

Surname	Centre Number	Candidate Number
First name(s)		0



GCSE

3310U40-1



THURSDAY, 4 NOVEMBER 2021 – MORNING

**MATHEMATICS – NUMERACY
UNIT 2: CALCULATOR-ALLOWED
INTERMEDIATE TIER**

1 hour 35 minutes

ADDITIONAL MATERIALS

A calculator will be required for this paper.
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 the work written on the additional page.
Take π as 3.14 or use the π button on your calculator.

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 2(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.	2	
2.	13	
3.	6	
4.	6	
5.	5	
6.	7	
7.	8	
8.	8	
9.	5	
10.	10	
Total	70	

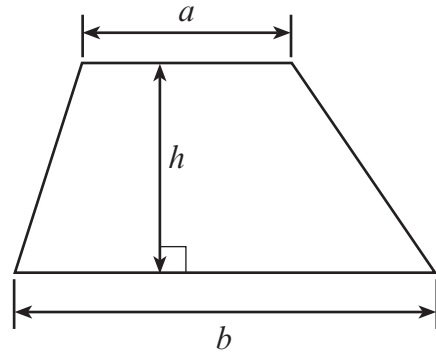
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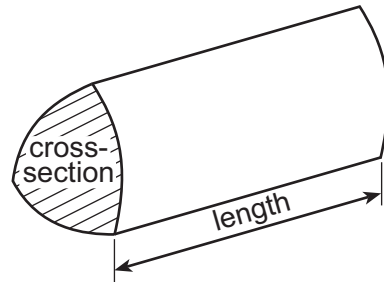
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Formula List – Intermediate Tier

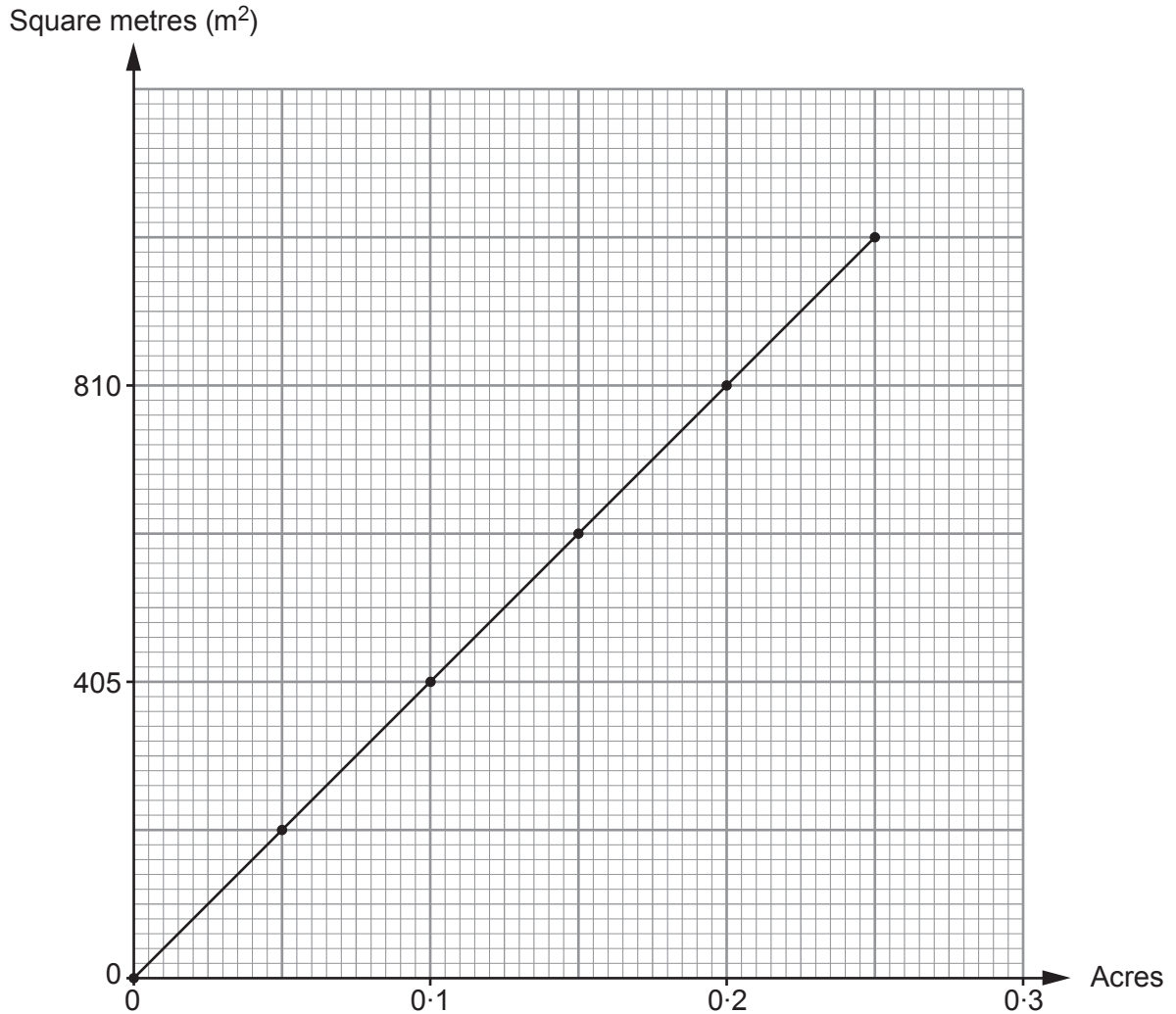
Area of trapezium = $\frac{1}{2}(a + b)h$



