Name	Date started	Target end date

WJEC GCSE Mathematics and Numeracy (Double Award) — Question Pack

Calculating compound measures: average speed from distance and time, and fuel consumption in miles-per-gallon or km-per-litre, including reverse quest

REVISE
.wales

F1.15 — Compound measures — speed & fuel consumption

Spec 3.5.8 — Unit 1 (calculator allowed)

Calculating compound measures: average speed from distance and time, and fuel consumption in miles-per-gallon or km-per-litre, including reverse questions. Sourced from legacy WJEC GCSE Mathematics-Numeracy Foundation papers (3300U10/U20) and accessible content from Intermediate papers (3300U30/U40), organised for revision under the 2025 spec.

2025 SPECIFICATION

Estimated time for entire question pack: ~26 minutes

*Derived from the GCSE Higher pace of **~1.5 min/mark** (17 marks across 9 questions).*

*You are advised to **not** attempt to complete all of this in one sitting.*

ABOUT THIS QUESTION PACK

This is a **focused single-topic practice pack**, not a single mock paper. Questions are organised against the 2025 specification. Questions are ordered chronologically by sitting, with custom-written and SAM questions at the end.

INSTRUCTIONS

Use black ink or black ball-point pen. Show all working — method marks are awarded for clear setup.

A calculator is allowed on every question in this pack (Unit 1 is the calculator-allowed paper).

Compound measures — speed & fuel consumption — what the new spec asks

WJEC GCSE Mathematics (first teaching 2025) · Unit 1: calculator-allowed.

Average speed 3.5.8

- Calculate average speed from a total distance and total time.
- Calculate distance from a given speed and time.
- Calculate time from a given distance and speed.

Fuel consumption 3.5.8

- Calculate miles per gallon from distance and fuel used.
- Calculate distance possible from fuel tank capacity and mpg.
- Calculate km per litre and total fuel cost for a journey.

Units & conversion 3.5.8

- Convert times between minutes and hours before computing speed.
- Convert distances between km and miles using a given factor.
- Choose appropriate units of speed for the context.

Exam strategy 3.5

- Write the formula before substituting.
- Check that distance and time use matching units.
- Sense-check: a car shouldn't show 500 mph or 0.5 mpg.

Crib sheet »

Compound measures — speed & fuel consumption in one page

Quick-reference notes — revisit before each question. Don't use during the questions.

Speed formula

$$\text{speed} = \text{distance} \div \text{time}$$

Common units: km/h, m/s, mph.

Distance & time

$$\text{distance} = \text{speed} \times \text{time}$$

$$\text{time} = \text{distance} \div \text{speed}$$

Use the triangle D / (S T) to rearrange.

Time in hours

30 min = 0.5 h · 15 min = 0.25 h · 45 min = 0.75 h.

For km/h or mph the time MUST be in hours.

Fuel consumption (mpg)

$$\text{mpg} = \text{miles} \div \text{gallons}$$

e.g. 240 miles on 8 gallons = 30 mpg.

Reverse: gallons = miles ÷ mpg.

km per litre

$$\text{km/litre} = \text{km} \div \text{litres}$$

e.g. 300 km on 25 litres = 12 km/litre.

Cost: litres × price per litre.

Common traps

- Using minutes instead of hours in a km/h sum.
- Dividing the wrong way round.
- Forgetting to convert miles ↔ km when needed.

Examiner only

7. *AB* and *CD* are parallel.

