number of orang-utans from 1906 to 2006?

fewer ✓ **[1]**

(b) Suggest **two** reasons for this change.

1 less food ✓ hunted ✓

2 **[2]**

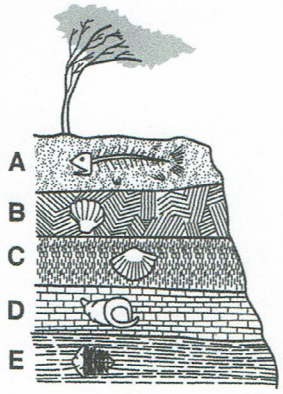
(c) What conclusion can you make from the chart?
Put a tick (✓) in the box next to **one** correct conclusion.

orang-utans are animals	☐
orang-utans are endangered	☒ ✓
orang-utans are extinct	☐

[1]

Both answers are on the same answer line. This is acceptable.

3 The diagram shows layers of rocks.



The correct answer has been circled. The student's meaning is clear.

(a) Which layer of rock is the oldest? Choose from **A**, **B**, **C**, **D** or **E**.

The oldest rock is _____ .

Explain your answer.

bottom

[2]

(b) The rocks have fossils in them.
Here are four sentences about how fossils form.
They are in the wrong order.

A The bones and shells turn to stone.
B The animals die.
C The soft parts rot away or get eaten.
D The bones and shells are covered by layers of sand and mud.

Fill in the boxes to show the correct order.

B	A	C	D

B is somewhere before C and C is somewhere before D – 2 marks.

[3]

(c) Fossils form in sand and mud.

Put a tick (✓) in the box next to **one other** place where fossils form.

ice [X]
lava flow [ ]
oven [ ]

[1]

B10 EXTINCTION – MARK SCHEME

Question	Suggested answers	Part mark	Question total
1 (a) (i)	true	1	
(ii)	false	1	
(b)	crocodiles that can breed with each other / tick in third box	1	
(c)	**any two from** mate; shelter; food; – prey **allow** survival **allow** habitat **ignore** space	2	5
2 (a)	gone down	1	
(b)	**Any two from:** habitat destruction; lack of food; hunting; pollution; disease; **allow** increase in predator numbers **allow** climate change / global warming	2	
(c)	orang-utans are endangered / tick in second box	1	4
3 (a)	E	1	
	because it is at the bottom / all the other layers are on top	1	
	allow idea of oldest / simplest fossils at the bottom		
(b)	B somewhere before C C somewhere before D D somewhere before A	3	
(c)	ice / tick in the first box	1	6
		Total = 15	

Mark scheme has been annotated to inform other teachers of acceptable alternative answer.

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Entry Level Certificate
Science R483/version 1
Test EL C12 CSI plus

Time allowed: 15 minutes

You may use:
- a calculator

The student has reversed her candidate number and centre number.

First name	Megan
Last name	D'Ucles
Centre number	1 8 1 2
Candidate number	2 0 6 7 8

INSTRUCTIONS
- Use black ink.
- Complete the boxes above with your name, centre number and candidate number.
- Answer **all** the questions.
- Write your answer to each question in the space provided.
- Do **not** write in the bar codes.

INFORMATION
- The total mark for this paper is **15**.
- The marks for each question are shown in brackets **[ ]**.
- This document consists of **6** pages.

The teacher has incorrectly added the marks awarded – total should be 9. However, if the answers to question 4 are included, the total becomes 12 marks, 2 points.

FOR TEACHER'S USE	
Raw mark /15	10
Points /2	1·5

Raw mark	3–5	6–8	9–11	12–15
Points	0.5	1	1.5	2

603/0226/4

R483

Turn over

1 The police think someone has changed the name on this cheque.

Ink sample 1 is taken from here. Ink sample 2 is taken from here.

OCR bank 53-39-98

Pay: *Sidney Bridgeman*

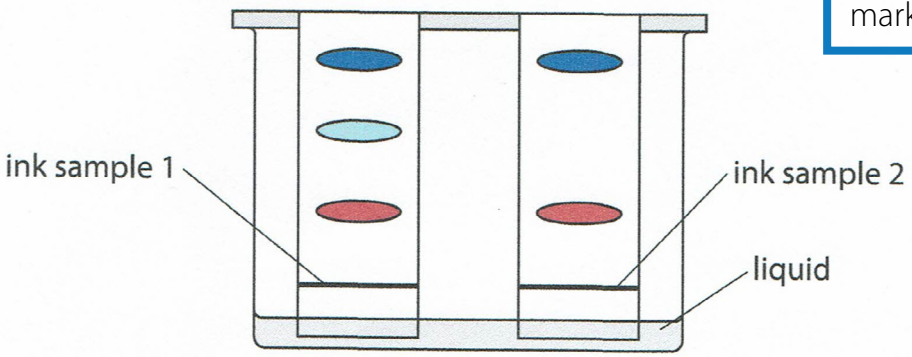
Amount in words: *One Thousand Pounds Only*

£ *1000.00*

Signed: *Frank Furt*

078066 53-39-98 24455677

Ink samples 1 and 2 are separated.
The samples started off on the black lines above the liquid.



Please use red ink for marking. Moderators use green to check marking.

(a) How many different colours are in ink sample 1? *3* **[1]**

(b) Chris says:

"Two different pens have been used to write the cheque."

Chris is correct. How can you tell?

I has more colors init **[1]**

The student's meaning is clear so a mark is awarded.

(c) Put a (ring) around the method used to separate the inks. **[1]**

chromatography **distillation** **DNA separation**

(d) The ink samples must be placed **above** the liquid at the start.

Why? _____ **[1]**

The student has not answered the question so the teacher has used an omission mark.

2 This investigator is collecting soil samples at a crime scene.
She is wearing special clothing so she does not leave extra evidence.

The student has drawn two lines, one correct and one incorrect. No mark is awarded for this answer.

(a) Draw a line from each item of **clothing** to the **evidence** it stops.

clothing	**evidence**
hood	fingerprints from her hands
gloves	dirt from her shoes
plastic suit	fibres from her clothes
	hair from her head

(2)

[3]

(b) The samples of soil she collects are put into bags.

Finish the sentences. Choose words from this list.

dried **evidence** **fertiliser** **labelled**

The student has provided two answers. It can be argued that dried is a neutral response, so the mark for labelled has been awarded.

(i) Samples of soil will be used as fertiliser. X **[1]**

(ii) The samples will need to be dried and labelled. ✓ **[1]**

bod

3 Fingerprints contain three main patterns.


whorl


loop


arch

(a) This fingerprint was found at a crime scene.

Although the spelling is incorrect, the intention of the student is clear.

(i) What is the main pattern of this fingerprint? wool ✓ **[1]**

The answer is not included on the mark scheme, but is a perfectly valid answer.

(ii) Suggest how a copy of this fingerprint can be stored.

in a file on paper ✓ **[1]**

(b) Finish this sentence.

We leave fingerprints on a surface because the skin leaves some iol ✓ behind. **[1]**

4 Carl and Marc are identical twins.
These fingerprints are from the same place on their right hand.


Carl


Marc

The student has not used the words from the list and therefore the teacher has not awarded the marks. However, it is clear that the student fully understands the question and has provided correct answers. All three marks can be awarded.

Finish the sentences. Choose the best words from this list.

different **identical** **lifestyle** **parents**

(a) Fingerprints of identical twins are not the same ✗ **[1]**

(b) The DNA of identical twins is the same ✗ **[1]**

(c) DNA is inherited from your mum + dad ✗ **[1]**

C12 CSI PLUS – MARK SCHEME			
Question	**Suggested answers**	**Part mark**	**Question total**
1 (a)	3	1	
(b)	different patterns / different number of dots (owtte)	1	
(c)	chromatography	1	
(d)	so they do not run into liquid (owtte)	1	4
2 (a)	(1 mark for each correct answer) hood – hair from her head gloves – fingerprints from her hands plastic suit – fibres from her clothes dirt from her shoes	3	
(b)(i)	evidence	1	
(ii)	labelled	1	5
3 (a)(i)	whorl	1	
(ii)	photograph / on a computer / scanned / saved as a file (owtte)	1	
(b)	oil / sweat	1	3
4 (a)	different	1	
(b)	identical	1	
(c)	parents	1	3
		Total = 15	

R591/C11/MS Sep14

OCR
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Entry Level Certificate
Science R483/version 1
Test EL P4 Hot Stuff

Time allowed: 15 minutes

You may use:
- a calculator

First name	Megan
Last name	D'Ucles
Centre number	20678
Candidate number	1812

INSTRUCTIONS
- Use black ink.
- Complete the boxes above with your name, centre number and candidate number.
- Answer **all** the questions.
- Write your answer to each question in the space provided.
- Do **not** write in the bar codes.

INFORMATION
- The total mark for this paper is **15**.
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Raw mark	3–5	6–8	9–11	12–15
Points	0.5	1	1.5	2

FOR TEACHER'S USE	
Raw mark /15	13
Points /2	2

603/0226/4

R483

Turn over

2

1 A saucepan is being used to boil potatoes.

Most of the saucepan is made from metal.

(a) Finish the sentence by putting a (ring) around the correct answer.
Metal is used because it is a good … .

conductor **convector** **reflector** **[1]** ✓

(b) The handle is not made from metal.

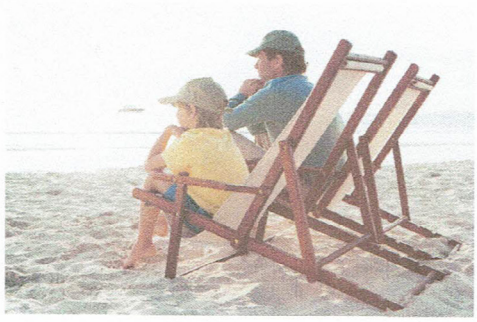
(i) Suggest what the handle is made from. plastic **[1]** ✓

(ii) Why is the handle made from this?

Its a good ~~conductor~~. insulator **[1]** ✗

It appears that a correct answer has been marked wrong. However, the teacher returned the paper to the student after marking and she wrote in the correct answer.
If papers are returned to students, please make sure that they do not write anything else.

2 Tom and his father are at the beach.



A sea breeze blows air towards them from the sea.
The air moves because the land is warmer than the sea.
Finish the sentences.

The air above the land rises because the air is warm . ✓

This is replaced by cold air from above the sea. **[2]** ✓

3 Solids, liquids and gases change state.
Water in a puddle changes into a vapour by **evaporating**.

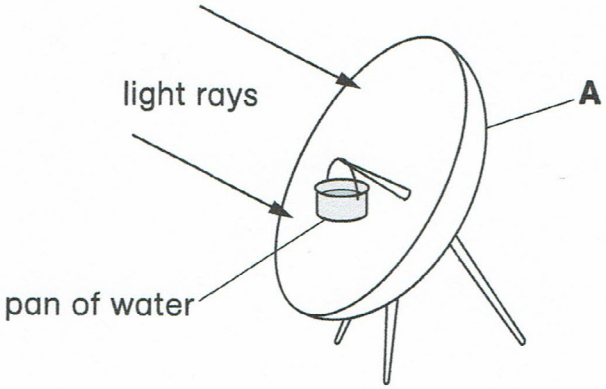
The intention of the student is clear and three marks can be awarded.

Draw a straight line from each **change of state** to its correct **description**.

change of state		description	
boiling	1	changes from solid to liquid	4
condensing	2	changes from liquid to solid	3
freezing	3	changes from liquid to gas	1
melting	4	changes from gas to liquid	2

[3]

4 The diagram shows a solar furnace. It is used to heat a pan of water.



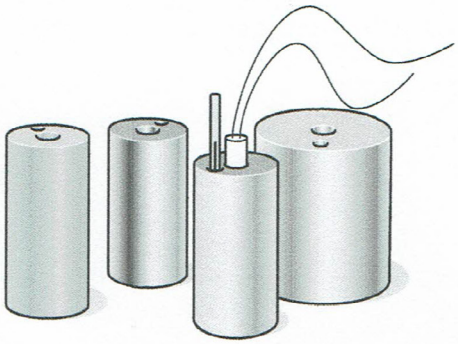
Although the spelling is incorrect, phonetically it could sound like mirror.

