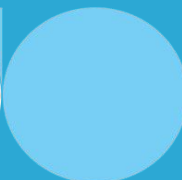


# Improving candidate performance through the use of mark schemes and Principal Examiner Reports

Simon Barr  
Product Manager (Sciences),  
Assessment

14<sup>th</sup>-15<sup>th</sup> September 2019



# Overview

- ▶ Code of Practice
- ▶ The marking process
- ▶ Generic marking principles
- ▶ Using Principal Examiner Reports
- ▶ Using mark schemes in the classroom
- ▶ Time for questions



# Code of Practice

- ▶ Cambridge International aims to produce assessments that are valid, reliable and accessible.
- ▶ Question papers and mark schemes should be related directly to, and consistent with, the content and skills defined in the syllabus, specimen assessment materials and past papers.
- ▶ Candidates' work should be marked by appropriately qualified and trained examiners.



# The marking process (1)

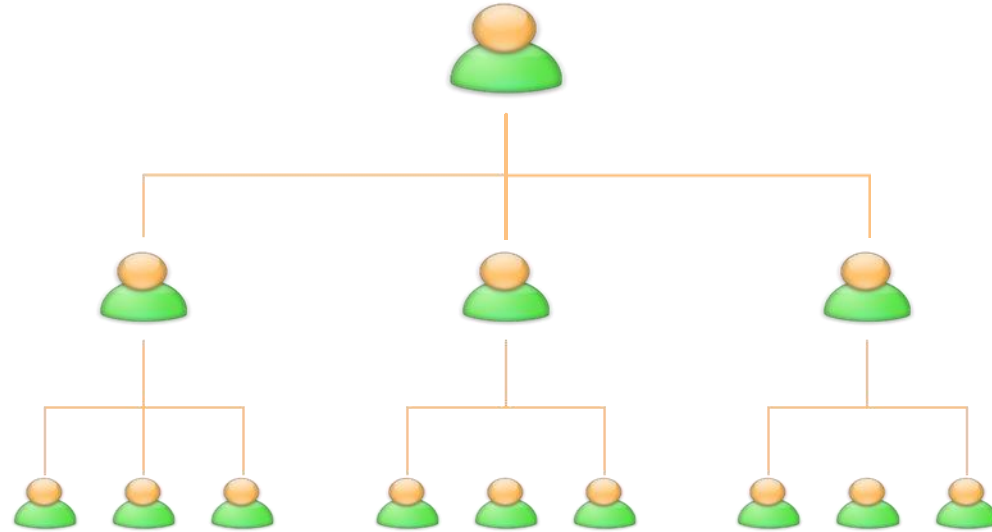
- ▶ **Approving Examiners**
- ▶ Relevant degree
- ▶ Recent and relevant teaching experience
- ▶ Pass Test to Assess (or equivalent)
- ▶ Given eligibility to mark a range of papers
- ▶ Added to an appropriate marking panel
- ▶ Examiner performance reviewed

Item	Mark	Definitive Mark	Difference
1a	1.00	1.00	0.00
1b	3.00	3.00	0.00
1c	2.00	1.00	1.00
2a	3.00	3.00	0.00
2b	2.00	2.00	0.00
2c	2.00	2.00	0.00
3a	1.00	1.00	0.00
3bi	2.00	2.00	0.00
3bii	3.00	3.00	0.00
3biii	1.00	1.00	0.00
3ci	0.00	0.00	0.00
3cii	1.00	1.00	0.00
4a	1.00	1.00	0.00
4b	0.00	0.00	0.00
4c	1.00	0.00	1.00
5a	1.00	1.00	0.00
5bi	2.00	2.00	0.00
5bii	1.00	1.00	0.00
5c	2.00	2.00	0.00
5d	1.00	1.00	0.00
6ai	1.00	1.00	0.00
6aii	1.00	1.00	0.00
6bi	2.00	2.00	0.00
6bii	0.00	0.00	0.00



# The marking process (2)

- ▶ **Marking panels**
  - ▶ Principle Examiner (PE)
  - ▶ Team Leaders (TLs)
  - ▶ Assistant Examiners (AEs)
- 
- ▶ **Standardisation process**
  - ▶ Candidates' responses
  - ▶ Practice scripts
  - ▶ Standardisation scripts
  - ▶ Seeded scripts



# On-screen marking



Home / Worklist Response 610017 1 of 3 in worklist

3

Answer all the questions in the spaces provided.  
Relevant Data, Formulae and the Periodic Table are provided in the Data Booklet.

