

GCSE (9-1)

Examiners' report

PHYSICAL EDUCATION

J587

For first teaching in 2016

J587/01 Summer 2022 series

Contents

Introduction	3
Paper 1 series overview	4
Section A overview	5
Question 1	5
Question 2 (a) and (b)	5
Question 4 (a)	6
Question 4 (b)	6
Question 5 (a)	7
Question 5 (b)	7
Question 6	7
Question 7	8
Question 9	8
Question 11	9
Question 12 (a) and (b)	9
Question 14 (a)	10
Question 14 (b)	11
Question 15	11
Question 18	11
Section B overview	12
Question 21 (a) (i), (ii) and (iii)	12
Question 21 (b)	13
Question 22 (a) (i)	14
Question 22 (a) (ii)	14
Question 22 (b)	15
Question 22 (c)	16
Question 23 (a)	18
Question 23 (b)	19
Copyright information	19

Introduction

Our examiners' reports are produced to offer constructive feedback on candidates' performance in the examinations. They provide useful guidance for future candidates.

The reports will include a general commentary on candidates' performance, identify technical aspects examined in the questions and highlight good performance and where performance could be improved. A selection of candidate answers is also provided. The reports will also explain aspects which caused difficulty and why the difficulties arose, whether through a lack of knowledge, poor examination technique, or any other identifiable and explainable reason.

Where overall performance on a question/question part was considered good, with no particular areas to highlight, these questions have not been included in the report.

A full copy of the question paper and the mark scheme can be downloaded from OCR.

Advance Information for Summer 2022 assessments

To support student revision, advance information was published about the focus of exams for Summer 2022 assessments. Advance information was available for most GCSE, AS and A Level subjects, Core Maths, FSMQ, and Cambridge Nationals Information Technologies. You can find more information on our [website](#).

Would you prefer a Word version?

Did you know that you can save this PDF as a Word file using Acrobat Professional?

Simply click on **File > Export to** and select **Microsoft Word**

(If you have opened this PDF in your browser you will need to save it first. Simply right click anywhere on the page and select **Save as . . .** to save the PDF. Then open the PDF in Acrobat Professional.)

If you do not have access to Acrobat Professional there are a number of **free** applications available that will also convert PDF to Word (search for PDF to Word converter).

Paper 1 series overview

J587/01 is one of two examined components for GCSE (9-1) in Physical Education. This component links together the topic areas of applied Anatomy and Physiology and Physical Training. To do well on this paper, candidates need to apply knowledge and understanding using practical examples from sports and practical activities, and to show an understanding of data analysis.

J587/01 includes one extended response question that forms part of synoptic assessment, in which the candidates are required to apply knowledge and understanding from J587/02 to this extended question.

Candidates who did well on this paper generally did the following:	Candidates who did less well on this paper generally did the following:
<ul style="list-style-type: none">• applied practical sporting examples accurately• read each question carefully to make sure answers are relevant• gave detailed explanations in their answers.	<ul style="list-style-type: none">• misinterpreted parts of some questions• gave large amounts of irrelevant information• left some questions unanswered.

Section A overview

Section A consists of twenty questions ranging in size/mark allocation and making 30 marks in total, taken from across the two topics (Anatomy and Physiology; Physical Training). Question formats include multiple choice; true/false; short responses.

Question 1

- 1 Other than sprinting, give an example of an athletic event that is anaerobic.

..... [1]

Many candidates correctly named an anaerobic athletic event.

Some responses stated swimming events or weightlifting, suggesting that the word 'athletic' had not been acknowledged. Candidates are reminded that questions should be read carefully.

Question 2 (a) and (b)

- 2 (a) Name the fitness component that is measured using the 'wall throw' test.

..... [1]

- (b) Describe a practical example to show the importance of this fitness component in a sport of your choice.

.....

..... [1]

Most candidates identified coordination as the fitness component measured by the wall throw test. The second part of the question proved more challenging. Answers were required to show an understanding of coordination and apply their knowledge to a sporting example of their choice. Responses that only named a skill, for example catching a cricket ball, did not show the importance of coordination in the performance of this skill.

Assessment for learning



Centres are encouraged to challenge candidates to explain each of the components of fitness and apply them to a range of sport skills. Questions should focus on **how** each fitness component enables the skill to be performed successfully. This knowledge is required in the 'analysis' section of the AEP and should be reinforced to strengthen exam technique.

Question 4 (a)

- 4 (a) Using **Fig. 1**, draw a line through the centre of the body that represents the transverse axis of rotation.