Volume of prism = area of cross-section \times length



1. Dilwyn draws a conversion graph to help him understand his geography homework. He is looking at areas, in both square metres (m^2) and acres.



- (a) Which of the following is equivalent to 0.05 acres? Circle your answer. [1]

607.5 m^2 202.5 m^2 6075 m^2 101.25 m^2 2025 m^2

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- (b) Which of the following is equivalent to 0.3 acres? Circle your answer. [1]

1620 m^2 1012.5 m^2 1215 m^2 1417.5 m^2 810 m^2

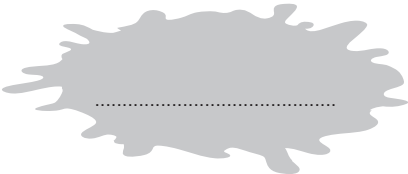

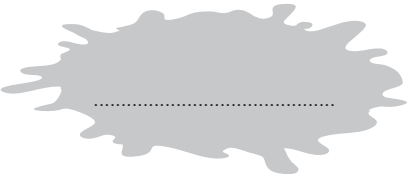


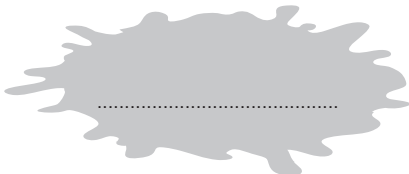
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2. (a) Mr Khan has received his electricity bill.
However, he has splashed coffee over some of the entries.

Mr Khan 306 Heol Rowe			
Period	Previous meter reading	Present meter reading	Number of units of electricity used
July, August and September 2021	34 560	35 180	
Charge for electricity:  units at 18p per unit		£	
Standing charge: 3 months at £6 per month			£18
Total charges:		£	
VAT at 5%:		£	
Amount to pay:		£	

Complete Mr Khan's electricity bill to find the amount he has to pay.

[6]

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4. Ms Ritter is buying a new dining table.
She has seen a table with a circular top and another with a rectangular top.



The circular top has a diameter of 1.5 m.
The rectangular top measures 2 m by 0.8 m.

- (a) Which of the table tops has the greater perimeter?
You must show all your working. [3]

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- (b) Does the table top with the greater perimeter also have the greater area?
You must show all your working. [3]

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5. (a) A bottle contains 250 grams of sun cream.

A website recommends that one application of sun cream is 1 ounce.



1 gram = 1000 milligrams
1 ounce \approx 28 350 milligrams

Use this recommendation to answer the following question.

How many applications of sun cream are there in this bottle?
You must show all your working.

[3]

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(b) Marie wants to buy some sun cream.



Small bottle
100 ml for £1.42



Large bottle
250 ml for £3.65

Which of the two bottles of sun cream offers the better value for money?

Small bottle

Large bottle

You must show all your working.

