Surname	Centre Number	Candidate Number
First name(s)		0

GCSE

3310U30-1

S24-3310U30-1

THURSDAY, 9 MAY 2024 – MORNING

MATHEMATICS – NUMERACY
UNIT 1: NON-CALCULATOR
INTERMEDIATE TIER

1 hour 45 minutes

ADDITIONAL MATERIALS

The use of a calculator is not permitted in this examination.

A ruler, a protractor and a pair of compasses may be required.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen. Do not use gel pen or correction fluid.

You may use a pencil for graphs and diagrams only.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** the questions in the spaces provided.

If you run out of space, use the additional page at the back of the booklet. Question numbers must be given for all work written on the additional page.

Take π as 3·14.

INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part-question.

In question **4**(b), the assessment will take into account the quality of your linguistic and mathematical organisation, communication and accuracy in writing.

For Examiner's use only		
Question	**Maximum Mark**	**Mark Awarded**
1.	**6**	
2.	**3**	
3.	**9**	
4.	**12**	
5.	**12**	
6.	**9**	
7.	**9**	
8.	**9**	
9.	**11**	
Total	**80**	

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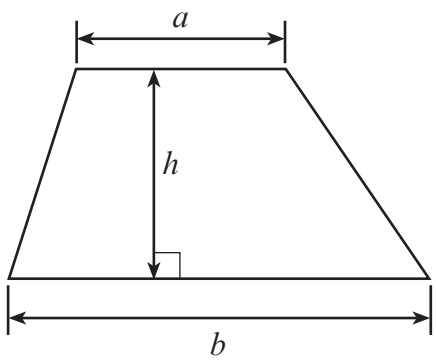
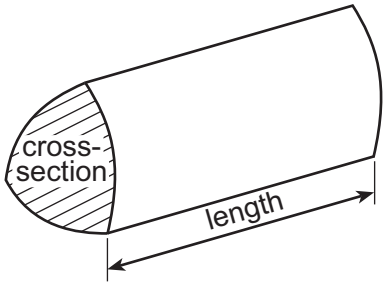
Formula List – Intermediate Tier

Area of trapezium $= \frac{1}{2}(a + b)h$



Volume of prism = area of cross-section × length



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1. (a) Identical toothbrushes are sold in packs of 3 or 5.

A pack of 3 toothbrushes costs £1.44.
A pack of 5 toothbrushes costs £2.25.

Which pack of toothbrushes offers better value for money?
You must show all your working. [3]

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(b) 75 ml tubes of toothpaste cost 93p each.

100 ml tubes of toothpaste offer the **same** value for money.

Calculate the cost of a 100 ml tube of toothpaste. [3]