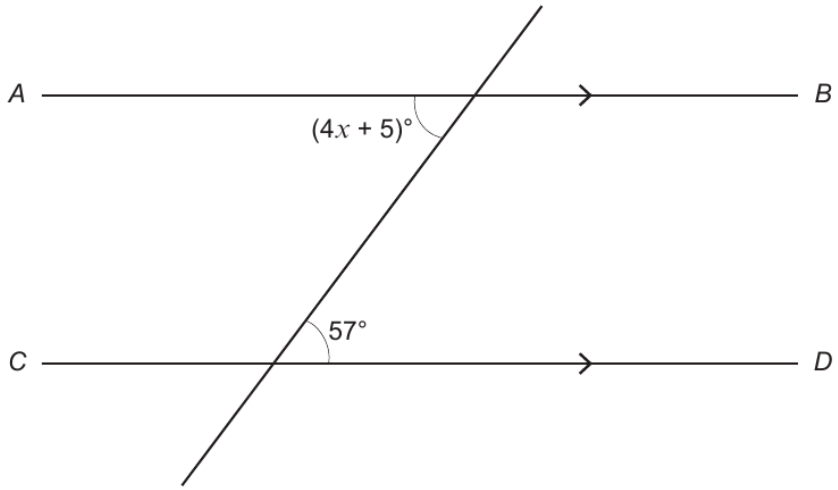

Diagram not drawn to scale

Calculate the value of x. [3]

8. Write down four positive whole numbers in the boxes below so that:

- the range of the numbers is 6,
- the mean of the numbers is 5,
- the median of the numbers is 4. [3]

Examiner only

4. Lena flew from Havana Airport in Cuba to Gatwick Airport in the UK. She then drove home from Gatwick Airport.

(a) When it is 09:40 in Havana, it is 14:40 on the same day in Gatwick.

It took 9 hours 15 minutes to fly from Havana to Gatwick.
Lena's flight left Havana on Monday at 17:40 local Havana time.

On what day and at what time did this flight arrive in Gatwick?
Give your answer in UK time. [4]

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Day ..... Time .....

(b) Lena lives 80 miles from Gatwick Airport.
The first 20 miles of Lena's journey home from the airport took 1 hour.
The average speed for the remaining 60 miles of her journey was 40 mph.

(i) Calculate the time taken for the remaining part of her journey. [2]

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(ii) Calculate the average speed, in mph, of Lena's 80-mile journey home from the airport. [3]

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Average speed ..... mph

Examiner only

5. Treviso is a company that designs and builds bicycles.

(a) Treviso has designed this new bike frame.
The missing angles need to be calculated.

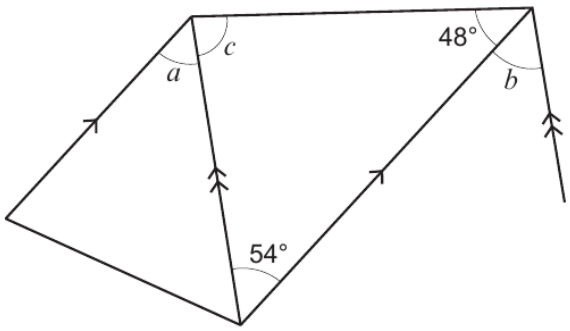

Diagram not drawn to scale

Find the size of each of the angles a, b and c. [3]

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a = ... ° b = ... ° c = ... °

Examiner only

(b) Each wheel on Treviso's new bike has a diameter of 29 inches.

(i)

Remember:	1 foot = 12 inches

Ollie tests Treviso's new bike over a distance of 1000 feet.
How many times will a wheel rotate during the test? [4]

(ii)

Remember:	12 inches ≈ 30 cm

What is the diameter of each wheel in **millimetres**? [3]

Diameter is ..... mm

(c) Ollie uses the new bike in a 48 km race.
He completes the race in a time of 1 hour 30 minutes.
Calculate his average speed for the race.
Give your answer in km/h. [3]