(a) What is the source of the light rays? Sun **[1]**

(b) What is the name of the part labelled **A**? mira **[1]**

(c) The heated water can be used for cooking. What else can the heated water be used for? having wash **[1]**

5 Amelia is finding out about the energy needed to heat different materials.
She uses 1 kg blocks of steel, brass, copper and aluminium.
She heats each block with an immersion heater for ten minutes.
She records the starting and finishing temperature of each block.



Here are her results.

block	starting temperature in °C	finishing temperature in °C
1 kg steel	16	59
1 kg brass	16	67
1 kg copper	16	66
1 kg aluminium	16	38

Although, they have not named the block they have indicated that the row in the table that rose to 67 was the hottest so a mark is given.

(a) Which block was the **hottest** after ten minutes? 67 ✓ **[1]**

(b) Answer **true** or **false** to each of these statements about the experiment.

	true / false
Amelia must use the same immersion heater to make sure it is a fair test.	f t X
The steel block needs **more energy** than the aluminium block to get the same temperature change.	f ✓

[2]

(c) Amelia repeats the test with a **2 kg** block of aluminium starting at 16°C.
Put a (ring) around its most likely temperature after ten minutes.

16°C **(27°C)** **38°C** **49°C** ✓ **[1]**

P4 HOT STUFF! – MARK SCHEME

Question	Suggested answers	Part mark	Question total
1 (a)	conductor	1	
(b) (i)	plastic / wood	1	
(ii)	good insulator / poor conductor / won't burn hand / owtte	1	**3**
2	warm / hot / less dense (accept lighter) / owtte	1	
	colder / cooler / more dense (accept heavier) / owtte	1	**2**
3	boiling – solid to liquid condensing – liquid to solid freezing – liquid to gas melting – gas to liquid all correct scores 3 3 correct scores 2 1 or 2 correct scores 1	3	**3**
4 (a)	Sun	1	
(b)	(curved) mirror / reflector	1	
(c)	generating electricity / washing / making a drink / sterilising / heating system	1	**3**
5 (a)	brass	1	
(b)	true	1	
	false	1	
(c)	27°C	1	**4**
		Total	**15**

R591/P10/MS Sep14

SECTION C
CAN-DO TASKS

CAN-DO TASKS (8 POINTS)

Can-do tasks form an integral part of the course and can be directly linked to activities within each of the items studied. They are designed to develop students' manipulative skills and many involve the practical activities undertaken by students as a normal part of their learning. However, and more importantly, they support the underlying 'I-can-do-it' philosophy of the course and supply, at frequent intervals, the necessary positive reminders of students' attainment.

The tasks enable all students to achieve success but still provide challenge and reward for high attaining students.

The can-do tasks are based on the GCSE (9–1) skills to enable co-teachability of Entry Level Certificate and GCSE (9–1). Opportunities to demonstrate proficiency in can-do tasks are indicated throughout the specification content.

Frequent opportunities will arise during the course for students to attempt these tasks.

A total of 16 can-do tasks totalling 8 points may be done. There is no formal time limit for these can-do tasks. It is expected that learners are assessed by their teachers in their practical lessons. It is important for teachers to appreciate that each of these tasks should not be regarded as a 'one-off' opportunity for a student to demonstrate success; students can attempt each task more than once during the course.

Each task must be completed in its entirety before a student can be credited with success. The partial completion of a particular task is not permitted.

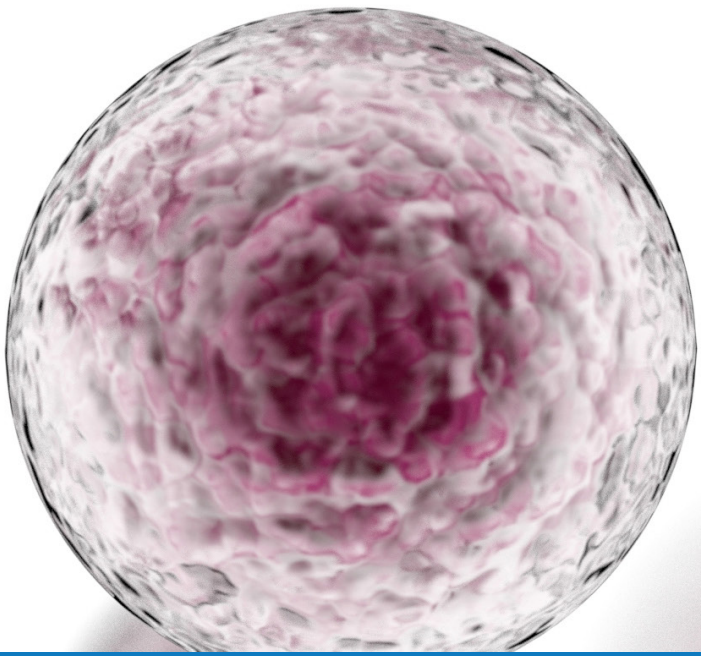
The tasks will not be reviewed by OCR during the moderation process, but the records and the totalling will be carefully checked.

The inter-linking of the can-do tasks provides teachers with a method of ensuring progression in the development of both the students' understanding of scientific procedures and their manipulative skills. Suitable tasks should be selected from the 16 that are listed on the Candidate Record Card (Appendix 1) to ensure that progression can be achieved.

The selection will require a consideration of:

- the resources available within the centre
- the likely attainment level of the candidates
- the size of the teaching group
- any perceived Health and Safety issues.

Can-do tasks can be assessed as part of a practical task. For example, if during a practical task to find the relationship between the load and extension of a spring, a student should fulfil the requirements for can-do task P1 (Use of appropriate apparatus and techniques to measure and observe the effects of forces on the extension of springs.)



SECTION D
PRACTICAL TASK

SKILLS AUDIT

Students need to be equipped with the appropriate skills before there is any attempt to undertake and assess a practical task. Without such consideration, there is unlikely to be a realistic match between the quality of students' reports and their expected attainment levels.

It is advisable to carry out a skills audit for each of the five Aspects of the practical test. It may be that the necessary skills have already been sufficiently developed in earlier Key Stages so that further preparation is unnecessary. Some of the skills may have been developed in other curriculum areas, but it is recommended that checks are made. For example, it may be appropriate for some students to gather information from a library or the Internet in their planning. If these students do not understand how to make good use of a library or the Internet to do their research then they are unlikely to fulfil their potential.

Appendix 3 provides a suitable checklist for a skills audit.

Students are provided with some suitable stimulus material linked to the teaching and learning of the specification content. The stimulus material needs to be in the format of a question or an issue to which the candidate can develop an answer.

Each candidate is required to:

- devise a strategy which will enable some suitable, appropriate and relevant data to be collected safely
- collect first-hand data and record it in a suitable format
- process the data and identify patterns in it
- link the conclusions to the scientific knowledge and understanding underpinning the task
- comment about the procedure used and the quality of the data collected.

THE STAGES OF A PRACTICAL TASK

The practical task is divided into three separate stages.

- Stage 1 - Teachers set students a practical task question and provide an introductory briefing so that students understand what is required of them. The students then work out their plan to collect data to answer the question. The students do not necessarily need to be directly supervised for this stage. They can work with others or at home to develop their plan and they may use the Internet for research. It is important, however, that each student writes about the planned procedure in their own words.

- Stage 2 - After the students' plans have been checked by the teacher for feasibility and for safety considerations, students collect data. This stage is supervised by the teacher but students can work in collaboration when collecting the data. Each student must, however, record the data individually in a suitable format.

  The teacher retains the data for use in the next stage.

- Stage 3 - Students work individually, under the direct supervision of the teacher, to process and analyse their data and comment on the suitability of the procedure they used.

The recommended total time for the three stages is four hours, but it is recognised that some students may require more time.

CHOICE OF PRACTICAL TASK

Some tasks are suggested by OCR for centres to use.

Teachers are, however, encouraged to develop their own tasks for use with their students. If teachers do develop their own tasks, it is important to ensure that:

- the advice and guidance given in this section are used when the tasks are being developed
- the background details underpinning the setting of the task and the overall rationale are sent to the moderator with the moderation sample. Without this background, the moderators will be unable to monitor, with any degree of certainty, the decisions made by the teacher about each candidate's work.

THE TASK

Any practical task that is chosen needs to be directly linked to the teaching of the relevant parts of the Specification and be suitable for the needs of the students at the centre. Students will need to have the necessary background knowledge and understanding in order to tackle a practical task.

More complex tasks may involve additional resource requirements in terms of apparatus, space, time and supervision. A suitable simple task can still gain the highest marks in each of the Aspects being assessed.

The conceptual demands of the task chosen will need to be appropriate to the likely attainment levels of the students at the centre. Tasks involving difficult concepts are likely to be counterproductive for some of the candidates and may decrease their motivation.

It is vital that students are set a task where the question asked is both relevant and realistic and within the capabilities of the students.

EXAMPLE PRACTICAL TASKS

Two examples of tasks are printed in this section of the Teacher Support Booklet and these demonstrate a suitable style and format for use, along with actual examples of students' responses to these two tasks.

Other examples may be provided at Training Sessions organised by OCR.

Commercially available publishers' support materials are another useful source of suitable tasks.

The OCR Science Community website provides a suitable forum for teachers to exchange ideas about practical tasks. Joining the Science Community is very straightforward. The website address is http://social.ocr.org.uk

EXAMPLE 1:
PRACTICAL TASK
SKI JUMPING

The next 4 pages show a practical task attempted by a student.

The first page shows the background sheet provided as stimulus material to the student. The stimulus material is designed to be visually attractive, well-presented and well-written so that the 'language' is accessible to students of differing abilities.

A useful strategy for saving resources is to number and laminate these stimulus sheets so that they can be collected in at the end of the practical task and then re-issued to another group of students.

The second page is a sheet that the student completed whilst developing the plan. The student's words have been word processed, both for ease of reading and to preserve the anonymity of the student.

The third page shows the table of results that the student produced during the task together with their interpretation and evaluation.

The fourth page shows the graph drawn from the results.

The performance descriptors used for the assessment are printed in Appendix 2.

Following the practical task there is a commentary on the marks that have been awarded for the task. The original annotation by the teacher on the student's work, to provide additional support for the decisions that were made, has not been added.

Oxford Cambridge and RSA

Entry Level Science (2018)
Practical Task

Ski jumping

Last week the class saw a video of the ski jumping at the Olympics in Korea.

We know that the winner is the one who flies the longest distance in the air.

Here is your question

Can you find a link between

the **height** of the ski jump
and
the **distance** they can travel?

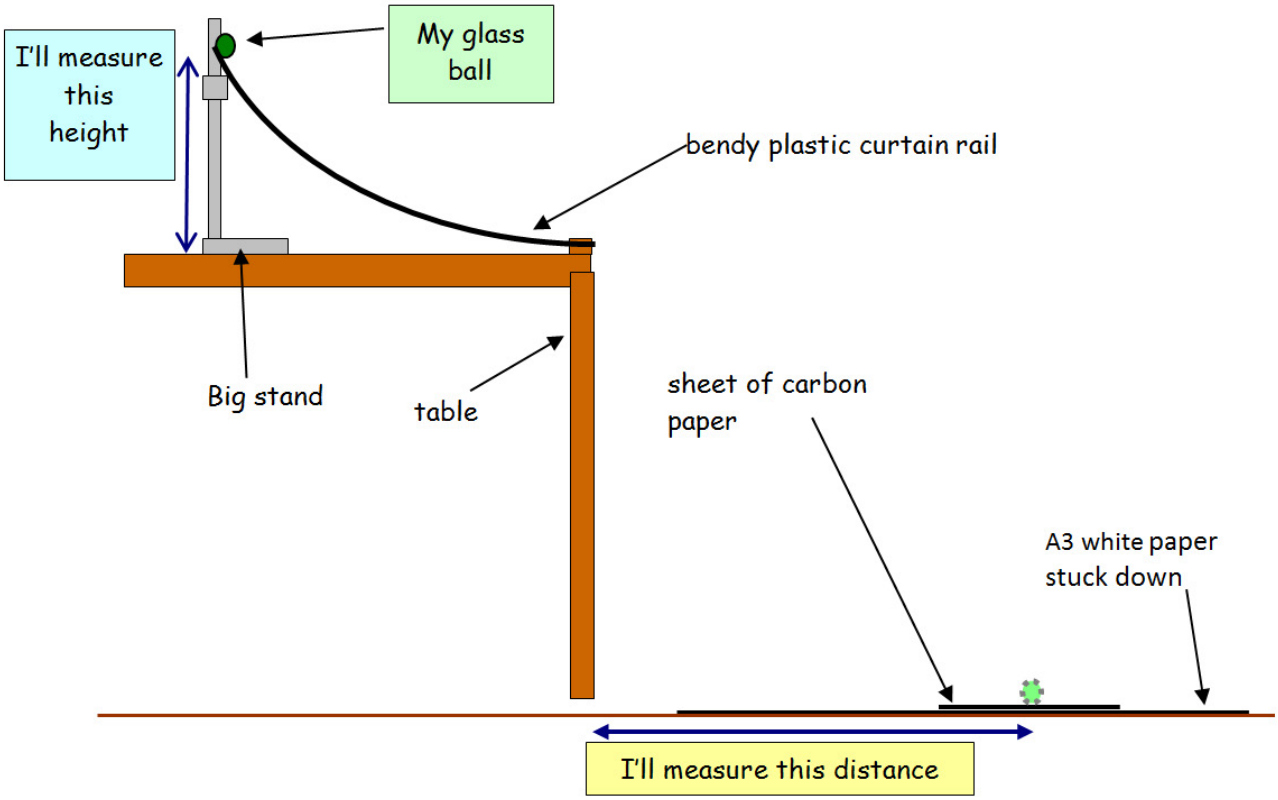
You need to think about

- the apparatus you need
- how to make it a 'fair test'
- how to work safely.