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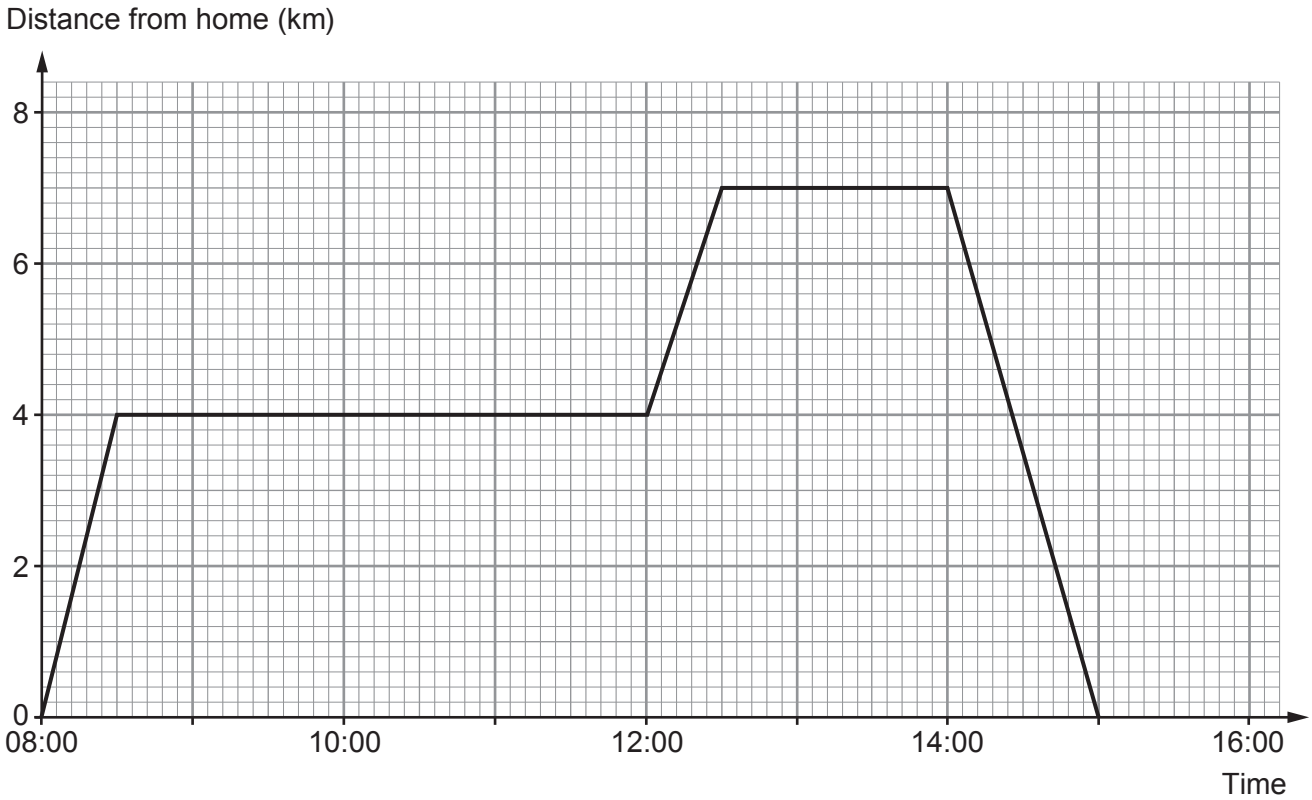
2. On Tuesday, Alfred travelled on a straight road.
The graph represents his journey during the day, until the time he arrived home.



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

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

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(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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3. Erin owns a small shop.

(a) Erin sells Franberg bottled water in her shop.
Franberg is only available in bottles of one size.

The weather in 2018 was hotter than usual.
In 2018, Erin sold 35% more bottles of Franberg than in 2017.
In 2019, Erin sold 21% fewer bottles of Franberg than in 2018.

Erin sold 2000 bottles of Franberg in 2017.
Calculate the number of bottles of Franberg Erin sold in 2019.
You must show all your working. [4]

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(b) Last year, Erin's income from her shop was 26 000 euros.
Erin had to pay tax on all of this income.
She paid 20% tax on the first 15 000 euros of this income.
She paid 30% tax on the rest of this income above 15 000 euros.

Calculate how much tax Erin paid in total.
You must show all your working. [5]

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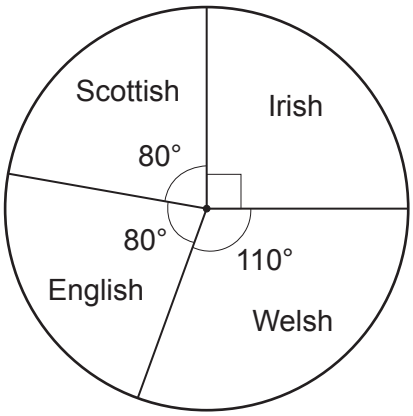
4. (a) 7200 spectators at a sports event were asked their nationality.
The results are displayed in the pie chart below.



