CAMBRIDGE
International Education

Specimen Paper Answers
Paper 3 Calculator (Core)

Cambridge IGCSE™/Cambridge IGCSE™ (9–1)
Mathematics 0580/0980

For examination from 2025

v1

Cambridge Pathway

Contents

Introduction

These specimen answers have been produced by Cambridge International ahead of the examination in 2025 to exemplify approaches to the questions for those teaching Cambridge IGCSE Mathematics (0580). Questions have been selected from Specimen Paper 3, Questions 9, 13(b), 13(e)(i), 18(b) and 21.

These are model answers. The working is accompanied by a brief commentary explaining alternative approaches or key considerations for the answers. Comments include more information about common misconceptions and key steps in working for students to be aware of.

The specimen materials are available to download from the School Support Hub at **www.cambridgeinternational.org/support**

2025 Specimen Paper 03

2025 Specimen Paper Mark Scheme 03

Past exam resources and other teaching and learning resources are available on the School Support Hub **www.cambridgeinternational.org/support**

Details of the assessment

The syllabus for Cambridge IGCSE Mathematics 0580 is available at **www.cambridgeinternational.org**

Assessment overview

All candidates take two components.

Candidates who have studied the Core subject content, or who are expected to achieve a grade D or below, should be entered for Paper 1 and Paper 3. These candidates will be eligible for grades C to G.

Candidates who have studied the Extended subject content, and who are expected to achieve a grade C or above, should be entered for Paper 2 and Paper 4. These candidates will be eligible for grades A* to E.

Candidates should have a scientific calculator for Paper 3 and Paper 4. Calculators are **not** allowed for Paper 1 and 2.

Please see the *Cambridge Handbook* at **www.cambridgeinternational.org/eoguide** for guidance on use of calculators in the examinations.

Core assessment

Core candidates take Paper 1 and Paper 3. The questions are based on the Core subject content only:

Paper 1: Non-calculator (Core)	
1 hour 30 minutes	
80 marks	50%
Structured and unstructured questions	
Use of a calculator is **not** allowed	
Externally assessed	

Paper 3: Calculator (Core)	
1 hour 30 minutes	
80 marks	50%
Structured and unstructured questions	
A scientific calculator is required	
Externally assessed	

Extended assessment

Extended candidates take Paper 2 and Paper 4. The questions are based on the Extended subject content only:

Paper 2: Non-calculator (Extended)	
2 hours	
100 marks	50%
Structured and unstructured questions	
Use of a calculator is **not** allowed	
Externally assessed	

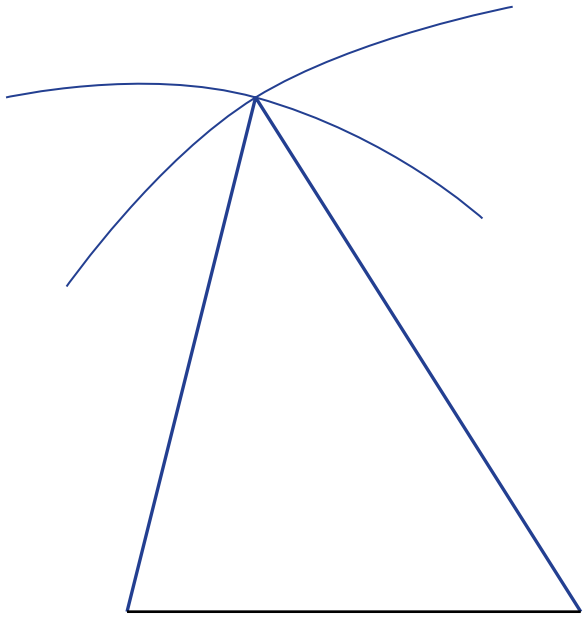
Paper 4: Calculator (Extended)	
2 hours	
100 marks	50%
Structured and unstructured questions	
A scientific calculator is required	
Externally assessed	

Question 9

Specimen answer

9 A triangle has sides 6 cm, 7 cm and 8 cm.

Using a ruler and compasses only, construct the triangle.
The 6 cm line has been drawn for you.
Show all your construction arcs.