[2]

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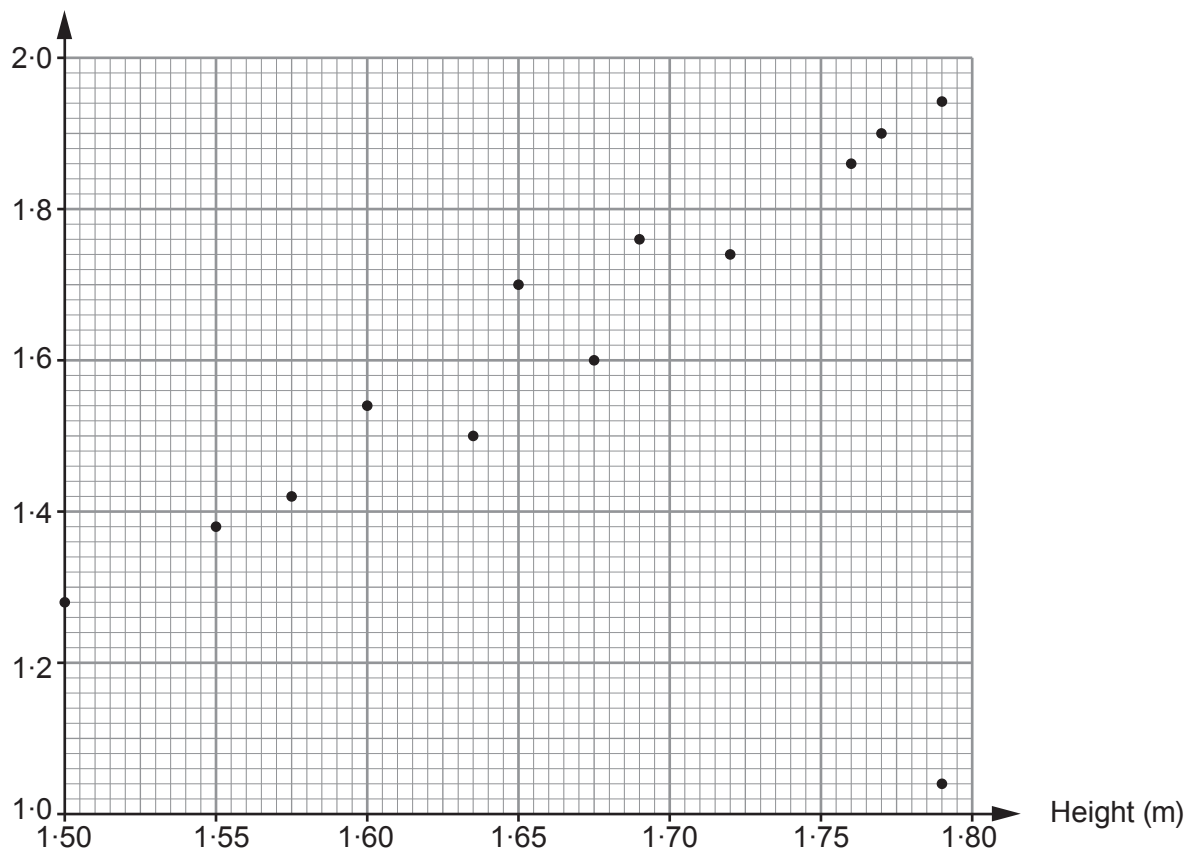
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6. In a science lesson, 13 students calculated an estimate of the area of their skin. The results are shown on the scatter diagram below.

Area of skin (m^2)



- (a) Arwyn is the only student who made an error in his calculation. He is one of the tallest students. What is Arwyn's calculated estimate of the area of his skin? Circle your answer. [1]

1.79 m^2

1.94 m^2

1.02 m^2

1.20 m^2

1.04 m^2

- (b) Which term best describes the correlation between a person's height and the estimate of the area of their skin? Circle your answer. [1]

No correlation

Spread

Certain

Positive

Negative



- (c) Garth is 5 cm taller than Ella.
The calculated estimate of the area of Ella's skin is 1.54 m^2 .
How tall is Garth? [2]