(i) One third of the Irish spectators were female.
How many female Irish spectators were at the event? [3]

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(ii) For the Welsh spectators, the ratio of the number of adults to the number of children was 6 : 5.
How many adult Welsh spectators were at the event?
You must show all your working. [4]

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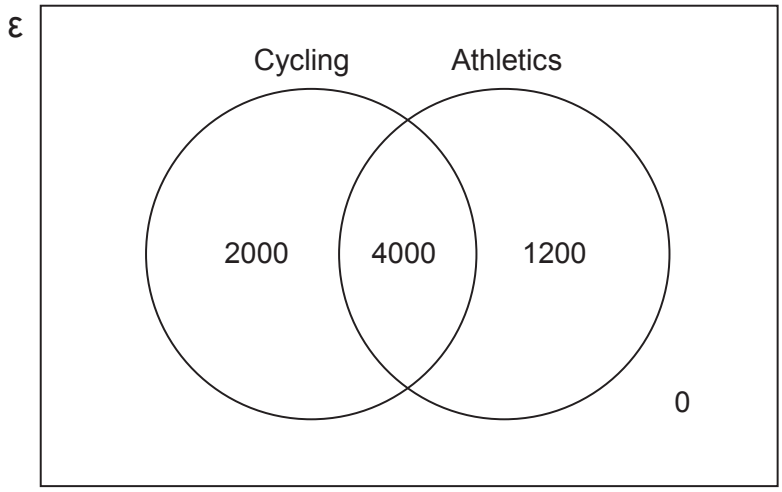
(b) *In this part of the question, you will be assessed on the quality of your organisation, communication and accuracy in writing.*

The 7200 spectators watched cycling, athletics, or both.
The entrance fees for the events were as follows.

Events	Entrance fee
Cycling only	£25
Athletics only	£30
Joint entry to both cycling and athletics	£40

The Venn diagram shows the number of tickets bought for the different events.



Calculate the total amount taken in entrance fees from the 7200 spectators.
You must show all your working. [3 + 2 OCW]

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5. (a) Siôn has an ice cream van.

On Monday, Siôn sold three times as many ice creams as cold drinks.
He sold 50 cold drinks on Monday.
Siôn sells ice creams for £1.80 each.

Calculate the amount of money Siôn took from selling ice creams on Monday. [4]

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(b) Siôn keeps ice cream in a freezer in his van.
Every hour he checks the temperature in his freezer.
He turns on his freezer at 8 a.m.
The readings he takes from 8 a.m. to 3 p.m. are listed below.

10°C 2°C –5°C –12°C –12°C –12°C –13°C –14°C

(i) Calculate the mean of these temperatures. [3]

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(ii) At 4 p.m. the temperature in Siôn's freezer was recorded as –16°C.
Calculate the mean of the temperatures recorded in Siôn's freezer from 8 a.m. to 4 p.m. [2]