Average speed is ..... km/h

Examiner only

1. Shiona is saving to pay for a holiday.
She has 13 weeks to save £510 to pay for her holiday.

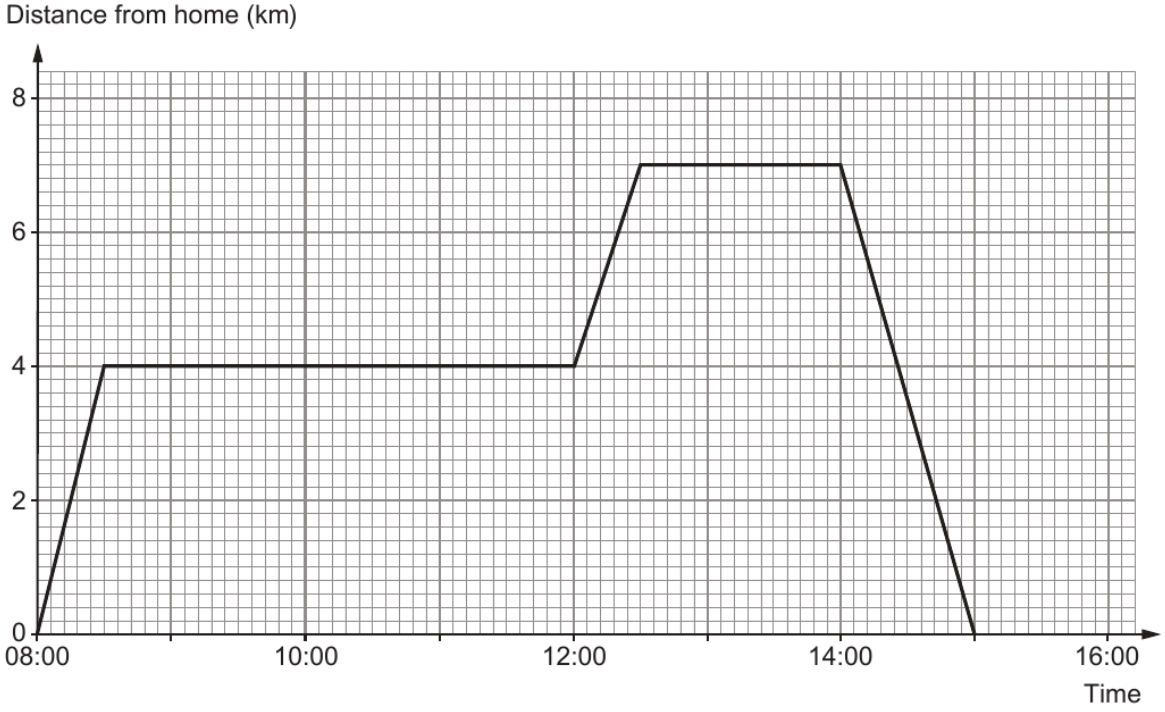
Shiona already has savings of £95.
In the first week, she knows she can save £70.

She plans to save equal amounts of money in each of the remaining weeks.

How much does Shiona need to save in each of the remaining weeks so that she can pay for her holiday?
You must show all your working. [4]

Examiner only

2. On Tuesday, Alfred travelled on a straight road.
The graph represents his journey during the day, until the time he arrived home.



(a) At what time did Alfred arrive home on Tuesday? [1]

.....

(b) How far, in total, did Alfred travel during the day on Tuesday? [1]

.....

..... km

(c) During which part of the day did Alfred travel at an average speed of 6 km per hour?
Circle your answer. [1]