Write down your plan

Your teacher will check your plan and then you can try out your ideas.

This is the plan that Freddie and me worked out.
We used the setup in the diagram below.
We measured the hight from the top to bench in cm.
To see whereabout it landed.
We always did practice runs at each hight
Freddie said we used a sheet of carbon paper for each real run.
We marks the black circle each time.
We did it three times each time.
We used different hights.
I wrote down all my results in a table and then I did a graph to show them in a different way.



Here is the data I collected

Height of ramp in Cm	Distance travelled in Cm			
	1st try	2nd try	3rd try	average
5	75	71	65	70.3
10	85	82	80	82.3
15	90	97	97	94.6
20	105	97	101	101
25	110	112	100	109.3
30	105	113	106	108
35	115	107	108	110
40	120	112	107	113
45	110	120	118	116
50	112	118	119	116.3

What I found out

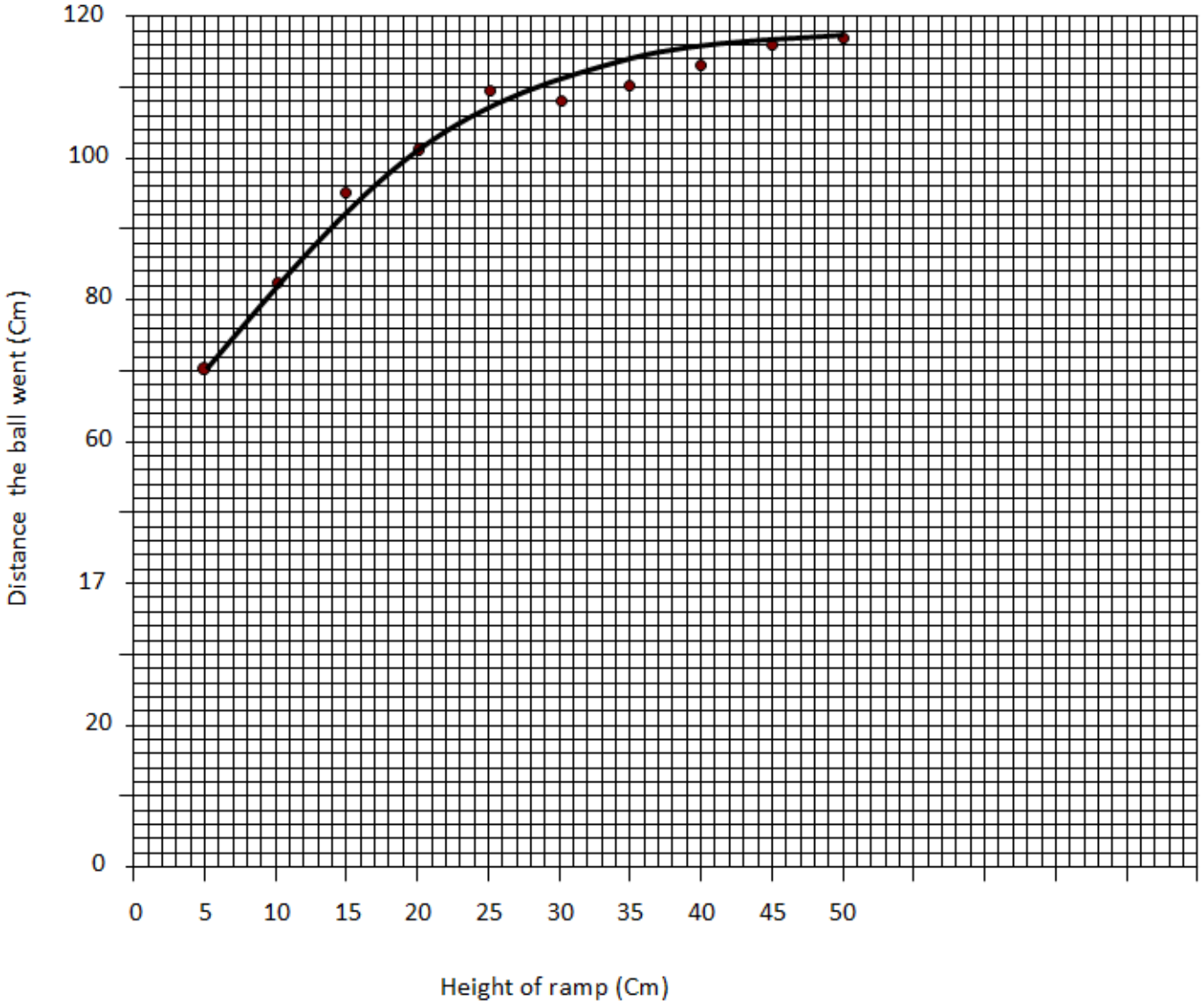
We drew a graph of the averages.

I changed the hight of the ramp.
Bigger hight means further in other words the higher the ramp the further the ball went but its not equal but a curve.

Conclusion

We had no problems with this question.
The hight does make a difference. You go further when higher but only up to a point.

It went well and Freddies idea of using carbon paper was a realy good plan.


120
100
80
60
17
20
0
Distance the ball went (Cm)
0 5 10 15 20 25 30 35 40 45 50
Height of ramp (Cm)

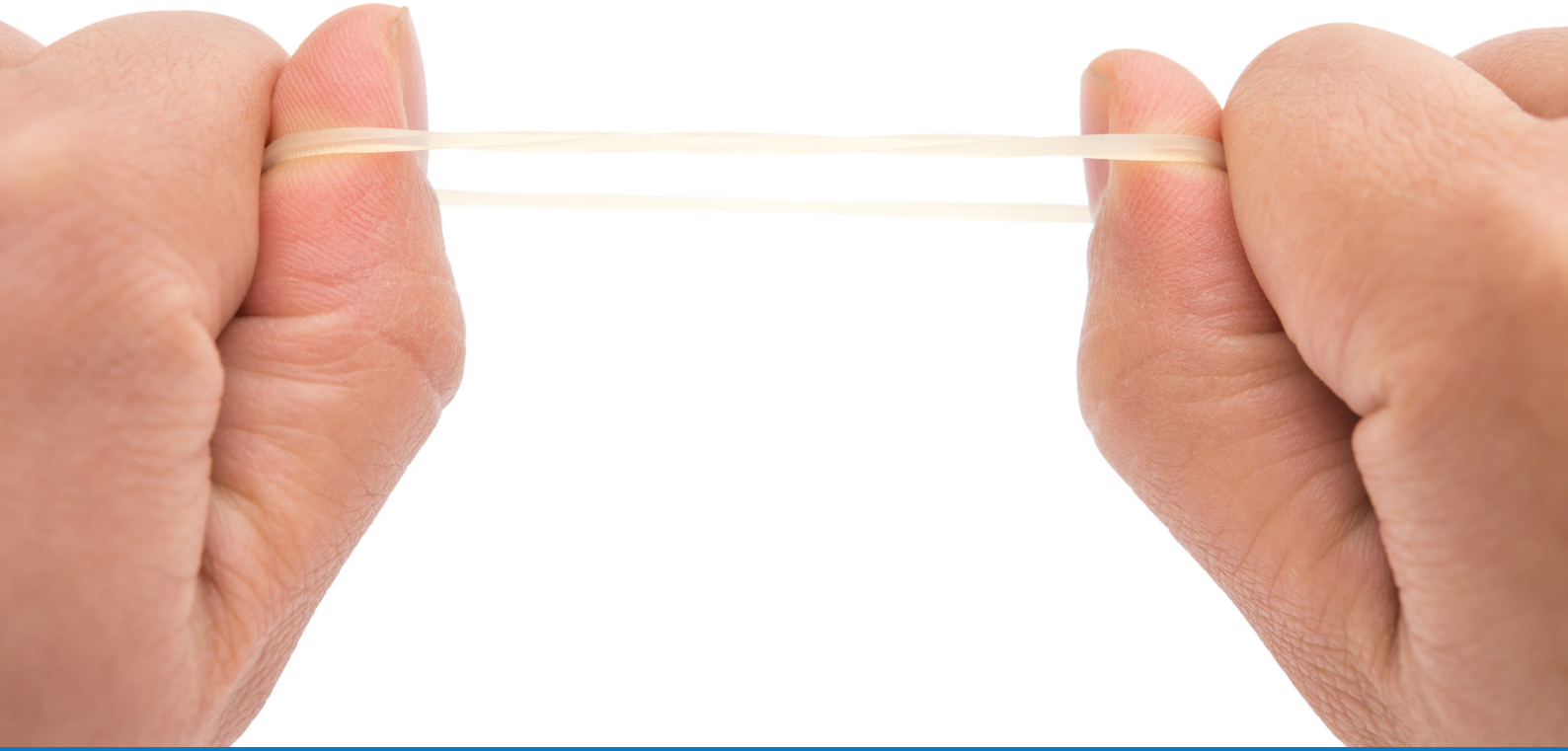
COMMENTARY FOR SKI JUMPING PRACTICAL TASK

Aspect		Mark	Comments
A	**Planning** to collect data	3	The student has devised a workable plan that will allow useable data to be collected. It is acceptable for students to work together, but care should be taken to ensure that marks are awarded for the contribution made by the individual student. There is no mention, at any point in the report of a reference to aspects of 'safe working' and this omission prevents the maximum mark from being awarded.
B	**Processing** the data	4	Sufficient data has been collected and recorded clearly. Marks are not awarded for the collection and recording of data. The data has been displayed correctly as a line graph. The axes are correct and the scales are suitable.
C	**Patterns** in the data	4	The trend has been identified that correctly reflects the pattern in the data.
D	**Interpreting** the data	2	Only a simple comment has been made and there is no link to the underpinning 'science' of the task.
E	**Reviewing** the method	2	There is a lack of fine detail in what the student has written. There are no comments on the quality of data collected. To obtain three or four marks for this aspect, reference should be made to the similarity (or otherwise) of repeated readings or how close a line of best fit passes to the plotted points.
	Total	**15**	This is a good piece of work from an Entry Level Science student. OCR always recommends that teachers annotate the assessed work of their candidates to provide justification for the mark which has been awarded. As a minimum, the use of, for example, 'C=4' is helpful, but in many cases additional comments may be needed. However, for this piece of work, despite the difficulties in the written English, the intentions of the candidate are clear and the absence of any annotation has not potentially disadvantaged the candidate.

EXAMPLE 2:
PRACTICAL TASK ON STRETCHING ELASTIC BANDS

This practical task on stretching elastic bands is set out in a similar format to the ski jumping task.

Some explanatory annotation made by the teacher is shown on the student's work and a detailed commentary is provided at the end of the task.



OCR
Oxford Cambridge and RSA

Entry Level Science
Practical Task

Information for candidates | Your question

Stretching elastic bands

Everybody knows that elastic bands get longer and longer when you pull on them.