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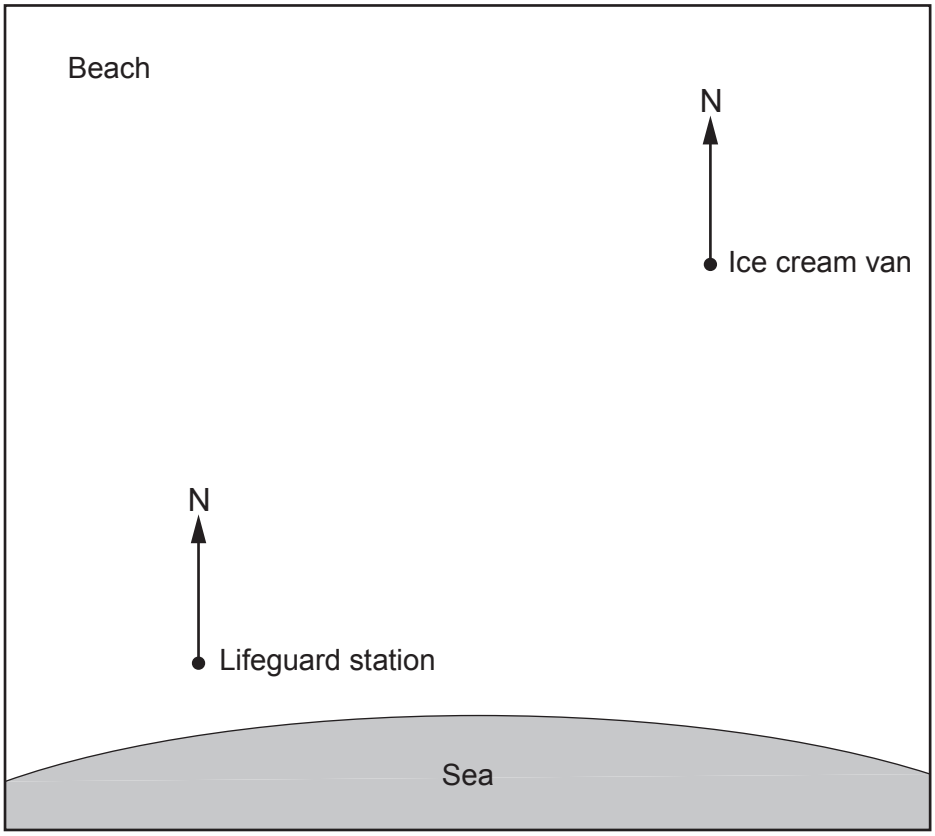
(c) Siôn parks his ice cream van on the beach, as shown on the map below.

Scale: 1 cm represents 20 metres



(i) How far is Siôn's ice cream van from the lifeguard station? [2]

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..... metres

(ii) Complete the following statement.

'The bearing of the lifeguard station from Siôn's ice cream van is .....°.' [1]

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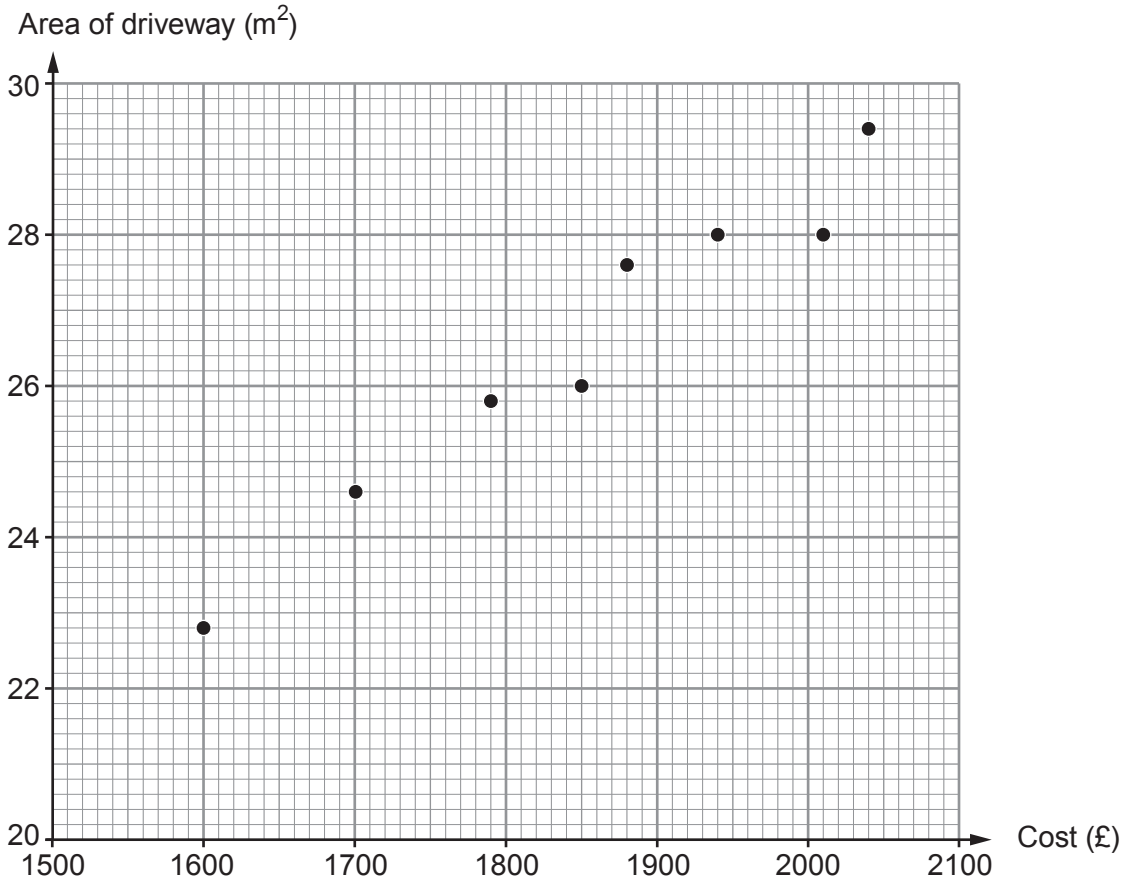
6. Some houses in a village have new driveways laid by DriveDown.
The scatter diagram shows the area and cost of each driveway.