1 The mass of a cube of aluminium is found to be 580g with an uncertainty in the measurement of 10g.

(a) Determine the percentage uncertainty in this measurement.

uncertainty = ..... % [1]

(b) Each side of the cube has a length of  $(6.0 \pm 0.1)$  cm.  
Calculate the density of aluminium with its uncertainty. Express your answer to an appropriate number of significant figures.

density = .....  $\pm$  .....  $\text{g cm}^{-3}$  [4]

[Total: 5]

Annotations ON Max 25

Section A

Q1 1 /25

Q2 2 -/25

Q3 3 -/25

Section B

Q4 4 -/25

Q5 5 -/25

Q6

Complete

0% Total marks ... NR

Add comment here



# Generic Marking Principles

- ▶ **Marks must be awarded:**
- ▶ in line with the expectations of the mark scheme and as exemplified by the standardisation scripts (MP1)
- ▶ as whole marks only (MP2)
- ▶ positively and not deducted for errors or omissions (MP3)
- ▶ consistently (MP4)
- ▶ using the full range of marks as defined in the mark scheme (MP5)
- ▶ as defined in the mark scheme and not in terms of grade descriptors or expected grade thresholds (MP6)



# Principal Examiner Reports

- ▶ Written by Principal Examiners
- ▶ Informed by actual candidate responses
- ▶ Includes feedback from Team Leaders and Assistant Examiners
- ▶ Uses statistical evidence, such as Item Level Data (e.g. facility value)
- ▶ Includes key messages, general comments and comments on specific questions

Cambridge Assessment International Education

Syllabus  
Cambridge IGCSE®  
Mathematics 0580

For examination (examined November 2020, 2021 and 2022)

Cambridge International General Certificate of Secondary Education  
0580 Mathematics 0580  
Principal Examiner Report for Teachers

**MATHEMATICS**

Examination  
Paper 4 (Paper 4)

**Key Issues from a particular paper are described in detail by the principal examiner.**

An overview of the questions is given alongside examples of questions that were answered well and questions that candidates found more difficult.

Issues on specific questions are highlighted alongside the common misconceptions and suggestions on how candidates could have improved their answers.

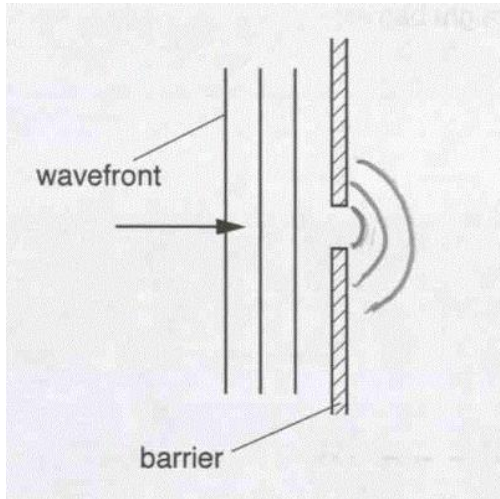




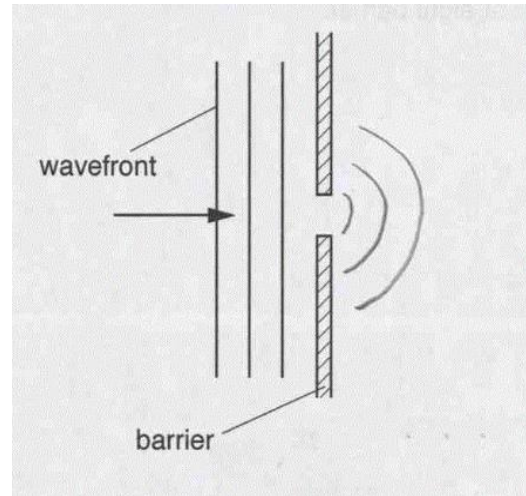
# Example questions and mark schemes

- ▶ IGCSE Physics (0625), June 2018, Paper 41, Q6(a)(i)