Barry wants to know if there is a pattern when they stretch.

Work out a plan to find out if there is a pattern.

You need to think about . . .

- the apparatus you need
- how to make it a 'fair test'
- how to work safely.

Write down your plan on the sheet of paper your teacher gives you.

Your teacher will check your plan and then you can try out your ideas.

OCR
Oxford Cambridge and RSA

Entry Level Science (R483)
Practical Task
Cover sheet

Submission year
2019

Centre Name: The Napoleon Academy

Centre Number: 20678

Candidate Name: Megan D'Ucles

Candidate Number: 1812

Task title: Elastic bands

		0	1 - 2 marks	3 – 4 marks
A	**Planning to collect data** **4**		outlines a simple plan which would enable a limited amount of data to be collected	describes the method and apparatus selected to collect data makes an appropriate comment about safe working
B	**Processing the data** **4**		displays a few results in charts or graphs, using given axes or scales	constructs simple charts or graphs to display data in an appropriate way, allowing some errors in scaling or plotting
C	**Patterns in the data** **4**		notes at least one difference between situations/cases, or compares individual results	identifies trend(s) or pattern(s) in the data
D	**Interpreting the data** **1**		makes a simple attempt to interpret the data	relates the trend(s) or pattern(s) to the relevant science
E	**Reviewing the method** **1**		makes a simple comment about the method used to collect data	comments on the method used and how it affects the quality of data collected

14 ← Total mark awarded/ **20**

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Entry Level Science
Practical Task

Information for candidates Your planning

My name is: Megan D'Ucles

Use this sheet of paper to write down your plan.

Make sure that you write down all the steps, so that other people can understand your plan.

Ill choose a strong elastic band and hang it from a large metal stand.

Ill work safely and were ✓googles in case the band flicks into my eyes. A4

Ill fix a little metal pan on the bottom with a bits of wire to hold it place.

Ill use a set of 10g waits one at a time to see how it streches.

Ill measure the strech by using a cm ruler fixed at the side pointing up and down.

Ill use a small wooden stick and hold it level as a marker to help me get the right answer.

Ill use up to 10 of the waits.

Ill put the results in a table and then do a graph.

Ill work on my own and it wont take to long to get me results and answer the question.

OCR
Oxford Cambridge and RSA

Entry Level Science
Practical Task

Information for candidates Collecting your data

My name is: Megan D'Ucles

Use this sheet of paper to put down your results.

It is useful to use a table of results. Use a ruler to help you.

If you need help with drawing a table, ask your teacher!

Number of waitts Hanging on the band	Lenth shown on the cm ruler	Amount of stretch in cm
0	31	0
1	33	2
2	33.5	2.5
3	34	3
4	34.5	3.5
5	35	4
6	35.5	4.5
7	36	5
8	37.5	6.5
9	37	6
10	37	6

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Entry Level Science
Practical Task

Information for candidates My answer to the question

My name is: Megan D'Ucles

You must work by yourself for this part.

Answer the following. Use this page and the graph paper.

Show your results in a different way.

See the graph paper on the next page.

Write about a trend or pattern in your results.

C4

The patern in way it stretches is that more waits means more strech.

It stretches even wait by wait up to 7 waits. I think the reading at 8 is wrong coz it don't fit on the line like the others.

It starts to break with 9 or 10 waits. D1

Link your results and pattern to the question your teacher gave you.

C4

I did find the patern it streches more with more waits up to point.

Write about any difficulty you had getting your results.

I had to wait for the pan with the waits from swinging around and had to use my finger to keep it still when I took the readings. E2

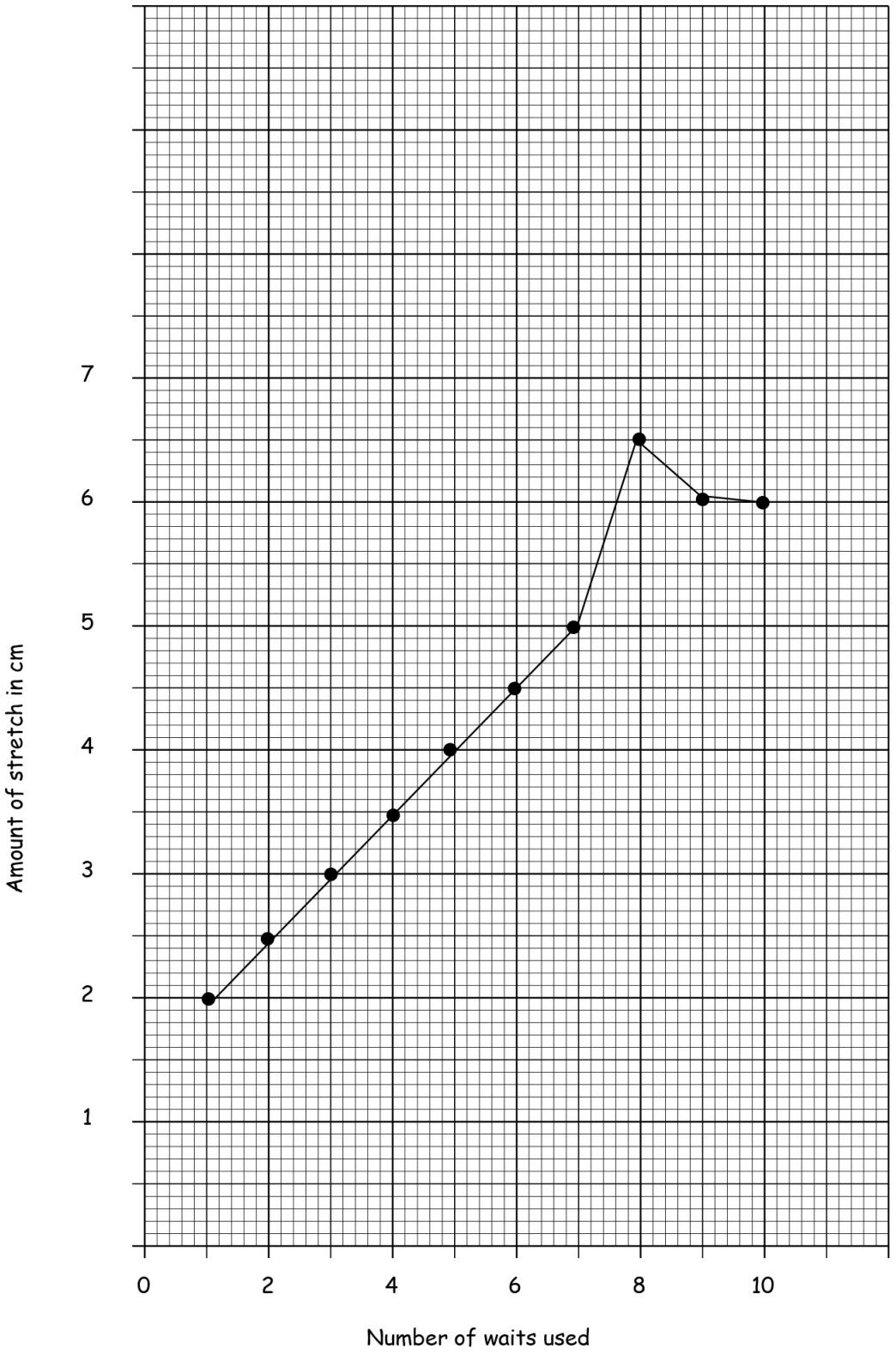
My name is: Megan D'Ucles

Have I put a title on the graph? ✓

Have I labelled my axes correctly? ✓

Have I plotted my points correctly? ✓

Stretching the elastic



B4

COMMENTARY FOR STRETCHING ELASTIC BAND PRACTICAL TASK

Aspect		Mark	Comments
A	**Planning** to collect data	4	The candidate does develop a plan but it does seem to lack sufficient detail. There is a mention of safe working. A moderator would confirm the awarding of three marks due to the lack of detail in the plan and write a comment in the Report to the Centre.
B	**Processing** the data	4	There are sufficient results and the data has been clearly plotted in a graph. A moderator would confirm the awarding of four marks.
C	**Patterns** in the data	4	The candidate has identified a trend both in the answer to Q2 and in Q3. A moderator would confirm the awarding of four marks.
D	**Interpreting** the data	1	The decision by the teacher does seem to be 'severe'. There is clearly no link to the underpinning 'science' but the sentence *"It starts to break with 9 or 10 waits"* does indicate a low-level understanding of what the evidence shows A moderator would confirm the awarding of two marks.
E	**Reviewing** the method	1	There is only a low-level comment made and this could be insufficient to allow a match to two marks. However, there is a comment on the quality of the data when the candidate refers to "the reading at 8 is wrong coz it don't fit on the line like the others." A moderator would confirm the awarding of two marks because of the recognition of the anomalous point on the graph.
	Total	**14**	The student has developed a plan to find the answer to the question posed by the task. Data has been collected and effectively processed and this does represent a good achievement for an Entry Level Science candidate. Overall, the moderator would have awarded fifteen marks, which is broadly in line with what the teacher at the Centre has awarded.

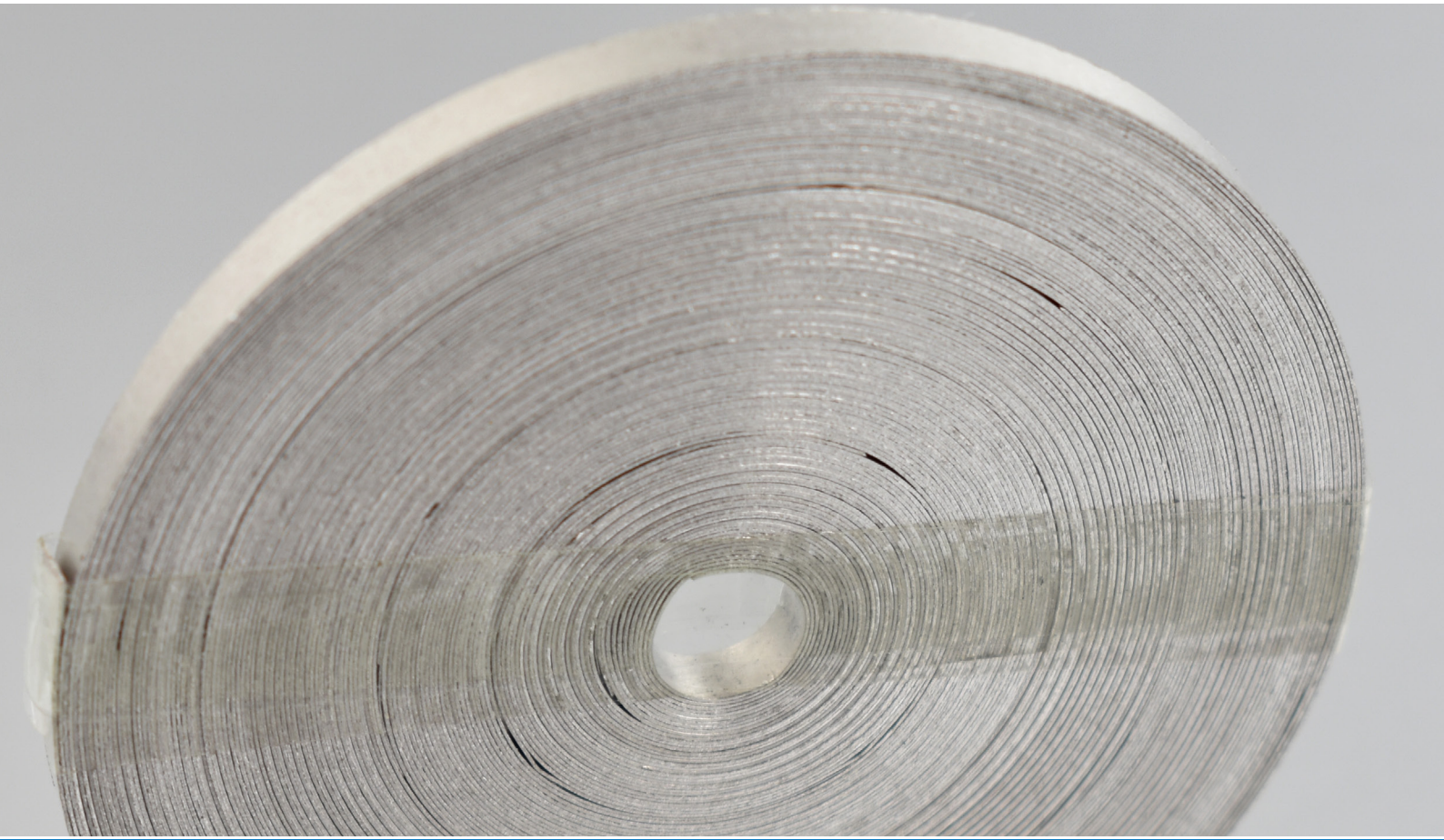
EXAMPLE 3: PRACTICAL TASK ON REACTING MAGNESIUM

This practical task on reacting magnesium is set out in a different format to the stretching elastic bands task.