(a) (i) Two of these houses have the same area of driveway.
Calculate the difference in the cost of the new driveway for these two houses. [2]

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(ii) Another house in the village has a driveway of area 25 m^2.
Estimate the cost of having a new driveway laid by DriveDown for this house. [1]

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(b) The measurements of Gwenda's driveway are shown below.

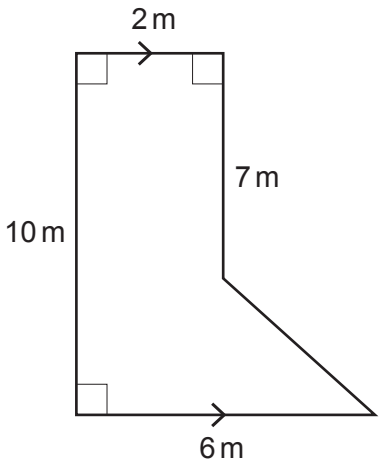

Diagram not drawn to scale

Consider the exact area of Gwenda's driveway.
Calculate an estimate of how much it would cost Gwenda to have a new driveway laid by DriveDown.
You must show all your working. [4]

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(c) Tanya's driveway covers an area of $23\,m^2$.
She decides to have her driveway repaired instead of having a new driveway.

Tanya thinks the repair will cost her 40% of the estimated cost of having a new driveway laid by DriveDown.
She has budgeted £575 for the repair of her driveway.
Will Tanya's budget cover the cost of repairing her driveway?

Yes ☐ No ☐

You must show all your working and give a reason for your answer. [2]