Construction method; not required in response:

- Using the ruler, open the compasses to 7 cm.
- Place compass point on the left end of the given base line and draw an arc above it.
- Using the ruler, open the compasses to 8 cm.
- Place compass point on the right end of the given base line and draw an arc to cross the first arc.
- Using the ruler, draw lines from the ends of the base to the point of intersection of the arcs to form a triangle.

[2]

Examiner comment

Candidates need to accurately use both a ruler and compasses to construct the triangle. The construction arcs must be left clearly visible. There is a part mark available for the correct triangle drawn with incorrect or no arcs or for two arcs drawn correctly.

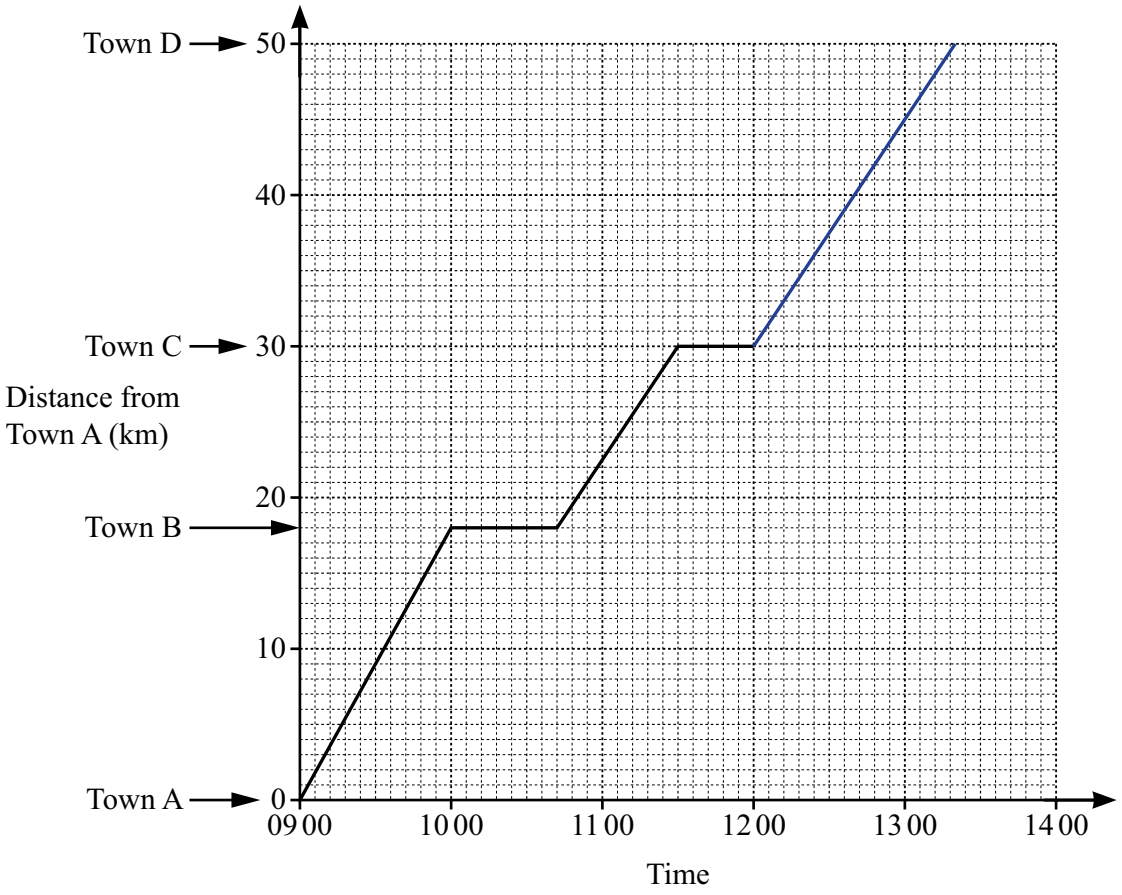
Common errors and general guidance for candidates

- The sides 7 cm and 8 cm can be either way around in the response. This would give a reflection of the triangle.
- If construction arcs are not visible full marks will not be awarded.
- This is a construction and should be accurate within 2 mm. Candidates need to take care the compasses remain open at the correct lengths when drawing the arcs.