08:00 to 08:30 08:30 to 12:00 12:00 to 12:30

12:30 to 14:00 14:00 to 15:00

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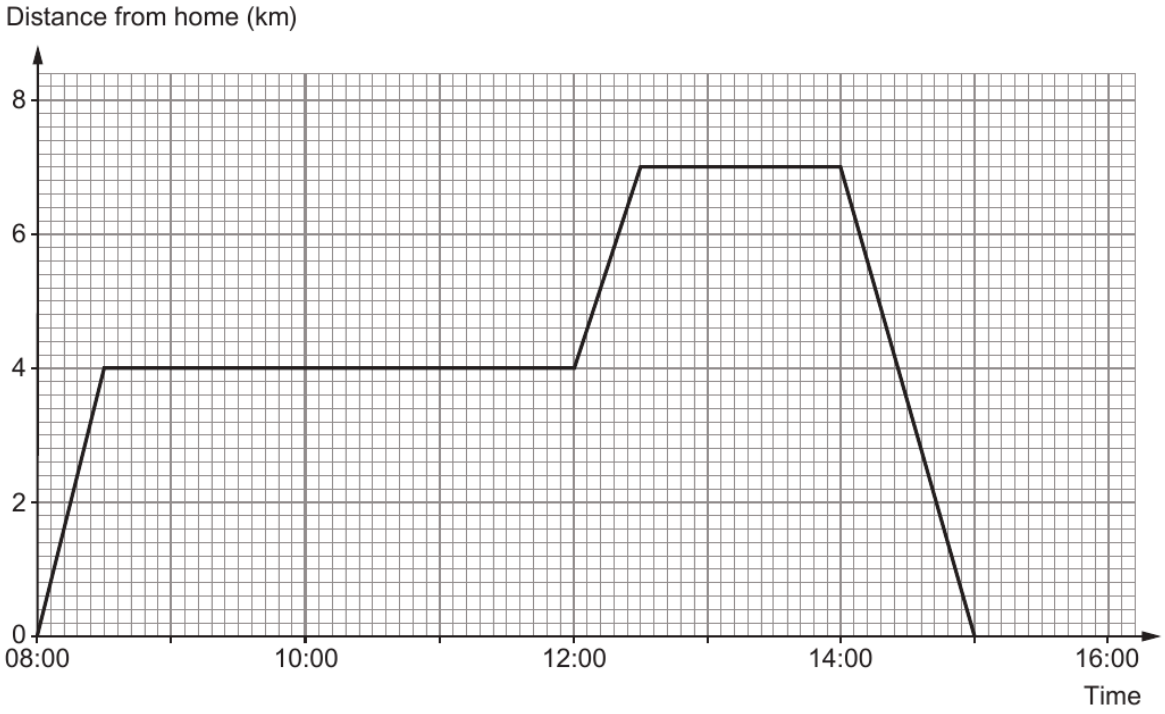
Examiner only

5. On Tuesday, Alfred travelled on a straight road.
The graph represents his journey during the day, until the time he arrived home.



(a) At what time did Alfred arrive home on Tuesday? [1]

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(b) How far, in total, did Alfred travel during the day on Tuesday? [1]

.....

..... km

(c) During which part of the day did Alfred travel at an average speed of 6 km per hour?
Circle your answer. [1]

08:00 to 08:30 08:30 to 12:00 12:00 to 12:30

12:30 to 14:00 14:00 to 15:00

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Examiner only

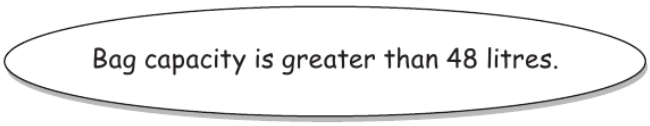
7. Idris flies from Cardiff to Faro, in Portugal.

(a) The actual flying time is 133 minutes.
The plane flies at an average speed of 8 miles per minute.

(i) Calculate the flying distance between Cardiff and Faro.
Give your answer in miles. [2]

(ii) Calculate the plane's average speed in **miles per hour**. [2]

(b) Idris takes a cabin bag on board his flight.
His bag measures 55 cm by 40 cm by 23 cm.
The label on his cabin bag says,



Is this label correct?

Yes ☐ No ☐

You must show all your working and give a reason for your answer. [3]

Examiner only

(c) Idris looks out of the aeroplane window.
He notices a village below.
Idris takes a photograph of the village to try to work out where he is.
From the photograph, he draws a sketch including some parallel streets.

His sketch is shown below.