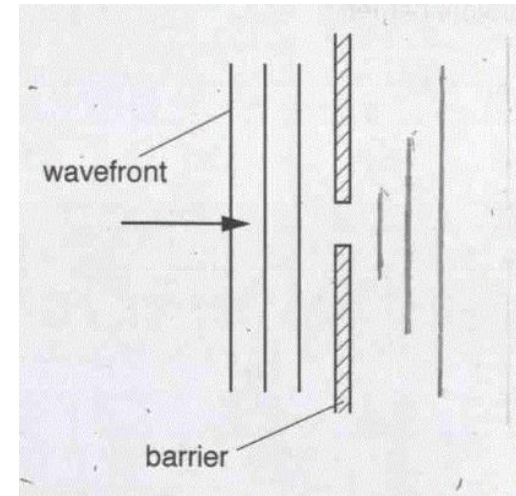
- ▶ Candidate A



- ▶ Candidate B



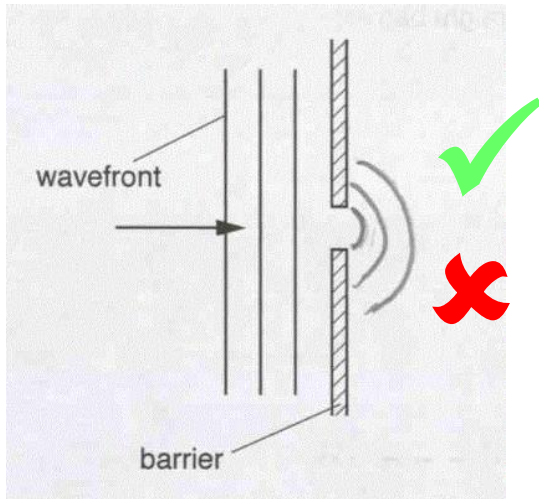
- ▶ Candidate C



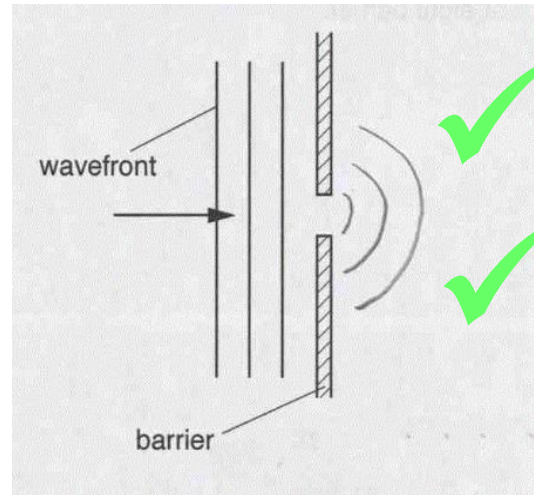
# Example questions and mark schemes

- ▶ IGCSE Physics (0625), June 2018, Paper 41, Q6(a)(i)

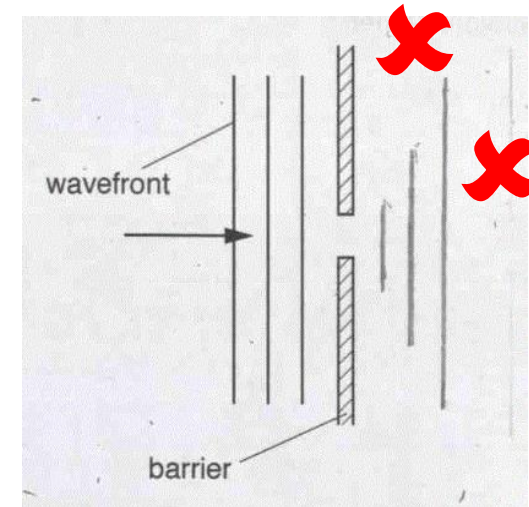
- ▶ Candidate A



- ▶ Candidate B



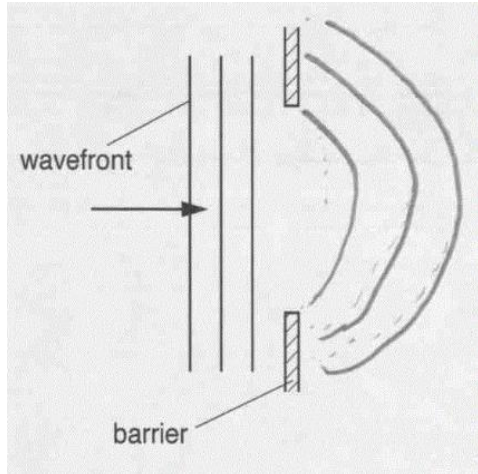
- ▶ Candidate C



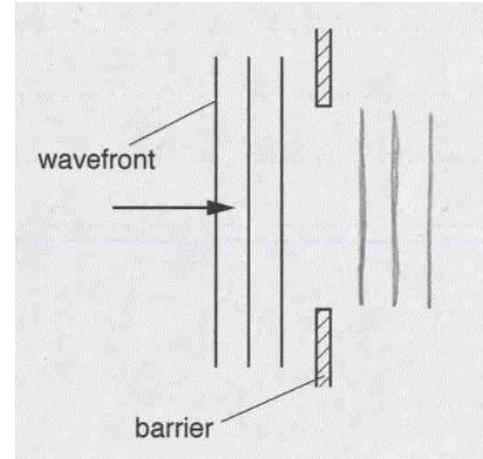
# Example questions and mark schemes

- ▶ IGCSE Physics (0625), June 2018, Paper 41, Q6(a)(ii)