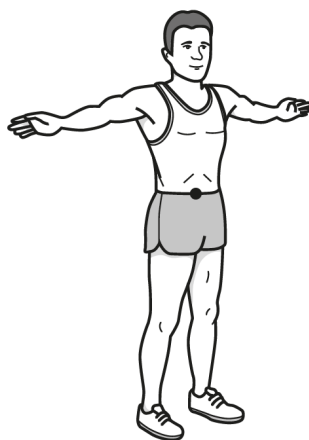


Fig. 1

[1]

Many responses recognised that the black dot represented the centre of the body. Correct lines should mirror the direction of the arms. Horizontal lines were given the benefit of the doubt. Some candidates gave additional information to support their answers such as 'hip to hip' or 'side to side'. These additional comments are helpful to show understanding.

Question 4 (b)

- (b) Give a practical example from physical activity or sport where movement takes place around the transverse axis of rotation.

..... [1]

This was generally well answered. Candidates are encouraged to use practical examples in which the whole body moves around the relevant axis of rotation. Some examples have movements of limbs around different axes. If one of these examples are used, candidates are required to state the specific joint or limb to clarify which movement they are using to support their answer.

Question 5 (a)

5 Fig. 2 shows a diagram of the lungs.

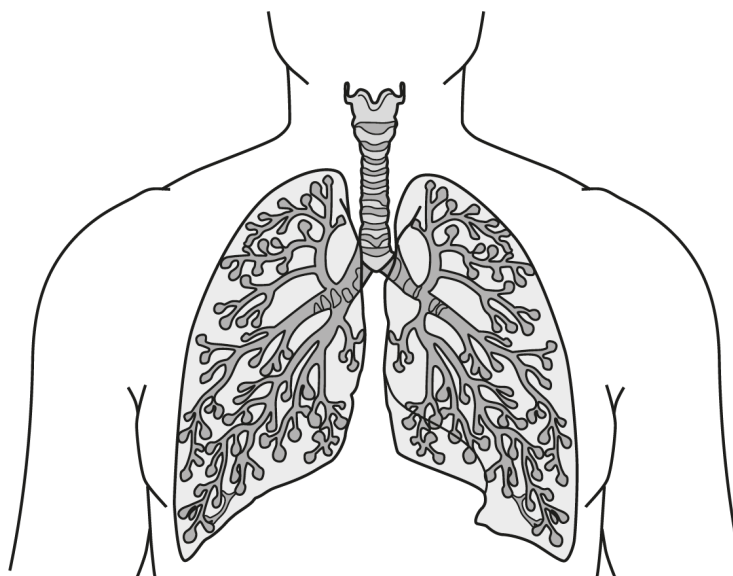


Fig. 2

(a) Draw on Fig. 2 to indicate the position of the diaphragm during inhalation.

[1]

During inhalation the diaphragm flattens. Diagrams needed to show a flat, or almost flat, line to represent this. Answers showing a domed shape with a downward arrow did not gain credit as the domed shape is a feature of expiration.

Question 5 (b)

(b) Describe the role of the diaphragm during exhalation.

[1]

Many responses stated that the diaphragm relaxes during exhalation. Some answers gave contradictory responses, such as the diaphragm contracts and domes or the relaxes and moves down. These contradictory answers do not gain credit.

Question 6

6 Name the artery that carries deoxygenated blood to the lungs.

[1]

This question was generally well answered. However, some candidates did not appear to read the full question as answers given included veins or the vena cava.