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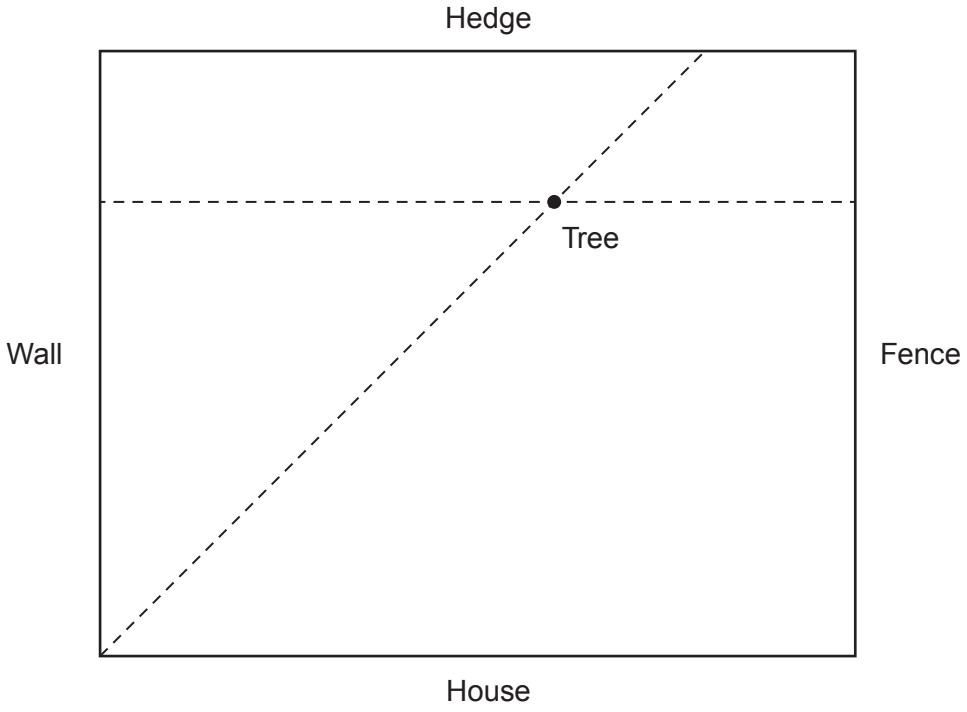
7. (a) Josif produces a scale drawing to show where he wants a tree planted in his garden.

Scale: 1 cm represents 0·5 m



He writes out instructions to show where the tree is to be planted.

Which **two** of the following instructions describe where the tree is to be planted?

A. The tree must be 2 m from the hedge.
B. The tree must be 1 m from the hedge.
C. The tree must be 6 m from the hedge.
D. The tree must be 3 m from the hedge.
E. The tree must be 1 m from the wall.

F. The tree must be equidistant from the hedge and the fence.
G. The tree must be equidistant from the hedge and the wall.
H. The tree must be equidistant from the wall and the house.
I. The tree must be equidistant from the hedge and the house.
J. The tree must be equidistant from the wall and the fence. [2]

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The two instructions are ..... and .....

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(b) A garden centre buys trees from a grower for £30 each.
The garden centre sells the trees for £42 each.

(i) Calculate the percentage profit the garden centre makes from buying and selling one tree. [2]

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(ii) The garden centre buys 10 of these trees to sell.
One of the trees gets damaged and cannot be sold.
The other 9 trees are sold.

Calculate the overall percentage profit or loss the garden centre makes from selling these trees.
You must state whether your answer is a profit or a loss.
You must show all your working. [4]

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(iii) Of the 10 trees bought by the garden centre, what is the minimum number that need to be sold to ensure that the garden centre makes a profit?
Circle your answer. [1]