On this occasion, the centre did not provide a background sheet as stimulus for the task although they did provide generic prompt sheets.

The task was carried out by the same student at an early stage of the course and the marks awarded are lower. Students should be given more than one opportunity to carry out a practical task and the highest marks for a complete task carried forward for final assessment.

Some explanatory annotation made by the teacher is shown on the student's work for the benefit of the student and a detailed commentary is provided at the end of the task.



OCR
Oxford Cambridge and RSA

Entry Level Science (R483)
Practical Task
Cover sheet

Submission year
2019

Centre Name: The Napoleon Academy

Centre Number: 20678

Candidate Name: Megan D'Ucles

Candidate Number: 1812

Task title: Reacting magnesium

		0	1 - 2 marks	3 – 4 marks
A	**Planning to collect data** **1**		outlines a simple plan which would enable a limited amount of data to be collected	describes the method and apparatus selected to collect data makes an appropriate comment about safe working
B	**Processing the data** **4**		displays a few results in charts or graphs, using given axes or scales	constructs simple charts or graphs to display data in an appropriate way, allowing some errors in scaling or plotting
C	**Patterns in the data** **2**		notes at least one difference between situations/cases, or compares individual results	identifies trend(s) or pattern(s) in the data
D	**Interpreting the data** **1**		makes a simple attempt to interpret the data	relates the trend(s) or pattern(s) to the relevant science
E	**Reviewing the method** **0**		makes a simple comment about the method used to collect data	comments on the method used and how it affects the quality of data collected

8 ← Total mark awarded/ **20**

OCR
Oxford Cambridge and RSA

Entry Level Science
Practical Task

Information for candidates	Your planning

My name is: Megan D'Ucles

Use this sheet of paper to write down your plan.

Make sure that you write down all the steps, so that other people can understand your plan.

We put Magnesum Ribbins in Acid

We Timed How Long it Took to Desolve

Then we added water

A1
You need much more detail than this. Don't forget to mention safety.

OCR
Oxford Cambridge and RSA

Entry Level Science
Practical Task

Information for candidates Collecting your data

My name is: Megan D'Ucles

Use this sheet of paper to put down your results.

It is useful to use a table of results. Use a ruler to help you.

If you need help with drawing a table, ask your teacher!

Dissolving Magnesum ribbin

Sample	Acid (mill)	Water (mill)	Time	Secs
1	50	0	1:20	81
2	40	10	2:25	145
3	30	20	3:10	190
4	20	30	4:17	257
5	10	40	4:40	280

OCR
Oxford Cambridge and RSA

Entry Level Science
Practical Task

Information for candidates My answer to the question

My name is: Megan D'Ucles

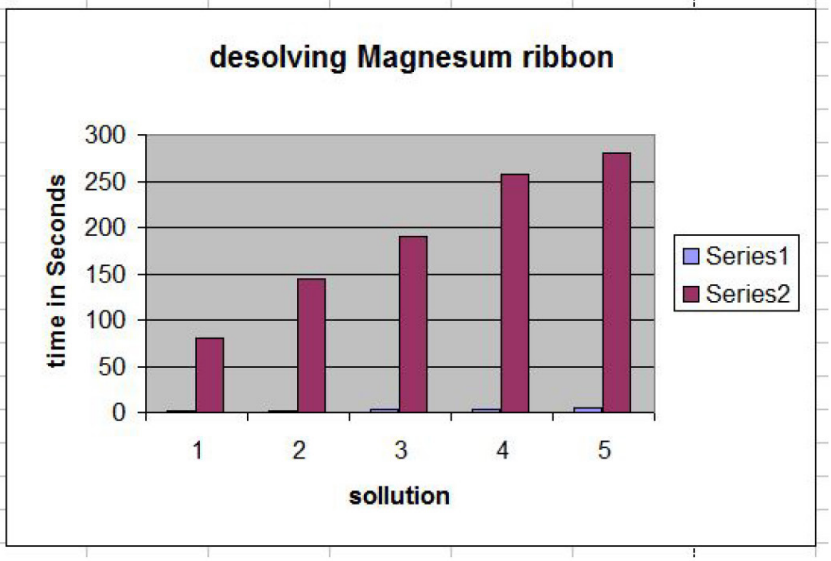
You must work by yourself for this part.

Answer the following. Use this page and the graph paper.

Show your results in a different way.

I used exel to do my graf B4

1	81
2	145
3	190
4	257
5	280



Write about a trend or pattern in your results.

It took longer to Dissolve when we added more water

C2
Not quite 4.

Link your results and pattern to the question your teacher gave you.

The Magnesum made the Acid weaker so the Magnesum Ribbions took longer to dissolve

The first Time I reorded was 81

My 4th timing was 257 but I Also added 30 mills of water

D1

My evident shows that One We added the water the Acid worked slower.

Write about any difficulty you had getting your results.

E0

COMMENTARY FOR REACTING MAGNESIUM PRACTICAL TASK

Aspect		Mark	Comments
A	**Planning** to collect data	1	There is no real plan here and there does not seem to be sufficient for a match to the two-mark standard. There is no mention of safe working.
B	**Processing** the data	4	The student does collect sufficient data, records it carefully and then uses the Excel package to produce an acceptable display. The title and the correct labelling of the two axes on the bar chart show that the student is not just 'pressing the keys'.
C	**Patterns** in the data	2	There is an attempt at identifying a trend but there does not seem to be sufficient for a mark in the 3/4 box.
D	**Interpreting** the data	1	If the sentence: 'My evident show that One We added the water the Acid worked slower' is interpreted as: 'My evidence shows that once we added the water the acid worked slower' could be a low-level attempt at an evaluation.
E	**Reviewing** the method	0	No marks are awarded here since there is no attempt.
	Total	**8**	This is a 'classic' Rates of Reaction task and is suitable for Entry Level candidates. The only general point is that it is all written in the past tense and this may be an issue, since there is an expectation that the students write their plan before they actually collect the data.

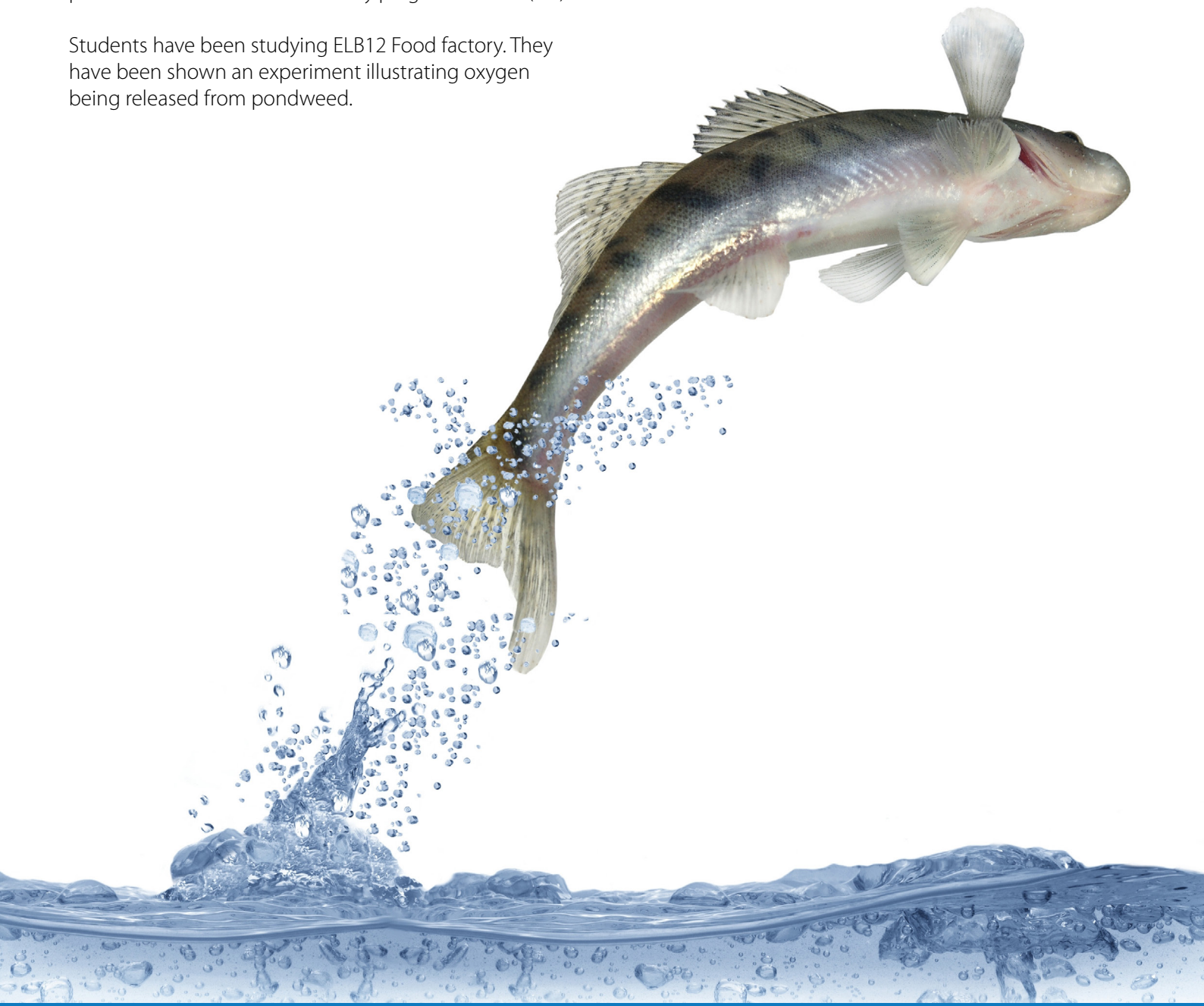
EXAMPLE 4:
PRACTICAL TASK
FISH POND

There may be occasions when:-

- students preparing for Entry Level are taught in the same class as GCSE students
- students from an Entry Level Science class make good progress and are also entered for GCSE.

GCSE (9-1) specifications include Practical Activity Groups (PAGs). These can be used as possible practical tasks assisting co-teachability and allowing teachers to plan practical tasks for students who may progress to GCSE (9-1).

Students have been studying ELB12 Food factory. They have been shown an experiment illustrating oxygen being released from pondweed.



Oxford Cambridge and RSA

Entry Level Science (2019)
Practical Task

Fish pond

A website about water plants states:-

The plants that make the oxygen always grow under the water.

This means that during daylight hours they absorb carbon dioxide from the water and release oxygen into it.

They will grow at any depth where there is enough light.

Here is your question

Can you find a link between

the **amount of light**
and
the **amount of oxygen produced**?

You need to think about

- the apparatus you need
- how to make it a 'fair test'
- how to work safely.

Write down your plan

Your teacher will check your plan and then you can try out your ideas.

Apparatus
piece of hornwort
boiling tube
clamp to hold boiling tube
lamp
ruler
clock
sodium bicarbonate solution

I am going to put the piece of hornwort in the boiling tube and cover it with sodium bicarbonate.
I will make sure the cut end of the hornwort is at the top of the tube.
Then I am going to put the boiling tube 10cm away from a lamp and turn the lamp on.
I will count how many bubbles come away from the hornwort in 5mins.
I will do the experiment three times and find an average.
Then I will do the whole thing again when the distance is 20cm again when it is 30cm and 40cm and 50cm.
Here is a diagram to show what I done.

To make it a fair test I will not change anything else other than the distance. I will use the same bit of hornwort and keep the temperature the same.
To keep myself safe I will wear goggles to protect my eyes from chemical and turn off the lamp before moving it as it will be hot.