Question 7

7 Using **Fig. 3**, state the muscle group **A**.

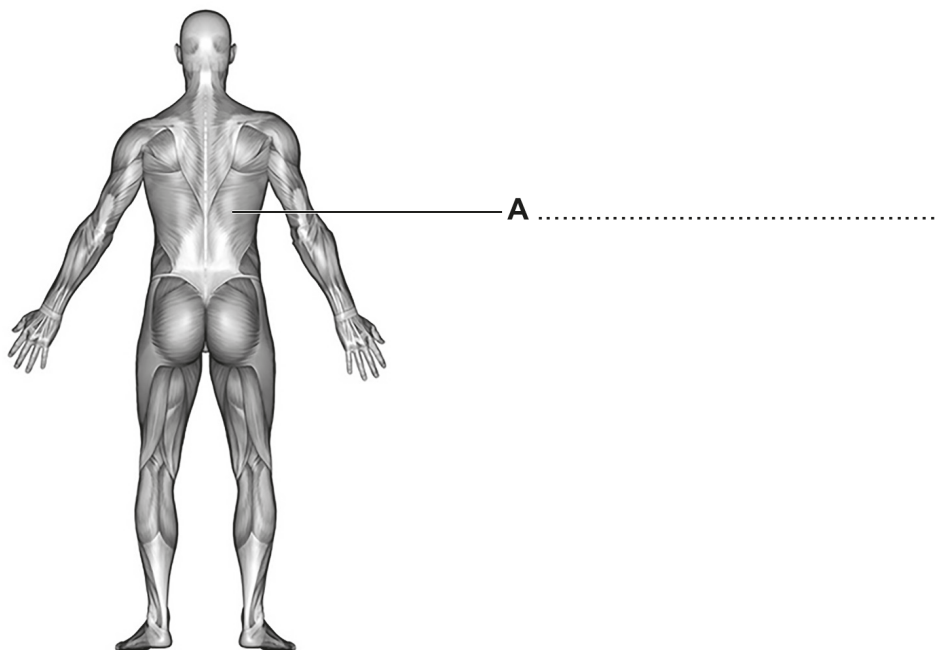


Fig. 3

[1]

Centres are reminded that the correct names of muscles are listed in the specification. Shortened versions, such as lats, are not credited. Phonetic spellings of the full name of the muscle are accepted.

Question 9

9 Explain how the risk of injury to a performer is reduced by wearing an appropriate type of sports footwear.

Type of footwear:

Explanation:

.....

.....

.....

[2]

Most answers explained how the studs on the soles of football boots give more grip. Responses needed to identify a specific feature of a type of sports footwear to explain how this feature reduced the risk of injury. Candidates are reminded that injuries cannot be prevented. This section of the syllabus is focused on minimising risk.

Question 11

11 Describe the role of the intercostal muscles during expiration.

.....
 [1]

The syllabus does not differentiate between the external intercostals and the internal intercostals, so a simple statement saying the intercostal muscles relax gained credit as correct. Candidates who correctly described the role of the internal intercostals were also given credit. However, answers that were contradictory because the movement of the ribs was not matched by the action of the muscles did not gain credit.

Question 12 (a) and (b)

12 Fig. 4 shows a diagram of the heart.

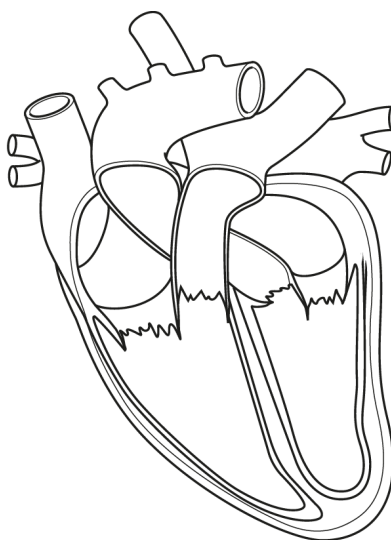


Fig. 4

(a) Using Fig. 4, draw an **X** to indicate the location of the bicuspid valve. [1]

(b) Valves help prevent the backflow of blood.

The bicuspid valve prevents blood flowing back into which chamber of the heart?

..... [1]

Many responses showed with an X the correct location of the bicuspid valve. Some candidates chose to use an arrow pointing to the correct spot and linked to an X. This was an acceptable format.

Assessment for learning

Centres are reminded that images of the heart appear in reverse, so that the right side of the image is actually the left side of the heart, and vice versa.

Many candidates annotate images of the heart on the paper to avoid any confusion and often draw lines indicating the direction of blood through the heart. This helps their understanding of the roles of the structures of the heart and minimises the risk of errors.

Question 14 (a)

14 **Fig. 6** shows the performance of the downward phase of a weight training exercise.

Item removed due to third party copyright restrictions

Fig. 6

- (a) Name **one** agonist and **one** antagonistic muscle used in **Fig. 6** during the downward phase of the exercise.

Agonist:

Antagonist:

[2]

It has been recognised that various texts and on-line resources give opposing answers for this question depending on their definitions of agonist and antagonist. Therefore, biceps and triceps were both credited as agonist, with the opposing muscle gaining credit as antagonist.

Question 14 (b)

- (b) State the type of movement that occurs at the elbow during the downward phase of the exercise.

..... [1]

Well answered by most candidates.

Question 15

- 15 Name the main bone that is protected when a hockey player wears shin pads.