Question 13(b) and 13(e)(i)

Specimen answer

13 Jason leaves Town A at 09 00 and cycles to Town C.
The travel graph shows Jason's journey.



(b) Jason leaves Town C at 12 00.
Jason continues to Town D at a constant speed of 15 kilometres per hour.

(i) Calculate the time Jason takes to travel from Town C to Town D.
Give your answer in hours and minutes. [2]

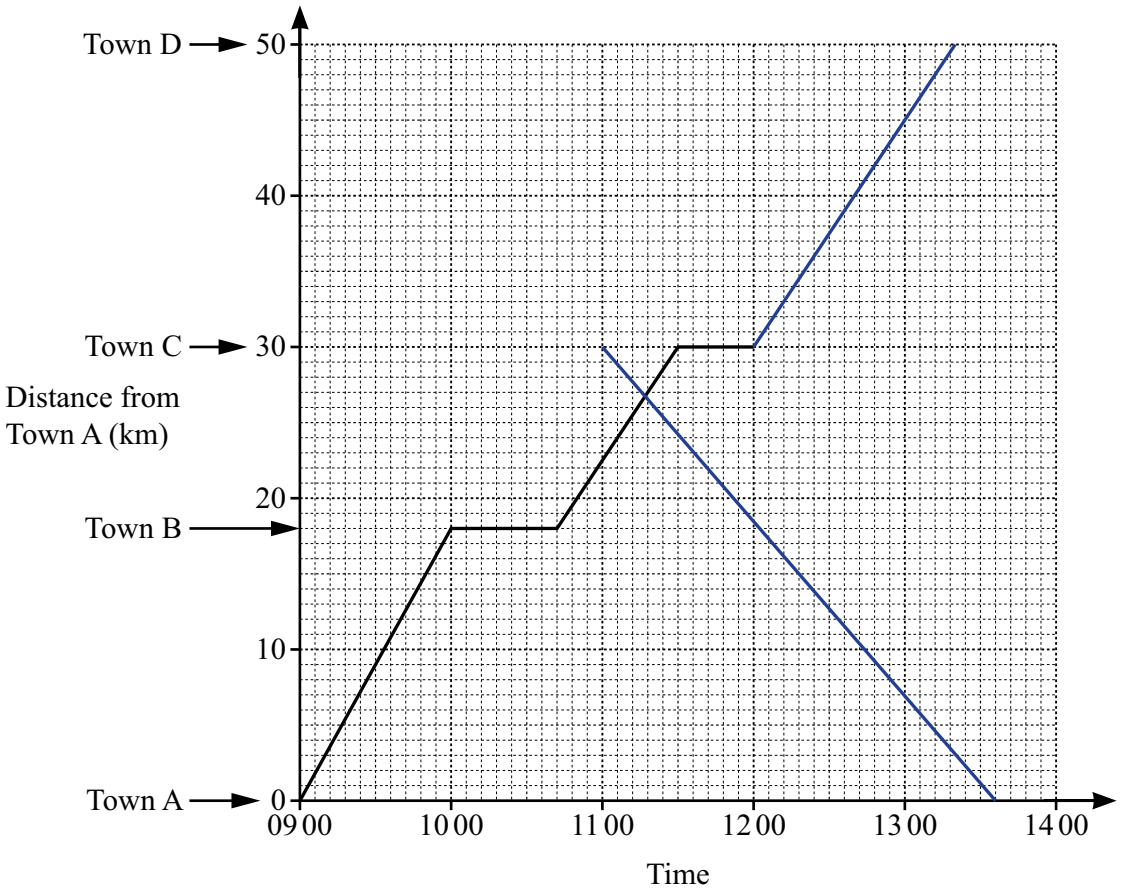
Distance from C to D = 50 – 30 = 20 km
Speed = 15 km/h
Time = hours
1.333... × 60 = 80 mins = 1 hour 20 mins
OR
$\frac{4}{3} \times 60 = 80$ mins = 1 hour 20 mins

(ii) On the travel graph, complete Jason's journey. [1]

Instructions, not required in the candidate's response:
• On the graph, plot a point at Town C at 12 00. • Plot a second point at Town D at 13 20. • Use the ruler to draw a line joining these two points.