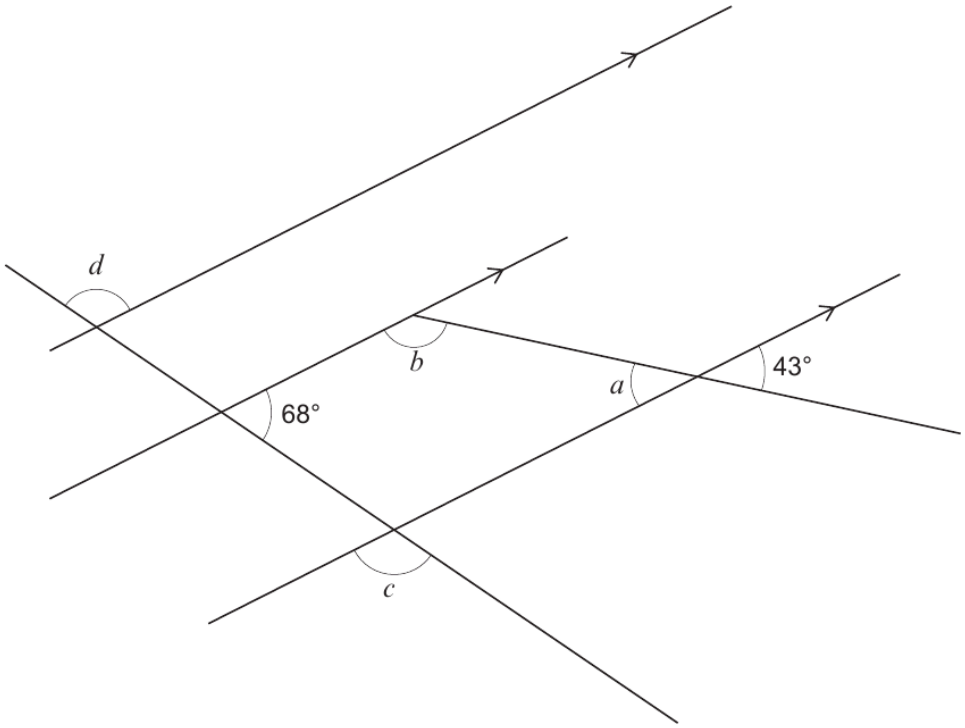


Diagram not drawn to scale

Find the size of each of the angles a, b, c and d. [4]

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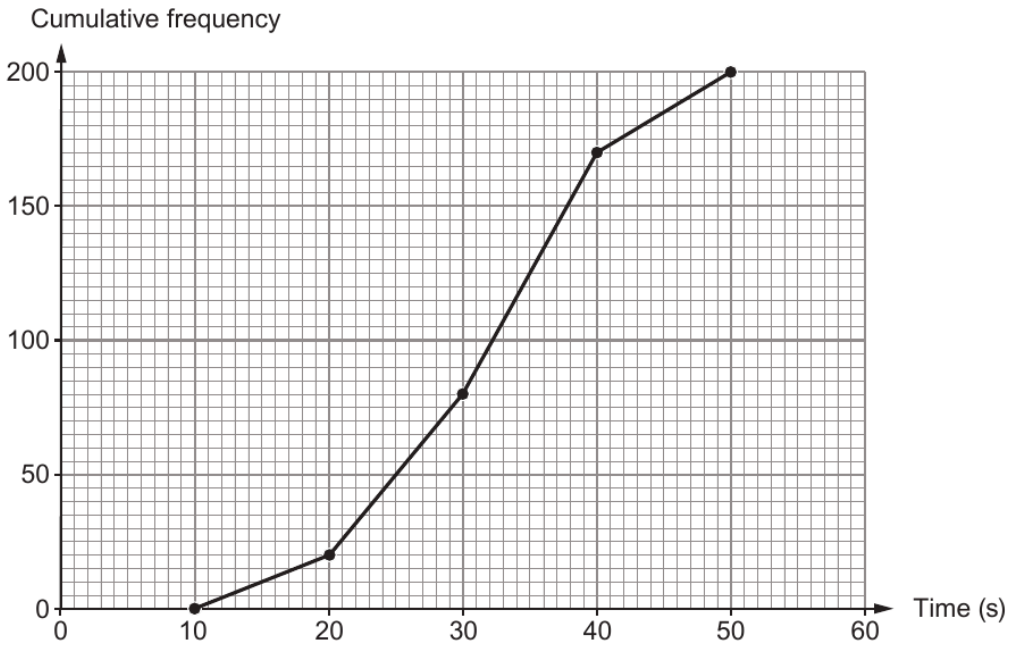
a = ... ° b = ... ° c = ... ° d = ... °