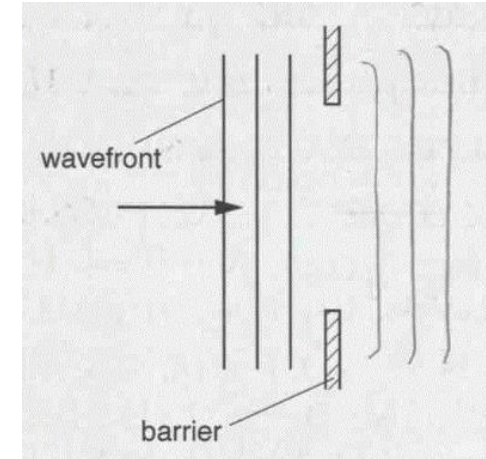
- ▶ Candidate A



- ▶ Candidate B



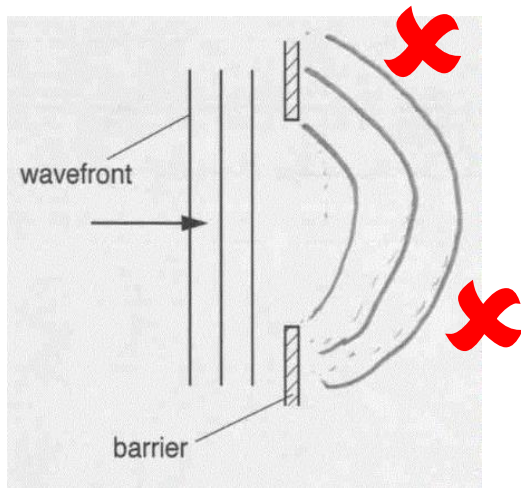
- ▶ Candidate C



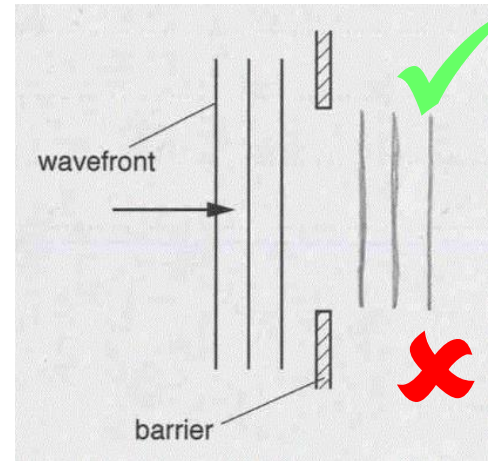
# Example questions and mark schemes

- ▶ IGCSE Physics (0625), June 2018, Paper 41, Q6(a)(ii)