This is the data I collected.

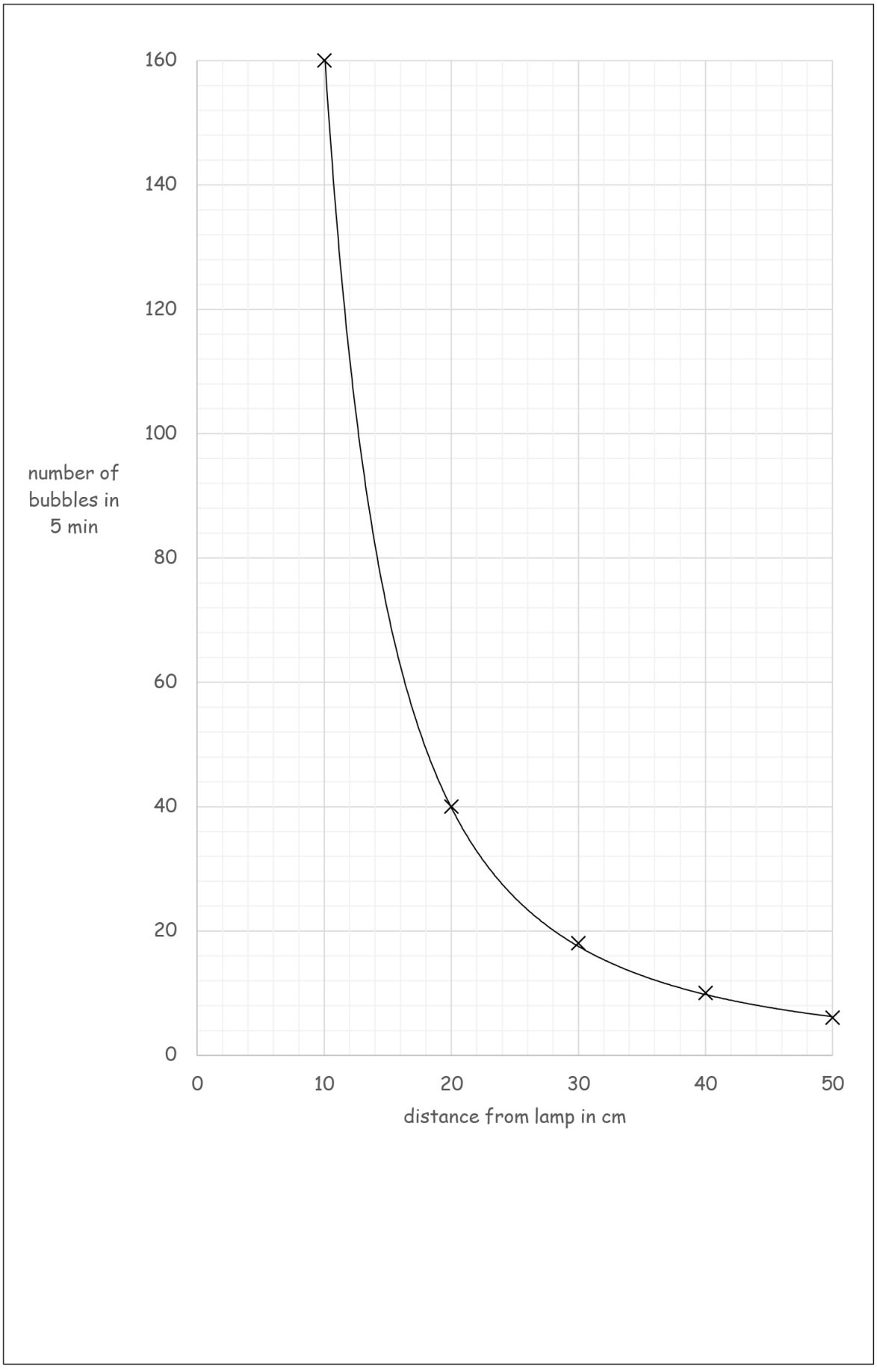
distance from lamp in cm	number of bubbles in 5 min			
	1st try	2nd try	3rd try	average
10	168	159	153	160
20	36	41	43	40
30	17	20	19	18
40	11	11	8	10
50	6	6	5	6

The results are good because all of the numbers are close together each time. I have done five experiments which should be enough to make a trend.

I have drawn a graph to illustrate my results. The best fit line passes through all the points.

I have found out that as the distance from the lamp gets bigger the number of bubbles gets smaller. This is my –er –er sentence.

This is because the number of bubbles shows how much photosynthesis is happening. Photosynthesis needs light and carbon dioxide. The carbon dioxide comes from the sodium bicarbonate. Light comes from the lamp. When the lamp moves further away there is less light so there is less photosynthesis so there are less bubbles.


160
140
120
100
80
60
40
20
0
number of bubbles in 5 min
0
10
20
30
40
50
distance from lamp in cm

COMMENTARY FOR FISH POND PRACTICAL TASK

Aspect		Mark	Comments
A	**Planning** to collect data	4	The student has provided a detailed plan with a full list of apparatus. They have indicated how the test will be fair and how they will work safely.
B	**Processing** the data	4	The graph has been accurately plotted and a good line of best fit drawn.
C	**Patterns** in the data	4	The student has identified a trend using an –er –er statement.
D	**Interpreting** the data	4	The level of understanding of photosynthesis is higher than would normally be expected from an Entry Level student and certainly relates the trend to the underlying science.
E	**Reviewing** the method	4	The student has commented on the quality of their data by referring to the closeness of the repeated readings and the quality of the line-of-best-fit.
	Total	**20**	This is a very good piece of work from an Entry Level Science student and suggests that they are probably being taught in a GCSE (9-1) group. The Centre may consider entering the student for GCSE (9-1) as well as for Entry Level if this piece of work is indicative of their overall attainment.

SECTION E ADMINISTRATION OF THE COURSE

KEY DATES

Final entries – deadline 21 February

There are two methods of submitting final entries:

- OCR Interchange – OCR's secure extranet
- EDI (Electronic Data Interchange) – an electronic method of transmitting entry and results data to and from OCR using a third party carrier.

It is important to make entries by the deadline. Any late entries will be subject to additional fees as a result of the additional work required to process them.

Final total points scores – deadline 15 May

The final total points score for each candidate should be submitted by the 15 May deadline. Moderators will then request a sample of candidates' work for checking.

ENTRY FOR GCSE

Any candidate may be entered for both Entry Level Science and any other GCSE (9-1) Science qualification.

There are a number of Science qualifications at OCR. Further details can be found at www.ocr.org.uk.

The Entry Level Science course is an attractive proposition for some candidates who may start Year 10 as possible under-achievers.

In recent years, this double entry has been increasingly popular and centres have taught the requirements of both Entry Level and their chosen GCSE either:

- in parallel, by incorporating the requirements of both into their Schemes of Work, or
- in series, by teaching Entry Level in Year 10 with the additional GCSE requirements in Year 11.

INTERCHANGE

Interchange is a secure website designed solely for use by teachers, and it is not accessible by students or members of the public.

Interchange allows teachers to download confidential materials if they have the correct access rights.

Copies of the end-of-item tests are now only available on Interchange. These end-of-item tests can be downloaded by anyone who has been allocated the Interchange Science Coordinator role on Interchange. It is likely that in a centre the Examinations Officer will be the Interchange Administrator; they may choose to act as the Interchange Science Coordinator or they may nominate someone in the science team to take on this role. Any teacher needing to use these tests should discuss with the centre's Interchange Administrator how they can be accessed.

SECTION F
MODERATION

MODERATION

The validation of teachers' judgements takes place when candidates have been entered for Final Certification.

This moderation is required to ensure that the judgements made for all the candidates at the centre are aligned to a common standard.

Where significant differences emerge between the decisions made by the teachers at a centre and those required, adjustments are made to the centre's marks.

WHAT HAPPENS AT MODERATION

Teachers are required to submit the final total points score for each of the candidates requiring Final Certification by 15 May.

OCR will then request a sample of candidates' work from the centre and this work will need to be sent to an OCR moderator either by post or to the OCR Repository.

For each candidate in the sample, the moderator will need to be sent:

- the completed Candidate Record Card
- all the marked end-of-item tests (arranged in order)
- the assessed practical task with a completed cover sheet.

The centre will also need to enclose with the sample:

- contact details (preferably the email address of the teacher responsible for the assessment) in case any issues emerge during the moderation.

WHAT THE MODERATOR DOES

The moderator is informed by OCR of the candidates whose work is required for moderation and checks that this is the work that has been sent.

An initial check is made to ensure that the centre has not made any arithmetical or transfer errors in determining the total credit for each of the candidates in the sample.

The moderator then remarks a selection of the completed end-of-item tests to ensure that the marking has been carried out in accordance with the published mark schemes.

The moderator then reviews the practical task, including the background details provided about the task, and the decisions made by the teacher for the performance descriptors in each of the five Aspects.

A marking tolerance is applied by the moderator to allow for minor errors in the marking of the end-of-item tests and for elements of professional judgement in the application of the performance descriptors for the practical task. The moderator attempts to confirm the original marks awarded by the teachers at the centre.

If the decisions made by the teacher are significantly aberrant then the moderator recommends adjustments to the original marks. These recommendations are reviewed by more senior moderators.

Finally, the moderator produces a report for the centre which is sent to the centre at the time the results are released. This report provides information about the sample supplied and any areas in which the teachers' interpretation of the requirements needs to be re-considered.

SECTION G
TEACHER SUPPORT

CONTACT OCR

The Specification, the Teacher Support Book and the OCR website are available to provide detailed information about the way in which the Entry Level Science course can be successfully developed.

If teachers have queries which are not easily resolved by the written information supplied, then there are a number of ways in which OCR can be contacted to obtain specialist advice.

Phone: 01223 553998

Email: science@ocr.org.uk

Online: http://answers.ocr.org.uk

Fax: 01223 552627

Post: Customer Contact Centre
OCR
Westwood Business Park
Coventry
CV4 8JQ

SUPPORT FROM OCR

Information about training events and how to contact OCR to arrange a bespoke course can be found at:

www.ocr.org.uk/training

There is also a science community:

www.social.ocr.org.uk

This community is a place where teachers can ask questions, join in discussions and share useful teaching resources.

SECTION H
APPENDICES

APPENDIX 1: CANDIDATE RECORD CARD

This is a four-sided document consisting of a folded sheet of A3 paper.

Page 1 has spaces to indicate the total points accumulated at the time the course is completed.

Pages 2, 3 and 4 deal with end-of-item test results, can-do tasks and the practical task.

The spaces provided for the dates that tasks and tests are taken are for use by the centre and are not required by OCR.

Teachers will need to monitor the performance of their students at frequent intervals during the course, and as they approach the five key points for Interim Awards of Bronze, Silver, Gold, Platinum and Diamond, the students will need to be aware of how close they are to the achieving their award.

The Candidate Record Card for Megan D'Ucles is partially completed.

The student has:

- completed 7 can-do tasks and has been credited with 3.5 points.
- been assessed on a practical task. The student may be assessed on another practical task later in the course and if the total mark is greater than the original task mark, this new task will replace the original task as part of the assessment total.
- attempted a total of 12 end-of-item tests. The student will almost certainly attempt additional tests during the course and the points obtained from all 36 tests may be used in assessment.