..... [1]

Most candidates correctly identified the tibia. Other named bones in the leg were not credited. Some candidates wrote 'fibia'. This spelling is not accepted as it appears that candidates are hedging their bets as to the correct name.

Question 18

- 18 Mobility and dynamic movements are components of a warm up.

Give a practical example for each.

Mobility:

.....

Dynamic movement:

.....

[2]

Many candidates gave a valid example for the mobility component of a warm up. More successful responses showed an understanding that dynamic movement involves speed and changes of direction in this part of the warm up. Some candidates named agility ladders for dynamic movement. Ladders are a piece of equipment that can be used but are not a practical example of an exercise.

Misconception



There is a misconception that dynamic movement in a warm up involves dynamic stretching. Candidates must be taught that dynamic stretching is used in the mobility component of the warm up. Exercises, such as shuttle sprints, that involve speed and changes of direction are used in the dynamic movement section.

Section B overview

Section B consists of 3 x 10-mark questions. These questions comprise of part-questions. Two 10-mark questions are on Anatomy and Physiology. One 10-mark question is on Physical Training. One of the part-questions is the extended response question.

Question 21 (a) (i), (ii) and (iii)

21 **Table 1** shows a set of results for muscular hypertrophy recorded before, half-way through, and at the end of a 6-month specialised training programme.

Name	Biceps (cm)		
	Before	Halfway	After
Harry	49 cm	51 cm	53 cm
Olivia	22 cm	23 cm	24 cm
Muhammad	33 cm	33 cm	35 cm
Noah	27 cm	30 cm	33 cm
Mia	28 cm	30 cm	29 cm

Table 1

(a) Use the data in **Table 1** to answer the following questions:

(i) Which participant has made the greatest increase in muscle hypertrophy?

..... [1]

(ii) Which participant has made the smallest increase in muscle hypertrophy?

..... [1]

(iii) Which participant experienced reversibility during their training programme?

..... [1]

This was generally well answered. A few candidates mistook Harry for the participant who had made the greatest increase in muscle hypertrophy as he had the largest biceps. However, his increase was 2cms less than Noah's.

Question 21 (b)

- (b) An increase in muscular hypertrophy usually means an increase in muscular strength.

Explain how the long-term benefits of hypertrophy will make Harry's muscles stronger than Olivia's.

.....

.....

.....

.....

.....

..... [3]

The best responses identified long-term benefits of training on the muscular system and explained how these benefits would lead to greater strength. Many candidates struggled to understand what was required and their answers were limited to basic descriptions making a link between muscle size and strength.

Exemplar 1

Harry's muscles will be larger so contain more muscle fibres that will increase strength. Harry's muscles will have built up more resistance to fatigue and lactic acid. Because Olivia's muscles are smaller and contain less muscle fibre she will be weaker.

This response explains that there are more muscle fibres (1) in Harry's muscles and this leads to hypertrophy of muscle. The answer points out that Harry's muscles will be stronger than Olivia's because they are more resistant to fatigue (1) and more resistant to lactic acid (1). The response gives three long-term benefits and these are linked to Harry's greater strength. It scores 3 marks.

Question 22 (a) (i)

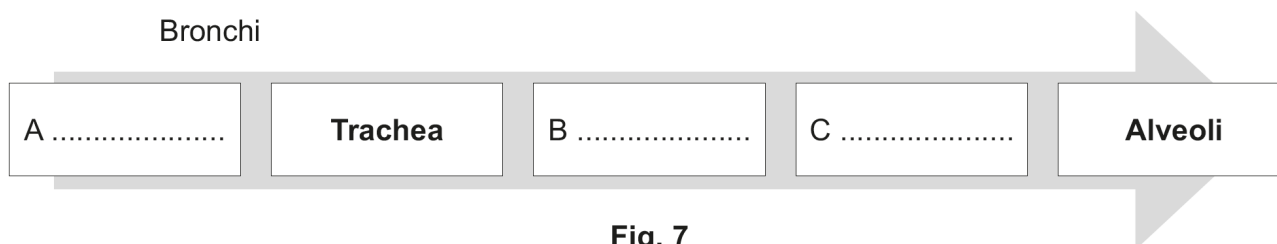
22 (a) (i) Fig. 7 shows the pathway of air through the respiratory system.

Put the following words in the correct order to complete **Fig. 7**.

Bronchiole

Nose

Bronchi



[1]

Most candidates placed the features of the lungs in the correct order. Some candidates placed the bronchioles before the bronchi. A few candidates did not read the options carefully enough and put the mouth for A.