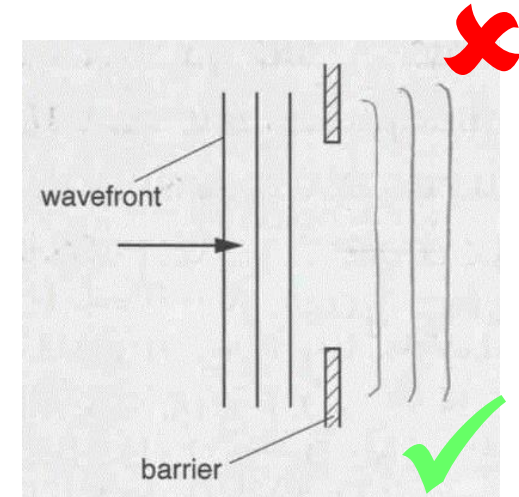
- ▶ Candidate A



- ▶ Candidate B

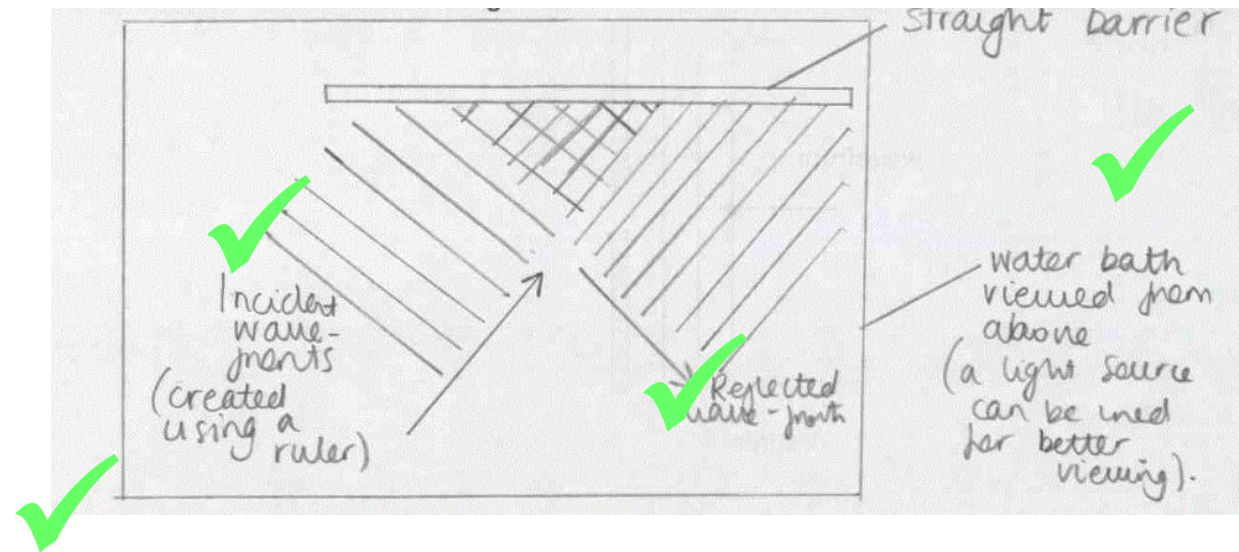


- ▶ Candidate C



# Example questions and mark schemes

- ▶ IGCSE Physics (0625), June 2018, Paper 41, Q6(b)
- ▶ Candidate A



Using a shallow water bath, place a straight barrier on the end of the bath. Next, using a ruler, create wavefronts by raising and lowering the rule on the water.

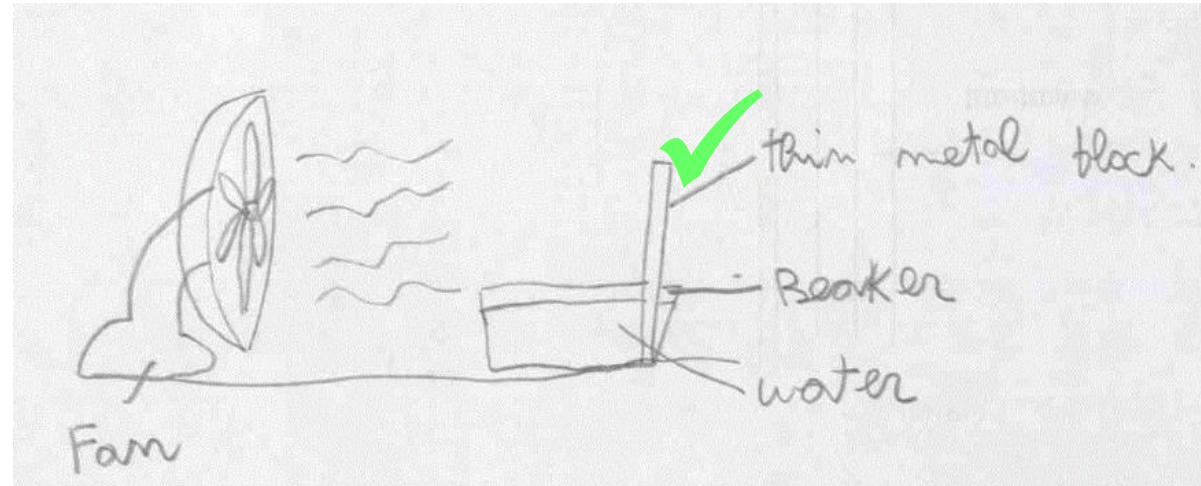
Ensure this is done at an angle, so that the reflection may be observed and ensure this is done at the same speed so that the frequency and wavelength of the water remain constant.

Next, observe what happens when the wavefronts hit the barrier. The water should reflect and the reflected wavefronts should have the same wavelength and frequency.