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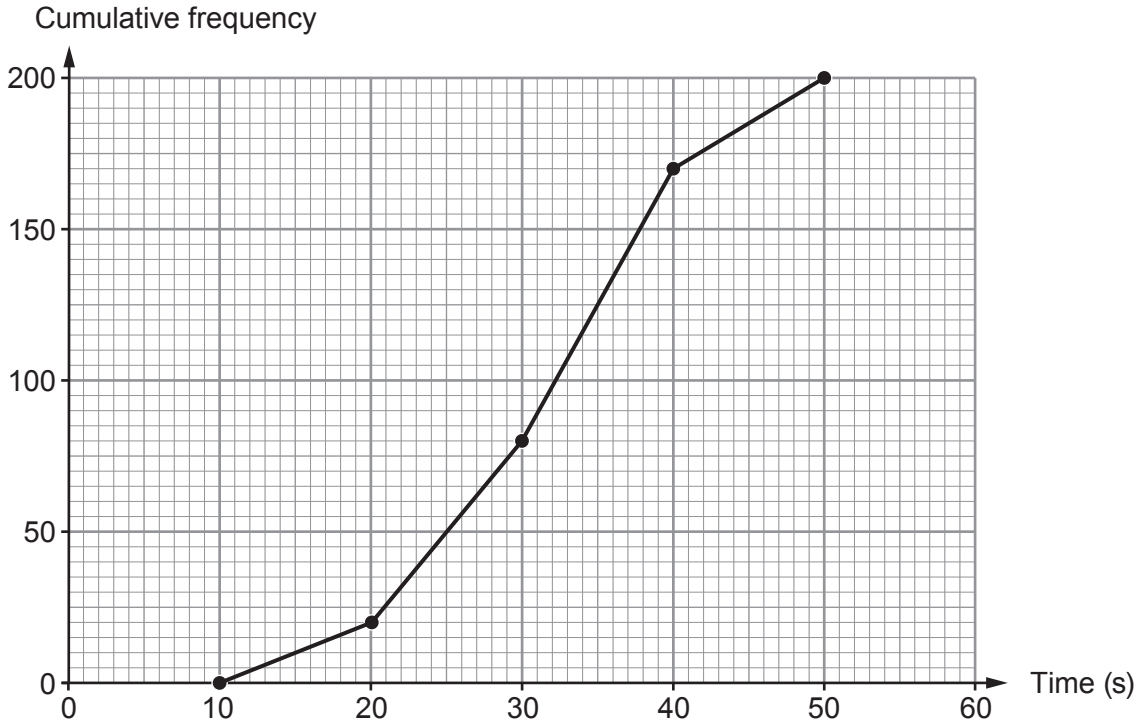
8. (a) On 1st June last year, 200 customers used cash to pay at Shop Lil.
The cumulative frequency diagram represents the time each of these 200 customers waited to be given change at the checkout.



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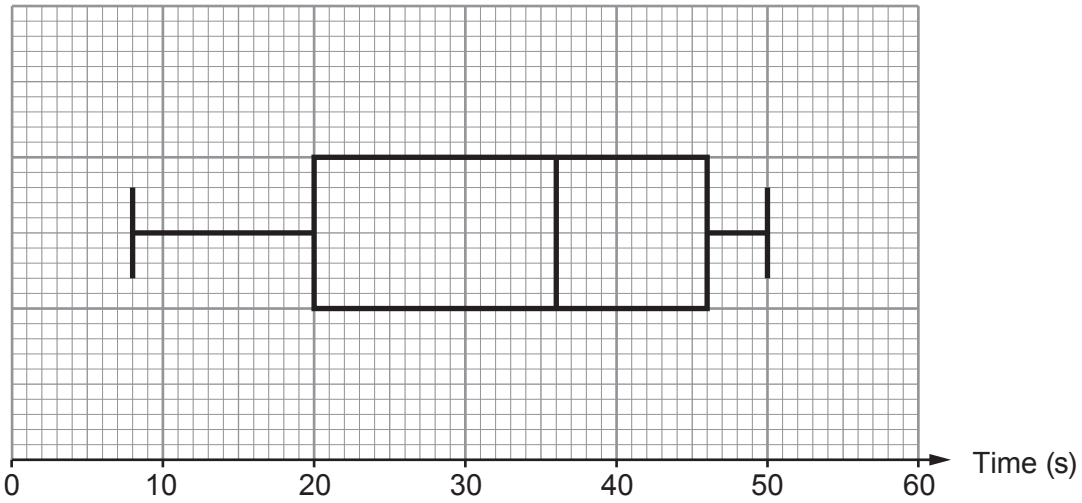
(b) On 1st June this year, the manager at Shop Lil drew a box-and-whisker plot of the times 200 customers waited for their change at the checkout.



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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9. (a) The area of Wales is 20 735 km^2.

The table below gives the population of Wales in 1977, 1998 and 2015.