(e) Lisa leaves Town C at 11 00 and arrives at Town A at 13 42.
Lisa cycles at a constant speed on the same road as Jason, without stopping.

(i) Draw a line on the travel graph to show Lisa's journey. [2]



On the graph, plot a point at Town C at 11 00. Plot a second point at Town A at 13 42. Use the ruler to draw a line joining these two points.

Examiner comment

(b) (i) This question requires more than one stage of working. The candidate first needs to find the distance from towns C to D from reading from the graph. Then, the standard method is to use the formula $T = \frac{D}{S}$.

Candidates need to be aware that the speed given is in km/h and the time is required in hours and minutes and so a conversion of $\times 60$ is required at some stage of the working. For those who prefer to work in fractions, converting $\frac{20}{15} = \frac{4}{3} = 1\frac{1}{3}$ hours, gives the time of 1 hour 20 minutes.

It is really important that candidates show clear working in this part in order to gain the mark for their method if the final answer is incorrect.

(b) (ii) Candidates need to take time to understand the scales used on the axes. Candidates can either add their previous answer of 1 hour 20 minutes to 12 00 to plot a point at (13 20, 50) or refer to the speed given, 15 km/h, to plot a point at (13 00, 45).
The ruled line drawn must join Towns C and D through these points. The horizontal scale means plotting the point at Town D at exactly 13 20 is not easy. It is recommended that candidates use the given information that Jason cycles from Town C at a speed of 15 km/h to work out he must be 45 km from Town C an hour later, and so the line must pass through (13 00, 45).

(e) (i) Candidates need to take time to understand the scales used on the axes and the information given in the question. They are required to know that since Lisa cycles at a constant speed without stopping they should draw a single straight and continuous line. There is a partial mark for either one of the correct points plotted.

Common errors and general guidance for candidates

- Candidates should not use a rounded value of 1.333… in their calculation in **(b)(i)** as this will lead to an inaccurate final answer. They should leave all the digits on the calculator display before they enter '$\times$ 60'.
- In **(b)(i)**, an error is often made when candidates write 1.33 hours as 1 hour 33 minutes.
- In **(b)(ii)**, care must be taken to draw the ruled line accurately for the mark to be awarded.
- In **(e)(i)**, a common error is to draw the line from Town C starting at 09 00 rather than at 11 00 and/or join it to (14 00, 0). Since the previous line drawn in **(b)(ii)** was sloping upwards some may draw this line to (14 00, 50).

Question 18(b)

Specimen answer

(b) These are the first five terms of another sequence.

4 11 18 25 32

(i) Find the *n*th term of the sequence.

The terms go up in 7's

1	2	3	4	5	
7	14	21	28	35	7n
4	11	18	25	32	7n – 3

OR

The terms go up in 7's

*n*th term = $a + d(n-1) = 4 + 7(n-1) = 4 + 7n - 7 = 7n - 3$

$7n - 3$ [2]

(ii) Show that 361 is a term in the sequence.

$7n - 3 = 361$

$7n = 361 + 3$

$7n = 364$

$n = \frac{364}{7} = 52$

[2]

Examiner comment

(b) (i) Candidates need to realise that the answer should be an expression in terms of *n* and not numerical. The two most successful ways of finding the required expression are shown. The first step is always to establish the number pattern increases by 7 each term. By comparing the given sequence with the 7 times table it is clear that 3 needs to be subtracted. Candidates may opt to use the general formula $a + d(n - 1)$. A part mark is awarded for either part of the expression being correct or for the correct expression seen but then spoilt by further incorrect work.