# Example questions and mark schemes

- ▶ IGCSE Physics (0625), June 2018, Paper 41, Q6(b)
- ▶ Candidate B



*Take a fan and put it in front of a beaker containing water.*

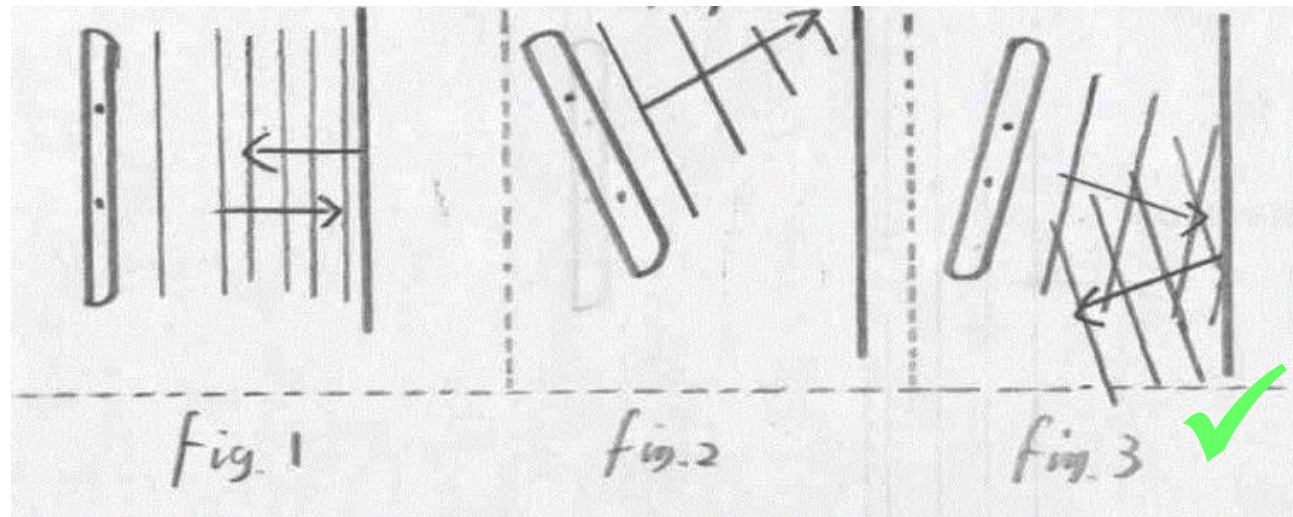
*Take a thin metal block and put it in the beaker on the opposite side to the fan.*

*Turn on the fan and observe how water behaves when waves hit the block.*



# Example questions and mark schemes

- ▶ IGCSE Physics (0625), June 2018, Paper 41, Q6(b)
- ▶ Candidate C



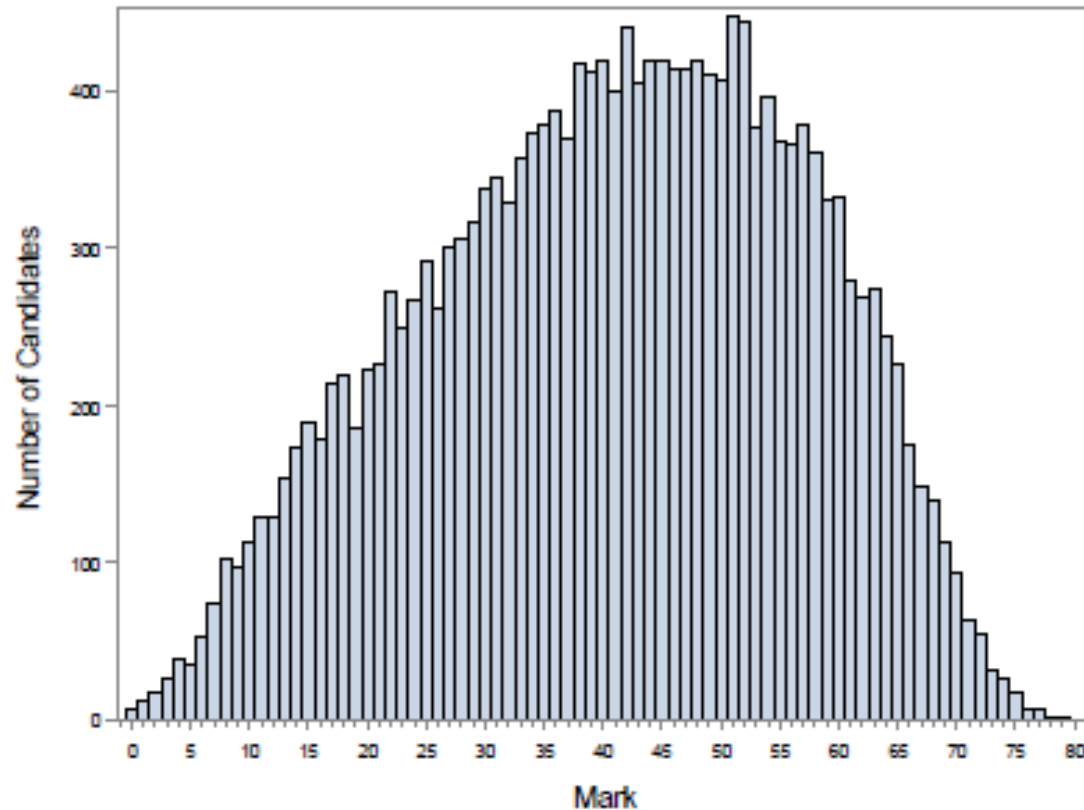
- ▶ Use a vibrating bar to create straight waves with a constant speed, wavelength and frequency. Perform experiments (shown in Figs. 1, 2 and 3) with the vibrating bar at different angles to the barrier. Use a lamp above the table to create shadows of waves that are then analysed later with pencil drawings of the directions of wavefronts and refractions.