Year	1977	1998	2015
Population	2·8 million	2·9 million	3·1 million

(i) What was the increase in the population of Wales between 1977 and 1998? Circle your answer. [1]

1×10^3 1×10^4 1×10^5 1×10^6 1×10^7

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(ii) Estimate the population density of Wales in 2015. [3]

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Population density of Wales in 2015 was ..... people / km^2

(b) Cardiff is the largest city in Wales.
In 2018, the population of Cardiff was approximately 360 000.
The population of Cardiff increased by 20% from 1991 to 2018.
Calculate the population of Cardiff in 1991. [3]

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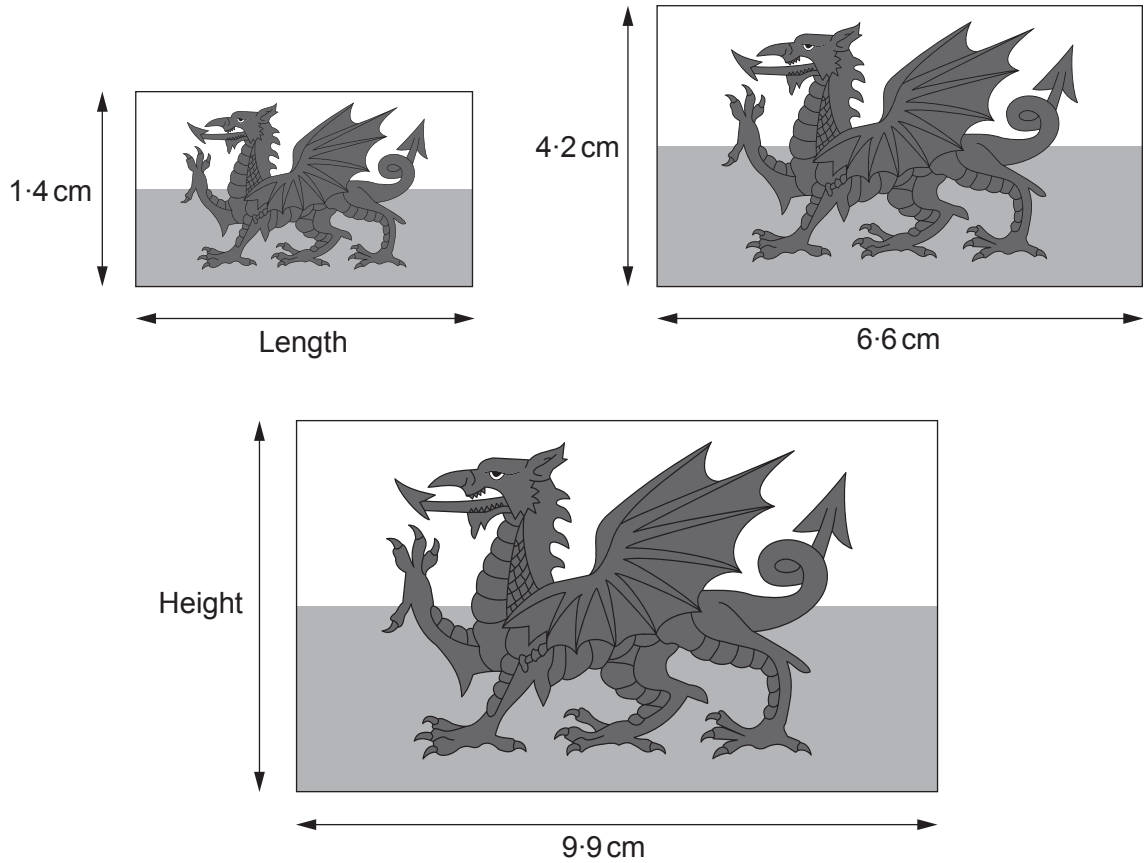
(c) DraigYma prints Welsh flags onto stickers.
Three of their mathematically similar Welsh flag stickers are shown below.



Diagrams not drawn to scale

Calculate the missing length and height in the diagrams. [4]

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Length is ..... cm Height is ..... cm

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Question number	Additional page, if required. Write the question number(s) in the left-hand margin.	Examiner only

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