Question 22 (a) (ii)

(ii) Describe the function of the alveoli.

.....

.....

.....

.....

[2]

This was a well answered question. Most candidates stated that the alveoli are the site of gaseous exchange where oxygen diffuses into the blood and carbon dioxide diffuses from the blood into the alveoli.

Question 22 (b)

- (b) Explain the impact of lactic acid production on the muscles and the quality of performance during a long-distance swim.

.....

.....

.....

.....

.....

..... [3]

More successful responses gave clear explanations of the impact of lactic acid on the muscles and effect of this on the quality of a swimmer's performance. Some candidates did not apply their answers to a swimmer.

Misconception



A common misconception is that lactic acid causes cramp. A second misconception is that lactic acid causes delayed onset muscle soreness (DOMS). Neither of these are true. Nor does it prevent you from using muscles. Muscles become fatigued but can still work at a lower intensity. Lactic acid is removed from the muscles after exercise in approximately one hour depending on the type of cool down.

Exemplar 2

Lactic acid leads to muscular fatigue, so the swimmer would not be able to sustain the long distance and would complete ~~the~~ the distance in a longer time. Lactic acid also leads to muscular pain. This could mean the swimmer has to stop swimming being unable to finish due to the pain. If the performer respired aerobically, they wouldn't produce it and so would better sustain the race.

This response explained that lactic acid leads to muscular fatigue (1) which means that they would complete the distance in a longer time (1). They also say that lactic acid leads to muscular pain (1). This scores 3 marks.

Question 22 (c)

- (c) Describe **two** long-term effects of a 6-month training programme on the cardiovascular system.

Explain how these effects can benefit a long-distance swimmer.

Long-term effect 1:

.....

.....

Benefit 1:

.....

.....

Long-term effect 2:

.....

.....

Benefit 2:

.....

.....

[4]

More successful responses described two long-term effects of training on the cardiovascular system. In most cases they were able to explain how each effect benefited a long-distance swimmer. If a benefit for the cardiovascular system was described as an effect it was given credit. Furthermore, if the explanation was correct extra credit was given. However, because of the nature of the question, if the effect was not correct no credit could be given for explaining how that effect could benefit a swimmer.

Some candidates did not read the question carefully and this was reflected in effects that were linked to the muscular system or the respiratory system, not the cardiovascular system.

Exemplar 3

Long-term effect 1:

Increased Cardiac Hypertrophy of the left ventricle

Benefit 1:

More blood is pumped per beat increasing the amount of oxygen supplied to muscles meaning the swimmer can go further aerobically

Long-term effect 2:

Increased maximum cardiac output

Benefit 2:

More blood is pumped per minute increasing the amount of oxygen given to working muscles during maximal efforts. This ^{delays} reduces the onset of lactic acid in muscles [4]
allowing the swimmer to swim faster without fatigue

This response has two correct long-term effects and explains the benefit of each for a swimmer. The first long-term effect is cardiac hypertrophy (1) and the benefit is an increased amount of oxygen to muscles (1). The second long-term effect is an increased maximum cardiac output (1) and the benefit is to swim faster without fatigue (1). A total of 4 marks.

Question 23 (a)

23 (a) Complete the table below about ways to minimise the risk of injury when participating in a training session.

Way to minimise risk	Practical example
Wearing correct clothing	1
2	Gentle stretches and breathing exercises
Appropriate level of activity	3
4	Induction programme or supervision during training session

[4]

Only the strongest candidates were able to give a practical example of correct clothing that showed how the risk of injury was minimised. Many responses described the use of items of equipment or footwear. These answers do not relate to clothing so gain no credit. Most responses correctly gave a warm up or cool down as the answer to 2. Practical examples for appropriate level of activity generally referred to training with others of the same age group. Other acceptable answers talked about sparring with opponents of the same weight or ability. Correct answers for 4 described using correct techniques, lifting safely, or having spotters or a coach present during the training session.

Less successful responses tended to repeat the words in the corresponding boxes or gave limited answers that did not show knowledge and understanding of minimising risk.

Question 23 (b)

(b)* Describe **two** different types of training a games player may use as part of their fitness programme.

Explain how different social factors can encourage participants to take part in training programmes to improve their fitness.

[6]

This question is the extended response question and the synoptic element is to explain how social factors can encourage participation in training programmes.

The best answers showed a degree of planning and this was reflected in clear descriptions of two types of training and a range of social factors.