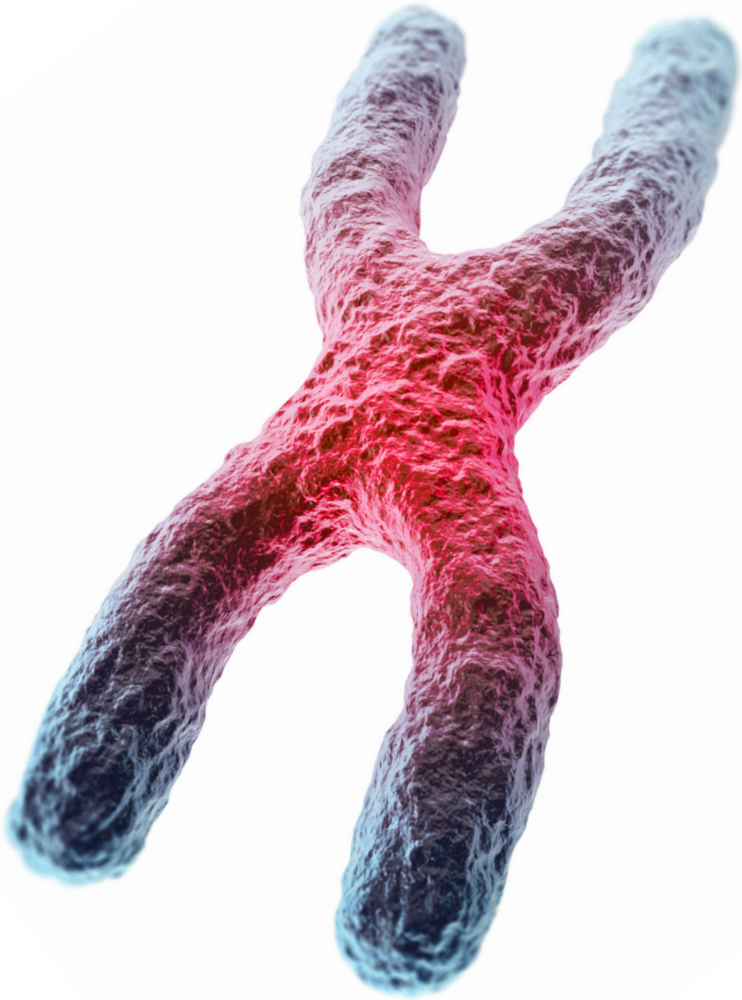
At this point in time, the student is two points below the total required for a level 1 certificate.

The Candidate Record Card also forms a useful 'wrap-round' cover for the portfolio of work assessed.

If requested as part of the moderation process for students requiring Final Certification, the moderator will need to be sent this Candidate Record Card showing the total attainment of the student as well as:

- all the marked end-of-item tests (arranged in order)
- the practical task report with the cover completed and with the background details of the way in which the task was presented to the student.

Centres are recommended to keep a copy of any Candidate Record Cards which are requested.



OCR
Oxford Cambridge and RSA

Entry Level

Science

OCR Entry Level R483
Candidate Record Card

Centre name	**The Napoleon Academy**		
Centre number	**20678**		
Candidate name	**Megan D'Ucles**	**Candidate No.**	**1812**
Task title	**Stretching elastic bands**		

Course start date	**Sept 2017**	**Course end date**	**May 2019**
month/year		month/year	

This document represents a convenient way of monitoring and recording a candidate's attainment. It is also a convenient way of storing a candidate's marks for end of item tests, can-do tasks and the practical task.

Centres are free to develop their own record keeping systems, provided that the level of detail of a candidate's attainment is identical to that shown in this paper-based one.

Summary of achievement at Final Certification.

Entries must be made by 21st February in the year which Final Certification is required

Please ensure that all completed end-of-item test papers and the practical tasks for this candidate are available for moderation if requested.

Date	End-of-item tests points total	Can-do task points total	Practical task points total	Overall Achievement Points Total (rounded down)
	20.5 /72	**3.5** /8	**14** /20	**38** /100

Name of candidate Megan D'Ucles

End-of-item tests:

End-of-item tests				
	Title	**Date**	**Test mark /15**	**Points (see below)**
ELB1	Dead or alive (cells)	22/09/2017	9	**1.5**
ELB2	Babies (reproduction)	13/10/2017	10	**1.5**
ELB3	Control systems			**0**
ELB4	Fooling your senses			**0**
ELB5	Gasping for breath			**0**
ELB6	Casualty	Jan 18	15	**2**
ELB7	You only have one life – look after it!			**0**
ELB8	Body wars			**0**
ELB9	Creepy crawlies			**0**
ELB10	Extinction	10/11/2017	14	**2**
ELB11	My genes			**0**
ELB12	Food factory			**0**
ELC1	Physical or chemical change			**0**
ELC2	Acids and alkalis	Jan 18	14	**2**
ELC3	Everything in its place			**0**
ELC4	Clean air and water	Apr 18	10	**1.5**
ELC5	Novel materials			**0**
ELC6	Sorting out	Jun 18	15	**2**
ELC7	Let's get together			**0**
ELC8	Heavy metal			**0**
ELC9	Fuels	Feb 18	6	**1**
ELC10	Are you overreacting?			**0**
ELC11	How fast? How slow?			**0**
ELC12	CSI plus	Mar 18	10	**1.5**
ELP1	Getting the message			**0**
ELP2	Full spectrum			**0**
ELP3	Medical rays			**0**
ELP4	Hot stuff	Jun 18	13	**2**
ELP5	Alternative energy	24/11/2017	11	**1.5**
ELP6	Nuclear power			**0**
ELP7	Our electricity supply			**0**
ELP8	Attractive forces			**0**
ELP9	Pushes and pulls	15/12/2017	13	**2**
ELP10	Driving along			**0**
ELP11	Fly me to the moon			**0**
ELP12	Final frontiers			**0**
			Points total	**20.5**

Converting marks to points				
Test mark	3-5	6-8	9-11	12-15
Points	0.5	1.0	1.5	2.0

Name of candidate Megan D'Ucles

Can-do tasks: **Please add the date the task was achieved and tick the box next to it**

Universal science skill area			
Reference	**Task**	**Date achieved**	
U1	Use of appropriate apparatus to make and record a range of measurements accurately		☑
U2	Safe use of appropriate heating devices and techniques		☐
U3	Obtaining and recording the results of a practical activity in an appropriate format		☑
U4	Follow a plan		☐

Universal science skill area			
Reference	**Task**	**Date achieved**	
B1	Use of appropriate apparatus to observe and measure a biological change or process		☐
B2	Measure the rate of a reaction in biology		☐
B3	Use appropriate sampling techniques to investigate the distribution and abundance of organisms in an ecosystem via direct use in the field		☐
B4	Use of appropriate apparatus, and techniques to magnify a biological sample	Sep 17	☑

Universal science skill area			
Reference	**Task**	**Date achieved**	
C1	Use of appropriate apparatus to conduct and monitor chemical reactions		☑
C2	Safe use of a range of equipment to purify and/ or separate chemical mixtures		☐
C3	Safe and careful handling of gasses, liquids and solids		☑
C4	Use of appropriate apparatus and techniques carry out electrolysis		☐

Universal science skill area			
Reference	**Task**	**Date achieved**	
P1	Use of appropriate apparatus and techniques to measure and observe the effects of forces on the extension of springs	08/12/2017	☑
P2	Use of appropriate apparatus and techniques for measuring motion		☑
P3	Safe use of appropriate apparatus to measure energy changes/transfers including work done		☐
P4	Use of appropriate apparatus to measure current, potential difference and resistance.		☐

Can-do tasks successfully completed	**Number of tasks**	**Half number of tasks**	**Points total**
	7 /16	**3.5** /8	**3.5** /8

Name of candidate Megan D'Ucles

Practical task:

		0	1-2 marks	3-4 marks
A	Planning to collect data **4**	*	Outlines a simple plan which would enable a limited amount of data to be collected	describes the method and apparatus selected to collect data makes an appropriate comment about safe working
B	Processing the data **4**	*	displays a few results in charts or graphs, using given axes or scales	constructs simple charts or graphs to display data in an appropriate way, allowing some errors in scaling or plotting
C	Patterns in the data **4**	*	notes at least one difference between situation/cases, or compares individual results	identifies trend(s) or pattern(s) in the data
D	Interpreting the data **1**	*	makes a simple attempt to interpret the data	relates the trend(s) or pattern(s) to the relevant science
E	Reviewing the method **1**	*	makes a simple comment about the method used to collect data	comments on the method used and how it affects the quality of data collected

*no response or the response is not sufficient for the award of 1 mark

14 ← Total mark out of 20.

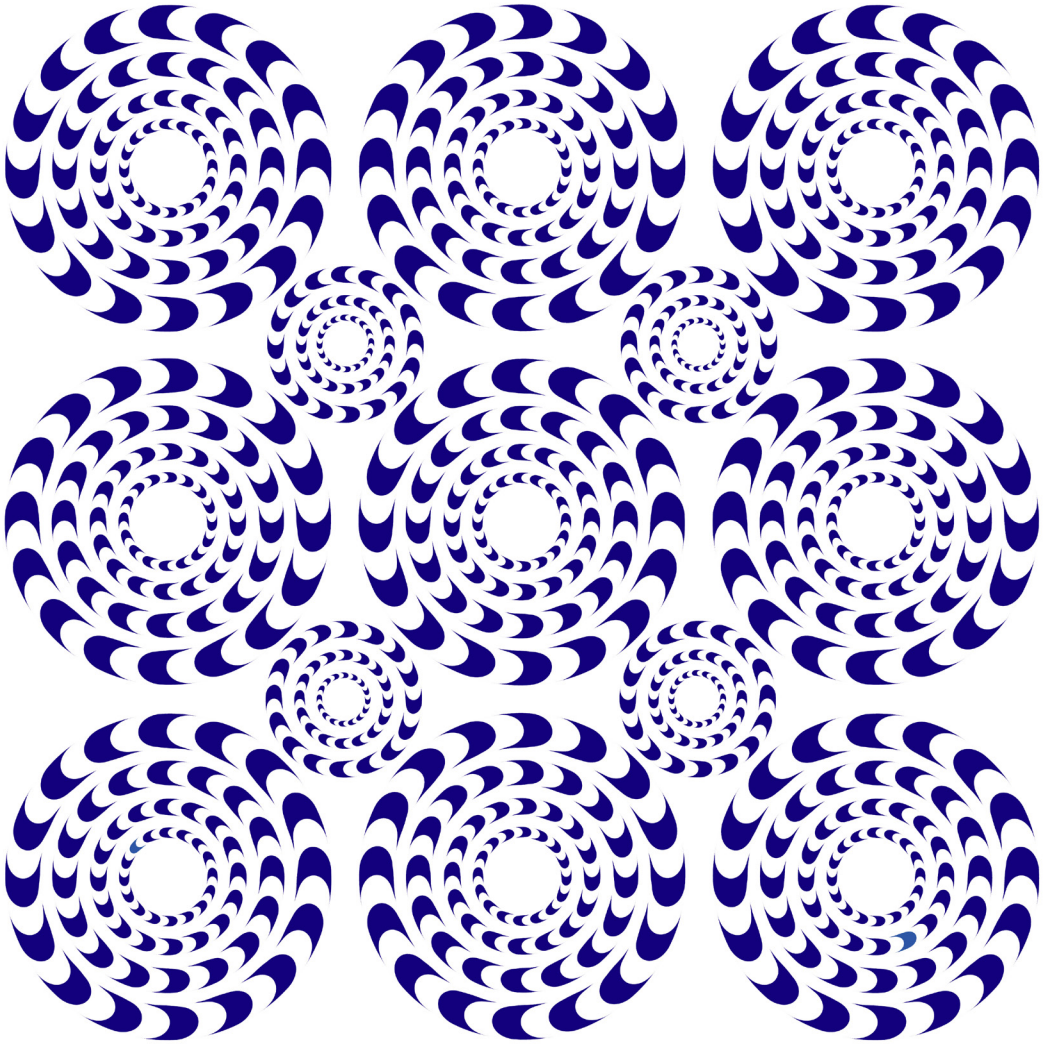
APPENDIX 2: PRACTICAL TASK COVER SHEET

This cover sheet is designed to summarise the marks awarded for each of the five Aspects of the practical task which are used for assessment.

A completed copy should be stapled to the front of the assessed practical task for each student whose work is part of the sample sent to the moderator.

Teachers are advised to annotate each student's practical task to show at what point and for what reason it is felt that a particular performance descriptor has been matched.

Annotation of this type is particularly useful during the moderation process as it can help significantly in enabling a moderator to confirm a teacher's marking decisions when it is not immediately obvious that what a student has written provides a clear match to a performance descriptor.