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Garth is m tall

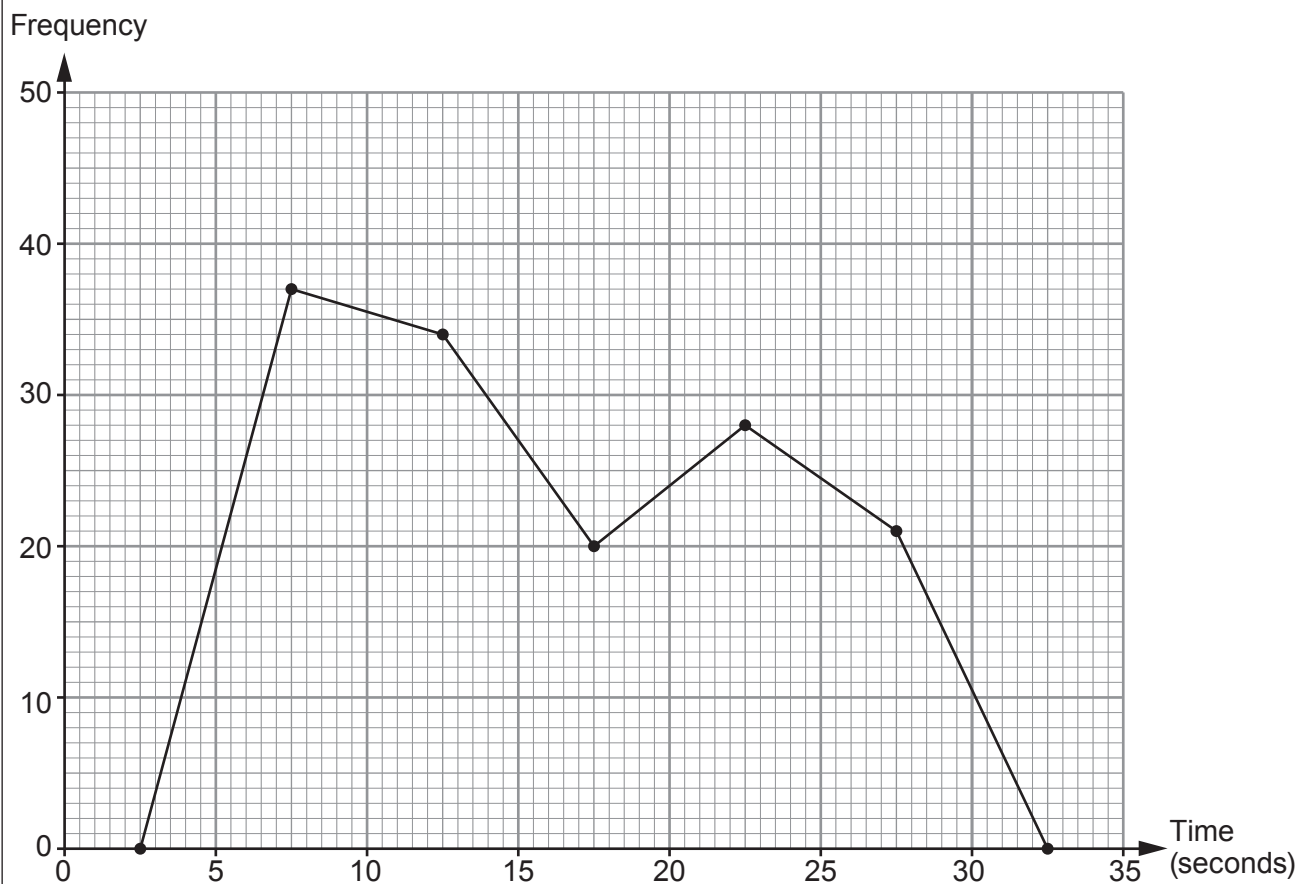
- (d) Bryn is 1.50 m tall.
Abigail is 18% taller than Bryn.
Find Abigail's calculated estimate of the area of her skin. [3]

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Abigail's estimate of the area of her skin is m^2



7. On Monday, Mrs Griffin recorded the time each of her students took to start a task. She records her data in groups of equal width. Mrs Griffin displays the results in a frequency polygon, as shown below.



- (a) On Monday, how many students started the task? [2]

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- (b) Which is the modal group of the times taken to start the task?
Circle your answer.

7.5 seconds 20 to 25 seconds 5 to 10 seconds
15 to 20 seconds 37 seconds

[1]

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(c) In which group is the median time taken to start the task?

[2]

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(d) Mrs Griffin had set a target that students should start the task within 30 seconds.
Was the target met?

You must give a reason for your answer.

[1]

Yes

No

Can't tell

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(e) On Tuesday, the same students started the same task again.
25% of them started the task within 10 seconds.