# Item Level Data

IGCSE Physics (0625), June 2018, Paper 41 (80 marks)

**Total Mark Frequency Distribution**



**n = 19 089**  
**mean = 40.9**  
**max mark = 79**





# Principal Examiner Reports

- ▶ **Key messages**
- ▶ What candidates need to do to improve their performance
- ▶ **General comments**
- ▶ An overview of the assessment with examples of questions that candidates found easy and questions that were challenging
- ▶ **Comments on specific questions**
- ▶ Question by question commentary that highlights common misunderstandings

Cambridge Assessment International Education

Syllabus  
Cambridge IGCSE®  
Mathematics 0580  
For examination in June and November 2020, 2021 and 2022

Cambridge International General Certificate of Secondary Education  
Mathematics  
Paper 0580/21

**Key Issues from a particular paper are described in detail by the principal examiner.**

**General comments.**  
Candidates need to check their number system competency as it is essential to the success of several questions in this section. Candidates should be aware of the common misconception of dividing a number by a number. This error should result in a candidate giving an incorrect answer for question 14. Candidates should also be aware of the common misconception of dividing a number by a number. This error should result in a candidate giving an incorrect answer for question 14.

**Comments on Specific Questions.**  
In question 1  
Candidates who had a good understanding of the paper and were able to give the correct answer. However, many candidates for question 14 had the correct answer but did not show their working.

**Issues on specific questions are highlighted alongside the common misconceptions and suggestions on how candidates could have improved their answers.**



# Principal Examiner Reports

## IGCSE Physics (0625), June 2018, Paper 41 (80 marks)

### ▶ Key messages

- ▶ In numerical work involving the use of a formula, candidates should write down the formula rather than beginning by writing down numbers. Credit can usually be awarded for the statement of a correct formula, but if any of the numbers that are written down are wrong, and with no formula, no credit is awarded.
- ▶ Candidates should note the command words used in the questions and should ensure they follow these instructions. For example in **Question 5(b)(iv)** candidates were asked to “state and explain”. Many candidates, in answering this question, only made a statement and did not include an explanation.



# Principal Examiner Reports

## IGCSE Physics (0625), June 2018, Paper 41 (80 marks)

### ▶ **General comments**

- ▶ The paper allowed candidates of all abilities to apply their knowledge and demonstrate their capabilities over questions of variable difficulty. There were few examples of wrong or missing units in numerical answers in this series.

### ▶ **Comments on specific questions**

#### ▶ **Question 6**

- ▶ **(a)(i)** Most answers were drawn correctly. However, some candidates drew arcs which were clearly not centered on the centre of the gap and others had inaccurate spacing of the arcs. Candidates who used compasses tended to gain full credit. Question by question commentary that highlights common misunderstandings. Some candidates drew only two wavefronts and could not be awarded the second marking point.



# Principal Examiner Reports

IGCSE Physics (0625), June 2018, Paper 41 (80 marks)

- ▶ **Comments on specific questions**
- ▶ **Question 6**
- ▶ **(a)(ii)** Only the strongest candidates answered this question correctly.

Although most knew that the wavefronts had straight sections, they often showed them longer than the width of the gap, or increasing in length as their distance from the gap increased.

The sections of the wavefronts adjoining the straight sections were sometimes not curved, showing too much curvature or extending as far as the barrier. The spacing of the lines was ignored as it was already marked in part (a)(i).



# Principal Examiner Reports

## IGCSE Physics (0625), June 2018, Paper 41 (80 marks)

- ▶ **Comments on specific questions**

- ▶ **Question 6**

- ▶ **(b)** Many answers failed to describe an experiment and just showed the final wave diagram. Some diagrams showed rays rather than wavefronts or showed refraction rather than reflection.