Examiner only

8. (a) On 1st June last year, 200 customers used cash to pay at Shop Lil.
The cumulative frequency diagram represents the time each of these 200 customers waited to be given change at the checkout.



(i) How many of these customers waited between 30 and 50 seconds for their change? [2]

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(ii) Use the graph to estimate the median time these 200 customers waited for their change.
Circle your answer. [1]

24 seconds 32 seconds 38 seconds 80 seconds 100 seconds

(iii) Calculate the fraction of these 200 customers who waited 40 seconds or longer for their change.
Give your answer in its simplest form. [2]

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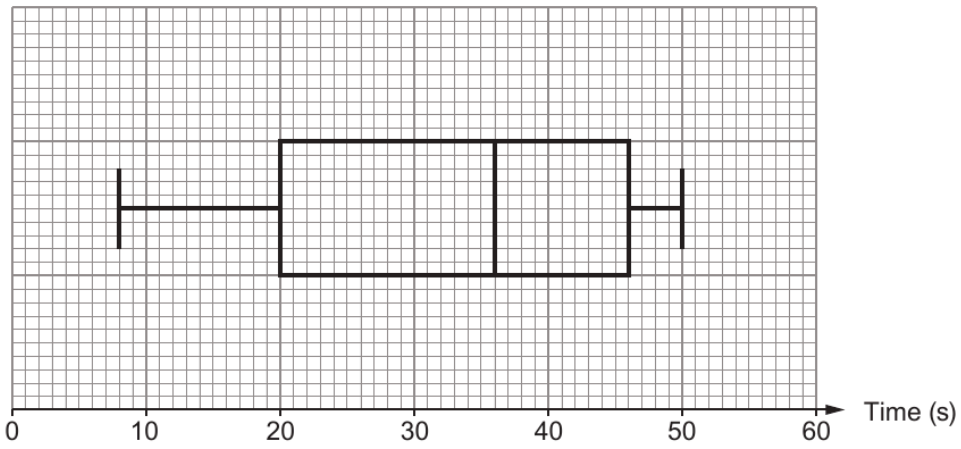
Examiner only

(b) On 1st June this year, the manager at Shop Lil drew a box-and-whisker plot of the times 200 customers waited for their change at the checkout.



Based on the results of these 200 customers, the manager made the following statements. Complete the statements.

(i) "On 1st June this year, 50% of our customers were given their change in ..... seconds or less." [1]

(ii) "On 1st June this year, the interquartile range of the times taken to give customers their change was ..... seconds." [2]

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(c) Consider the 50 customers waiting the **longest** times to get their change on 1st June last year and this year.
Has the speed of giving change at the checkout improved since last year?

Yes ☐ No ☐

You must give a reason for your answer. [1]

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Examiner only

7. Eleri is investigating whether people working in offices are happy with the processing speed of their office computer.
She considers the data she needs to collect.

Eleri includes the following two questions in her questionnaire.
For each question, write down one set of possible groups she could use as answer options.
[2]

Question 1: How many days per month do you work in your office?

Possible groups for answer:

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Question 2: How happy are you with the processing speed of your office computer?

Possible groups for answer:

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