(b) (ii) This part requires a clear understanding that the value of *n* is required which is best done by equating *their* answer to part **(b)(i)** to 361. This stage is awarded the Method mark. Solving this equation correctly then earns the final Answer mark. Candidates are advised to show clear working so the partial Method mark, which is a follow through mark, can be awarded even if the final answer is incorrect. An alternative method of counting on to generate a long list of numbers in sequence is not an efficient method and although not penalised if the correct answer is reached, arithmetic errors often occur and the Method part mark is not awarded in this case.

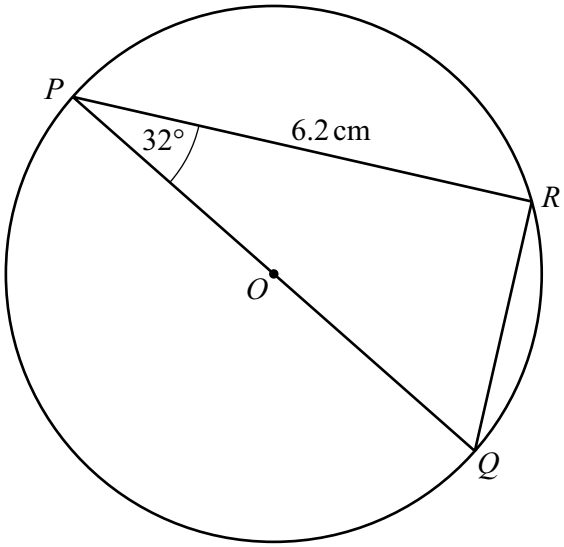
Common errors and general guidance for candidates

- In **(b)(i)** a common error is for candidates to write the term-to-term rule 'add 7' or the incorrect expression '$n + 7$'.
- In **(b)(i)** a common error is made expanding the brackets in $4 + 7(n – 1)$ as $4 + 7n – 1$, leading to an incorrect final answer which only scores the partial B1 mark.
- In **(b)(ii)** candidates sometimes misinterpret the question; thinking it requires them to find the value of term 361, they substitute 361 into the expression for the nth term. This is not awarded a mark.
- If a question asks to show a value is not in a sequence, candidates would need to find the decimal value of n and state it is not an integer.

Question 21

Specimen answer

21



NOT TO SCALE

The diagram shows a circle, centre O, with diameter PQ.
R is a point on the circumference.

(a) Give a geometrical reason why angle PRQ is 90°.

Angle in a semicircle = 90° ..... [1]

(b) Calculate the length of PQ.

$$\cos 32° = \frac{62}{PQ}$$

$$PQ = \frac{6.2}{\cos 32°} = 7.3109... = 7.31 \text{ (3 s.f.)}$$

$PQ =$ 7.31 cm [3]

Examiner comment

(a) Candidates are expected to recognise and write the correct circle theorem as the geometrical reason.

(b) The standard method using the cosine ratio is shown. Candidates are strongly advised to show all *their* working. A part Method mark is awarded for the correct first step of $\cos 32° = \frac{6.2}{PQ}$ or two Method marks are awarded for the re-arrangement $PQ = \frac{6.2}{\cos 32°}$. Candidates are not advised to write down a decimal value for cos 32° within the working. This avoids premature approximation of cos 32° which can often lead to an inaccurate answer and the loss of the final accuracy mark. The final answer should be given correct to 3 significant figures.

Common errors and general guidance for candidates

- In **(a)**, a common incorrect answer is ‘a triangle in a semicircle is right-angled’. Descriptions such as ‘the diameter makes an angle of 90°‘ are also not accepted. Candidates are advised to use the terminology as given on the syllabus.
- In **(b)**, candidates need to take care they use the correct trigonometrical ratio.
- In **(b)**, errors rearranging the equation are quite common.
- In trigonometry questions candidates need to check their calculator is set in the correct mode.
- When finding an inexact angle value, candidates need to remember to write their answer correct to 1 decimal place.

For further information about common mistakes made by candidates, please refer to the examiner reports which are published after the first exam series in 2025 on the School Support Hub at **www.cambridgeinternational.org/support**

Cambridge International Education
The Triangle Building, Shaftesbury Road, Cambridge, CB2 8EA, United Kingdom
t: +44 1223 553554
e: **info@cambridgeinternational.org** **www.cambridgeinternational.org**