Many responses contained significant amounts of irrelevant information. Much of this involved evaluating the effectiveness of each type of training. This extra knowledge has not been asked for and is therefore given no credit. Candidates are reminded to focus on the command word in the question.

Some responses described how training could develop social skills. This did not answer the question, however, if the answer was developed to show that these new social skills could encourage continued participation credit was given.

Answers that explained how social factors may discourage participation did not answer the question.

Copyright information

Permission to reproduce all copyright material has been applied for. In some cases, efforts to contact copyright-holders have been unsuccessful and OCR will be happy to rectify any omissions of acknowledgements in future papers if notified.

Supporting you

Post-results services

If any of your students' results are not as expected, you may wish to consider one of our post-results services. For full information about the options available visit the [OCR website](#).

Keep up-to-date

We send a weekly roundup to tell you about important updates. You can also sign up for your subject specific updates. If you haven't already, [sign up here](#).

OCR Professional Development

Attend one of our popular CPD courses to hear directly from a senior assessor or drop in to a Q&A session. Most of our courses are delivered live via an online platform, so you can attend from any location.

Please find details for all our courses on the relevant subject page on our [website](#) or visit [OCR professional development](#).

Signed up for ExamBuilder?

ExamBuilder is the question builder platform for a range of our GCSE, A Level, Cambridge Nationals and Cambridge Technicals qualifications. [Find out more](#).

ExamBuilder is **free for all OCR centres** with an Interchange account and gives you unlimited users per centre. We need an [Interchange](#) username to validate the identity of your centre's first user account for ExamBuilder.

If you do not have an Interchange account please contact your centre administrator (usually the Exams Officer) to request a username, or nominate an existing Interchange user in your department.

Active Results

Review students' exam performance with our free online results analysis tool. It is available for all GCSEs, AS and A Levels and Cambridge Nationals.

It allows you to:

- review and run analysis reports on exam performance
- analyse results at question and/or topic level
- compare your centre with OCR national averages
- identify trends across the centre
- facilitate effective planning and delivery of courses
- identify areas of the curriculum where students excel or struggle
- help pinpoint strengths and weaknesses of students and teaching departments.

[Find out more](#).

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

For more information visit

 **ocr.org.uk/qualifications/resource-finder**

 **ocr.org.uk**

 **[/ocrexams](https://www.facebook.com/ocrexams)**

 **[/ocrexams](https://twitter.com/ocrexams)**

 **[/company/ocr](https://www.linkedin.com/company/ocr)**

 **[/ocrexams](https://www.youtube.com/ocrexams)**

We really value your feedback

Click to send us an autogenerated email about this resource. Add comments if you want to. Let us know how we can improve this resource or what else you need. Your email address will not be used or shared for any marketing purposes.



I like this



I dislike this

Please note – web links are correct at date of publication but other websites may change over time. If you have any problems with a link you may want to navigate to that organisation's website for a direct search.



OCR is part of Cambridge University Press & Assessment, a department of the University of Cambridge.

For staff training purposes and as part of our quality assurance programme your call may be recorded or monitored. © OCR 2022 Oxford Cambridge and RSA Examinations is a Company Limited by Guarantee. Registered in England. Registered office The Triangle Building, Shaftesbury Road, Cambridge, CB2 8EA. Registered company number 3484466. OCR is an exempt charity.

OCR operates academic and vocational qualifications regulated by Ofqual, Qualifications Wales and CCEA as listed in their qualifications registers including A Levels, GCSEs, Cambridge Technicals and Cambridge Nationals.

OCR provides resources to help you deliver our qualifications. These resources do not represent any particular teaching method we expect you to use. We update our resources regularly and aim to make sure content is accurate but please check the OCR website so that you have the most up to date version. OCR cannot be held responsible for any errors or omissions in these resources.

Though we make every effort to check our resources, there may be contradictions between published support and the specification, so it is important that you always use information in the latest specification. We indicate any specification changes within the document itself, change the version number and provide a summary of the changes. If you do notice a discrepancy between the specification and a resource, please [contact us](#).

You can copy and distribute this resource freely if you keep the OCR logo and this small print intact and you acknowledge OCR as the originator of the resource.

OCR acknowledges the use of the following content: N/A

Whether you already offer OCR qualifications, are new to OCR or are thinking about switching, you can request more information using our [Expression of Interest form](#).

Please [get in touch](#) if you want to discuss the accessibility of resources we offer to support you in delivering our qualifications.