Stronger answers described a container for the water, a description of barrier or how wavefronts were produced.

Candidates who did not draw a labelled diagram were not usually awarded full marks.



# How candidates can improve

- ▶ Follow the rubric and answer the question being asked
- ▶ Avoid trying to maximise the chances of success with multiple responses
- ▶ Know the meaning of command words
- ▶ Describe, with a labelled diagram...
- ▶ State and explain (express in clear terms and give reasons for...)
- ▶ Compare (identify/comment on similarities and/or differences)
- ▶ Calculate/determine (work out/identify from given data)
- ▶ State the correct formula in words or symbols
- ▶ Show working in calculations
- ▶ Give units for calculated quantities
- ▶ Practice applying their knowledge in unfamiliar situations



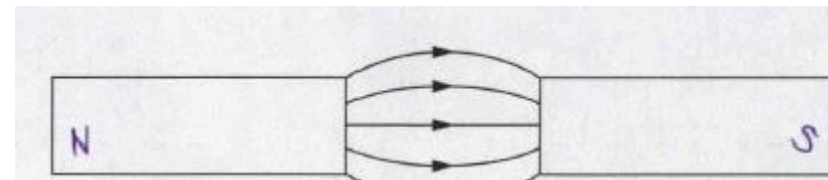
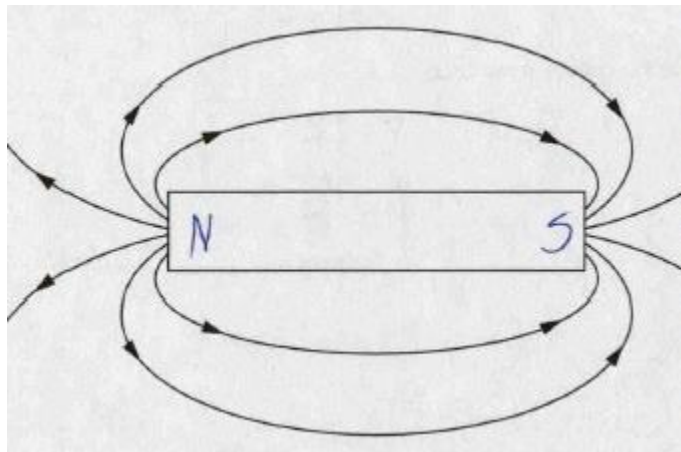
# Using mark schemes

- ▶ Single mark questions often require a simple statement or answer.
- ▶ Candidates should be discouraged from giving a list of responses as contradictions may mean marks cannot be awarded.
- ▶ Multiple mark questions usually expect more than one point and often maximum marks can be awarded for a range of marking points.
- ▶ Candidates may not be awarded full marks for calculations without a unit.
- ▶ Candidates should give numerical answers to an appropriate number of significant figures.
- ▶ Candidates should show their working in calculations as they may be awarded some method marks if the final answer is incorrect.
- ▶ If candidates make an error in one question part they may still be awarded marks in subsequent question parts by carrying forward the error.



# Example Candidate Responses

- ▶ Exemplifies standards
- ▶ Gives the expectations of the mark schemes
- ▶ Illustrates different levels of candidates' performance
- ▶ Relates performance against the syllabus (content and assessment objectives)
- ▶ Describes how candidates could have improved their answers
- ▶ Highlights common misunderstandings





# Support for teachers

- ▶ **Cambridge Assessment International Education**

- ▶ <http://www.cambridgeinternational.org/>

- ▶ Endorsed textbooks

- ▶ **School Support Hub**

- ▶ <https://schoolsupporthub.cambridgeinternational.org>

- ▶ Syllabuses

- ▶ Question papers, mark schemes, Examiner reports, grade thresholds

- ▶ Schemes of work

- ▶ Example Candidate Responses (exemplifying common misunderstandings)

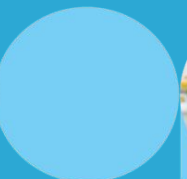
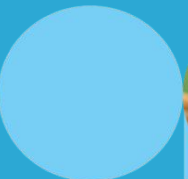
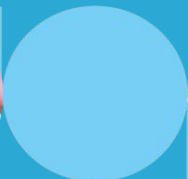
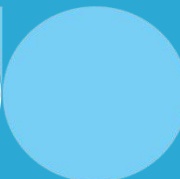
- ▶ Teacher guides

- ▶ Resource Plus

- ▶ Discussion forum



Thank you  
Any questions?





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# Learn more!

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