Is this an improvement on the number of students who started the task within 10 seconds
on Monday?

You must show all your working.

[2]

Yes

No

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Nerys will buy \$

She will have £ left to buy euros.



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TURN OVER.



10. Mr Read is building a shelter against his house.

(a) The length of the shelter is 6 m.

He has drawn a sketch of the side view of the shelter, as shown below.

Mr Read has started to place some panels on his roof.

When fitted to the roof, each panel needs to slightly overlap the next panel.

The plan view of placing the first 3 panels is also shown below.

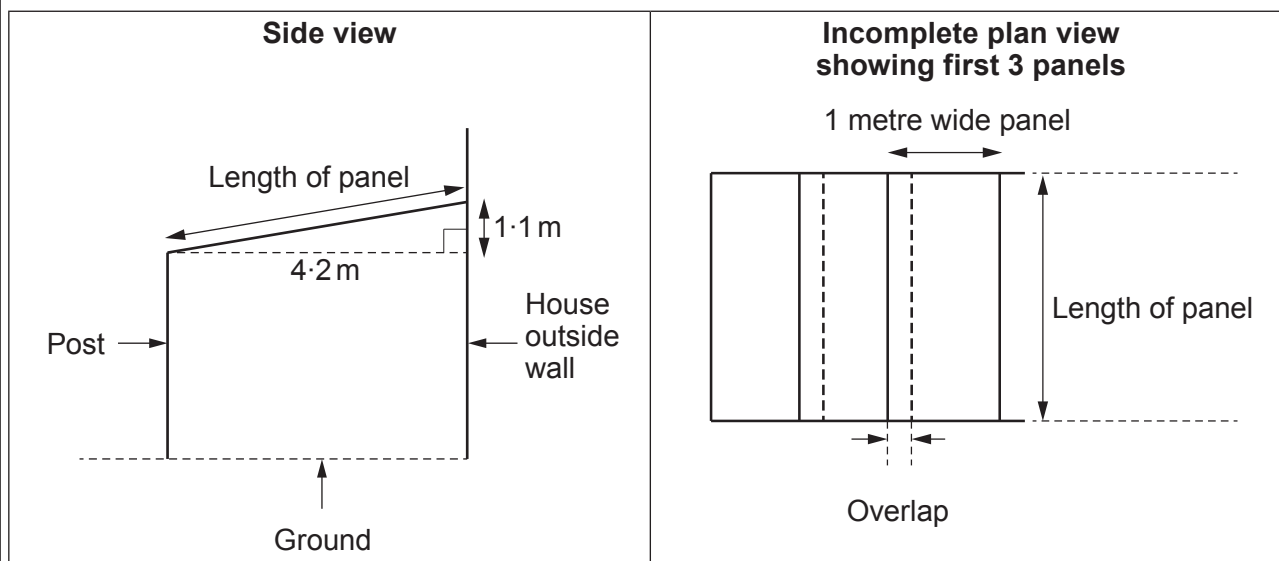


Diagram not drawn to scale

The shelter roof panels are 1 metre wide and can be bought in different lengths.

Length of panel	4.1 m	4.2 m	4.3 m	4.4 m	4.5 m	4.6 m
Cost per panel	£21	£22	£23	£24	£25	£26

Mr Read bought the cheapest suitable panels to build his shelter roof. Calculate the cost of all of the panels Mr Read bought. You **must** show all your working.

[6]

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(b)

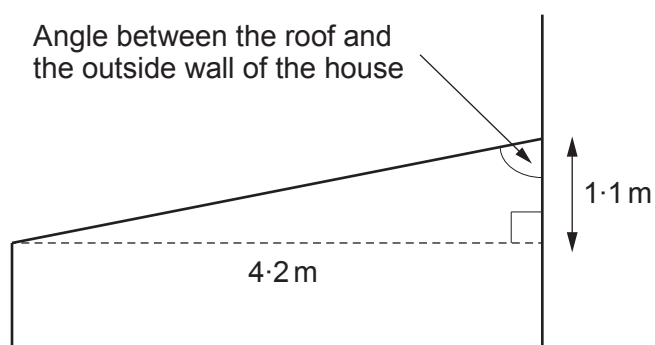


Diagram not drawn to scale

Calculate the size of the angle between the shelter roof and the outside wall of the house.
Give your answer correct to 3 significant figures. [4]

END OF PAPER