Name of candidate **Megan D'Ucles**

Practical task:

		0	1-2 marks	3-4 marks
A	Planning to collect data **4**	*	Outlines a simple plan which would enable a limited amount of data to be collected	describes the method and apparatus selected to collect data makes an appropriate comment about safe working
B	Processing the data **4**	*	displays a few results in charts or graphs, using given axes or scales	constructs simple charts or graphs to display data in an appropriate way, allowing some errors in scaling or plotting
C	Patterns in the data **4**	*	notes at least one difference between situation/cases, or compares individual results	identifies trend(s) or pattern(s) in the data
D	Interpreting the data **1**	*	makes a simple attempt to interpret the data	relates the trend(s) or pattern(s) to the relevant science
E	Reviewing the method **1**	*	makes a simple comment about the method used to collect data	comments on the method used and how it affects the quality of data collected

*no response or the response is not sufficient for the award of 1 mark

14 ← Total mark out of 20.

APPENDIX 3: SKILLS AUDIT

Students need to be equipped with the necessary underpinning skills before they undertake a practical task.

Teachers should be aware that without careful preparation of students there is unlikely to be a satisfactory match between their expected performance and their actual performance.

Some of the skills that are needed may have been covered to an adequate level in previous Key Stages but teachers are advised to undertake an audit, which may be across the whole of the curriculum, to determine what additional skills are needed.

The skills will need to be linked to the likely attainment level of the students.

Aspect A (Planning to collect data) A student ...	
	…is able to use the index of a book
	…is able to select appropriate equipment to collect data
	…understands the importance of working safely
	…knows about the Dewey Decimal Classification system
	…can use a search engine to obtain suitable evidence from the Internet
	…can select other relevant information from sources provided by the teacher
	…can indicate where the information has been gathered from

Aspect B (Processing the data) A student ...	
	…can present their data clearly
	…can construct a simple chart to display their data
	…can display their data using a grid with axes and scales provided for them
	…is able to plot their data on a graph grid
	…is able to work out averages from repeated readings they have taken
	…can manipulate, in simple terms, any quantitative evidence they have discovered
	…can indicate where the information has been gathered from

Aspect C (Patterns in the data) A student ...	
	…is able to compare individual results
	…is able to make simple comparisons between different pieces of data
	…can recognise simple trends and patterns in their data

Aspect D (Interpreting the data) A student ...	
	…can make simple conclusions about their data
	…is able to link an outcome to previous experience
	…is able to link a conclusion to a pattern in their data
	…can answer the question underpinning the task studied
	…can link their data and conclusions to the associated scientific principles
	…is able to communicate their findings appropriately using suitable language

Aspect E (Reviewing the method) A student ...	
	…is able to comment about the method(s) used to collect their data
	…is able to make comments about the quality of their data

APPENDIX 4: CAN-DO TASKS – SUGGESTIONS

Universal Science Skill Areas

Task	Description	Example can-do activity
U1	Use of appropriate apparatus to make and record a range of measurements accurately	1. I can measure a person's breathing rate 2. I can measure reaction time 3. I can use a measuring cylinder to measure volume 4. I can identify some common metals: iron (using a magnet) copper, aluminium and lead (by sight and touch)
U2	Safe use of appropriate heating devices and techniques	1. I can heat water using a kettle 2. I can use a water bath to control the temperature of a liquid 3. I can safely use a Bunsen burner 4. I can use a heating plate to safely melt ice and boil water
U3	Obtaining and recording the results of a practical activity in an appropriate format	1. I can measure the effect of exercise on heart rate and record the results in a table 2. I can add results to a bar chart 3. I can plot a line graph of my results 4. I can produce a poster on animal or plant cells
U4	Follow a plan	1. I can write a message in mirror writing 2. I can take a set of fingerprints 3. Given information I can match a plant or animal to their habitat where it lives 4. I can separate a simple mixture (e.g. iron lings/ aluminium, salt/sand)

APPENDIX 4: CAN-DO TASKS – SUGGESTIONS

Biology Skill Areas

Task	Description	Example can-do activity
B1	Use of appropriate apparatus to observe and measure a biological change or process	1. I can measure a person's breathing rate 2. I can measure a reflex reaction 3. I can the effect of salinity on the germination of seedlings
B2	Measure the rate of a reaction in biology	1. I can measure the rate of photosynthesis by counting the bubbles on pond weed 2. I can measure the rate of an enzyme reaction using potato or liver (catalase) in hydrogen peroxide 3. I can measure the effect of amylase on starch using Benedict's solution.
B3	Use appropriate sampling techniques to investigate the distribution and abundance of organisms in an ecosystem via direct use in the field	1. I can carry out a simple line transect survey of a habitat 2. I can use a quadrat to measure the abundance of plant species in a habitat 3. I can use a pit-fall trap or pooter to measure the abundance of animals (invertebrate) species in a habitat
B4	Use of appropriate apparatus, and techniques to magnify a biological sample	1. I can use a hand lens to observe and draw a labelled diagram of a biological specimen 2. I can use a binocular microscope to observe and draw an onion cell 3. I can prepare a microscope slide of a leaf to observe the stomata

Chemistry Skill Areas

Task	Description	Example can-do activity
C1	Use of appropriate apparatus to conduct and monitor chemical reactions	1. I can use a pH probe 2. I can compare the reaction of different indigestion tablets in water 3. I can make and use an indicator from red cabbage
C2	Safe use of a range of equipment to purify and/ or separate chemical mixtures	1. I can make a chromatogram 2. I can make crystals from a salt solution 3. I can plan and carry out an experiment to separate a chemical mixture
C3	Safe and careful handling of gasses, liquids and solids	1. I can safely handle a metal to test its reactivity 2. I can use dilute hydrochloric acid to carry out an experiment 3. I can safely test for hydrogen gas
C4	Use of appropriate apparatus and techniques carry out electrolysis.	1. I can carry out a microscale electrolysis 2. I can copper plate an iron nail cathode using electrolysis 3. I can test for chlorine gas at the anode during electrolysis using litmus paper

Physics Skill Areas

Task	Description	Example can-do activity
P1	Use of appropriate apparatus and techniques to measure and observe the effects of forces on the extension of springs	1. I can measure the extension of a rubber band using different masses 2. I can use a newtonmeter to measure the force on a spring 3. I can test different materials to make a model bungee rope
P2	Use of appropriate apparatus and techniques for measuring motion	1. I can use a stopwatch and ruler to measure ball bearings falling through shampoo 2. I can measure the speed of a toy car on a ramp using light gates 3. I can carry out an experiment to investigate what affects the speed of a falling whirligig
P3	Safe use of appropriate apparatus to measure energy changes/transfers including work done	1. I can use a joulemeter to measure energy transfer from an immersion heater to a beaker of water* 2. I can use a voltmeter and ammeter to measure the energy transferred to a block of metal* 3. I can measure the efficiency of the energy transfer in a whoosh rocket car*
P4	Use of appropriate apparatus to measure current, potential difference and resistance	1. I can use a diagram to set a simple circuit to measure the resistance of a single resistor 2. I can measure the resistance of two resistors in series and in parallel 3. I carry out an experiment to measure how light effects the resistance of an LDR

*Using the calculation work sheet for teachers provided.

Calculation work sheet for Teachers

P2: Use of appropriate apparatus and techniques for measuring motion

- Ball bearings falling through a measuring cylinder filled with shampoo
  1. Distance between marks on measuring cylinder filled with shampoo = ***h*** cm
  2. Time taken for ball bearing to fall = ***t*** seconds
  3. Convert distance in centimetres into metres = ***h*** ÷ 100 = ***H*** m
  4. Velocity of ball bearing = ***H*** ÷ ***t*** m/s metres per second
- Toy car on a ramp, light gates can be set up to measure velocity directly
- Whirligig, uses shampoo method as ball bearings in shampoo but time over 1 metre drop

P3: Safe use of appropriate apparatus to measure energy changes/transfers including work done

- Measuring energy transfer using a joulemeter
  1. Record amount of energy transferred to increase temperature of water by 10°C = ***x*** joule
     Simple joulemeter will beep/flash every 100 J, a digital joulemeter will display a number
- Measuring energy transfer using a voltmeter and ammeter
  1. Time taken to increase temperature of metal block by 10°C = ***t*** seconds
  2. Record potential difference from the voltmeter = ***V*** volts
  3. Record current from the ammeter = ***I*** amps
  4. Energy transferred/work done by the circuit = ***V*** × ***I*** × ***t*** = energy Joule(**J**)
- Measuring energy transfer in a woosh rocket car
  1. Measure the mass of the woosh rocket car =***m*** kilograms (***kg***) to nearest 0.001
  2. Record volume of methanol/ethanol added to rocket = ***x*** millilitres (***ml***)
     Check dropper pipette (20–25 drops per ml) or measuring syringe
  3. Record velocity of rocket car using light gates = ***v*** meters per second (***m/s***)
  4. Calculate the mass of methanol/ethanol burnt = ***x*** × 0.792 methanol or ***x*** × 0.789 ethanol = ***g*** grams
  5. Calculate the chemical energy released by the rocket = ***g*** × 22700 methanol or ***g*** × 29700 ethanol = energy ***C*** Joule (**J**)
  6. Calculate the kinetic energy in the woosh rocket car = 0.5 × ***m*** × ***v*** × ***v*** = energy ***K*** Joule (**J**)
  7. Calculate efficiency of the woosh rocket car = (***K*** ÷ ***C***) × 100 = efficiency %

P4 Safe use of appropriate apparatus to measure current, potential difference and resistance

- Measuring resistance of a single resistor
  1. Record potential difference from the voltmeter = ***V*** volts
  2. Record current from the ammeter = ***I*** amps
  3. Calculate resistance of the resistor = ***V*** ÷ ***I*** = ohms
- Measuring the resistance of two resistors in series and parallel, using a multimeter set to Ω
  1. Record resistance across both resistors directly using a multimeter
     Set range of resistance to be measured before students use multimeters
- Measuring how light effects the resistance of an LDR
  1. Measure the light intensity as a relative measurement (i.e. low, medium and high)
  2. Measure the resistance of the LDR using one of the two methods above.

Experiment Cards

1. **The strength of hair** – How do we measure the properties of materials and why are the results useful?
2. **Ion racing** – Carry out simple precipitation reactions. What reactions happen in the hydrosphere?
3. **Bones** – Carry out an experiment to compare the strengths of solid and hollow structures.
4. **Column Chromatography** – Batch or continuous. Chromatography'.
5. **Seed Germination** – Carry out an experiment to measure effect of increased concentrations of sodium chloride in soil water has a detrimental effect on the germination of seedlings.
6. **Stomata Density** – Make leaf prints and examine stomata under a microscope.
7. **Whirlygig Challenge** – Investigate the factors affecting the speed of a falling whirligig. Explaining motion.
8. **Java Jive** – Carry out an experiment to measure the fall in temperature of hot water.
9. **A Classic Pin-Hole Camera** – Physics lens.
10. **Stress and Strain** – Testing for flexibility and strength.
11. **The silver fingerprint** – Chemistry out there.
12. **To see or not to see. Part I** – In this pair of experiments we examine some aspects of vision that are surprising! Blind spots.
13. **To see or not to see. Part II** – Brain and Mind, test the limits of your peripheral vision.

APPENDIX 5: SUGGESTIONS FOR PRACTICAL TASKS

This list provides some basic suggestions that teachers could use to develop practical tasks for their students.

Outline suggestions for practical tasks	Item
How does exercise affect my pulse rate? Equipment requirements: pulse meters, stop watches, exercise space, step stools. The task also allows access to can-do tasks: U1, U3, U4, B1.	ELB6
How does the temperature of water affect the time taken for a chemical to dissolve? Equipment requirements: Bunsen Burner, tripod, gauze, beaker, measuring cylinder, balance, thermometer, stirring rod, stop clock, salt or other suitable chemical. The task also allows access to can-do tasks: U1, U2, U3, U4, C1, C3.	ELC11
How does the length of resistance wire affect the current passing through it? Equipment requirements: battery or power supply, voltmeter, ammeter, connecting wire, length of resistance wire, metre rule, crocodile clip. The task also allows access to can-do tasks: U1, U3, U4, P4.	ELP7
Does the number of turns on an electromagnet affect the number of paperclips it can pick up? Equipment requirements: low voltage power supply, large nails, insulated wires, paper clips. The task also allows access to can-do tasks: U1, U3, U4.	ELP8

Need to get in touch?

If you ever have any questions about OCR qualifications or services (including administration, logistics and teaching) please feel free to get in touch with our customer support centre.

Call us on
01223 553998

Alternatively, you can email us on
support@ocr.org.uk

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