Surname	Centre Number	Candidate Number
First name(s)		0

GCSE

3310U10-1

A22-3310U10-1

TUESDAY, 8 NOVEMBER 2022 – MORNING

MATHEMATICS – NUMERACY
UNIT 1: NON-CALCULATOR
FOUNDATION TIER

1 hour 30 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 the 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 **5**, 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.	**3**	
2.	**10**	
3.	**4**	
4.	**7**	
5.	**9**	
6.	**4**	
7.	**9**	
8.	**3**	
9.	**11**	
10.	**5**	
Total	**65**	

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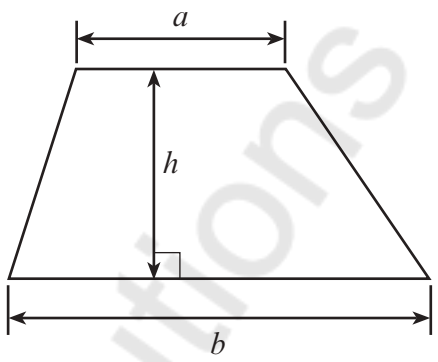
Formula List – Foundation Tier

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



Examiner only

1. Jayne and Llinos go shopping for their end of year prom.
Jayne bought the following items.

Item	Cost
Dress	£199.85
Shoes	£38.75
Bag	£27.98
Jewellery	£18.99

Llinos says,

I think you have spent over £300 in total.

By approximating the cost of each item, show that Llinos is not correct.
You must show all your working. [3]

Dress — 200
Shoes — 40
Bag — 30
Jewellery — 20

= 200 + 40 + 30 + 20
= £290

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2.

The table below shows the number of visitors to some of the top attractions in Wales in 2017 and 2018.
The table also shows the percentage change in the number of visitors from 2017 to 2018.

Attraction	Number of visitors 2017	Number of visitors 2018	Percentage change
Folly Farm	480 000	455 428	–5·1%
Cardiff Castle	319 131	452 007	+41·6%
Bodnant Garden	255 949	260 153	+1·6%
Caernarfon Castle	204 675	205 009	+0·2%
Conwy Castle	221 652	201 961	–8·9%
Zip World Slate Caverns	190 000	195 000	+2·6%

Use the information in the table above to answer the following questions.

(a) Zip World Slate Caverns had 195 000 visitors in 2018.
Write this number in words. [1]

One hundred and ninety five thousand

(b) Which attraction had the smallest percentage change from 2017 to 2018? [1]

Caernarfon Castle

(c) Calculate the total number of visitors to Bodnant Garden in 2017 and 2018. [2]

516 102

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(d) Calculate the difference between the number of visitors to Cardiff Castle in 2017 and the number of visitors to Cardiff Castle in 2018. [2]

452007 − 319131
= 132876

(e) Ian looks at the data and says,

"In 2018, Folly Farm had about half a million visitors."

Is Ian correct?
Give a reason for your answer. [1]

Yes ☑ No ☐

455,428 ≠ 500,000

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05

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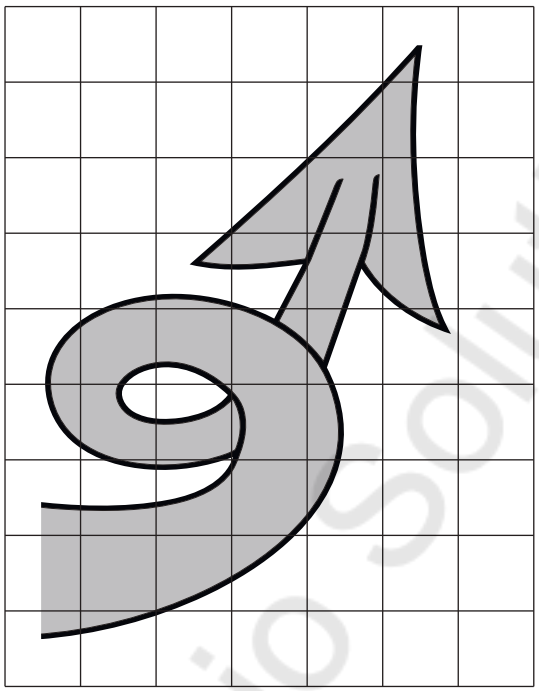
(f) A new visitor attraction, Tailspin, wants to use the tail of the dragon from the Welsh flag as its logo.

The tail is drawn on the centimetre square grid below.
Each square on the grid represents an area of 4 cm^2.



Tailspin is planning to make flyers to advertise the attraction.
To print the flyers, the area of the tail must be less than 48 cm^2.

The manager of Tailspin thinks that the area of the tail is greater than 48 cm^2.

Decide whether or not the manager is correct.
You must show all your working. [3]

The manager is:

Correct ☑ Not correct ☐

12 × 4 cm = 48

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3.

Rhodri has a 6-digit code for his internet bank account.
He remembers the code as three lots of two-digit numbers.

The first two-digit number is a prime number between 25 and 30.
The second two-digit number is a square number between 10 and 20.
The third two-digit number is an odd number that is a multiple of 7 between 20 and 40.

All 6 digits of Rhodri's code are **different**.
What is Rhodri's 6-digit code? [4]

29 1st 2 digit prime no. 25 to 30
16
21 and 35

29 and 16 21 = 1 to 2
29 to 16 35 =

29 16 35

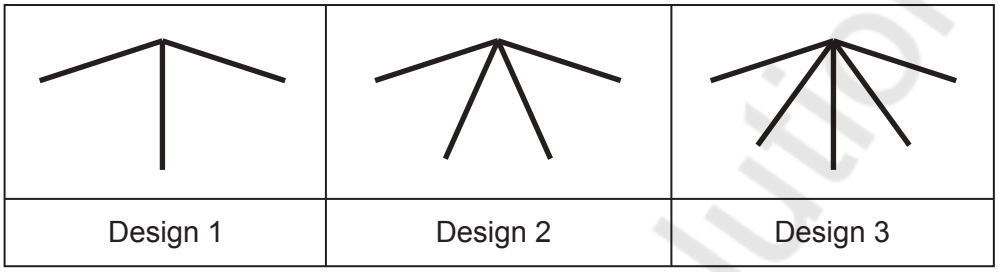
Rhodri's 6-digit code is: 2 9 1 6 3 5

Examiner only

4. A jewellery designer makes brooches.
Each brooch consists of a number of identical pieces of metal.

These brooches come in different designs.
These designs follow a simple pattern.

The first three designs are shown below.
Design 1 consists of 3 pieces of metal.



Design 1	Design 2	Design 3

(a) How many pieces of metal will be used to make the brooch in Design 5? [1]

7 metals

(b) Which design uses 11 pieces of metal? [1]

Design 9

(c) A customer says,

To find how many pieces of metal are used in every design, you multiply the design number by 3, because Design 1 has three pieces of metal.

Is the customer correct for every design?

Yes ☐ No ☑

Give a reason for your answer. [1]

Design 2 - 4 metals
2 × 3 = 6

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(d) One customer decides to order a special brooch with a horizontal bar at the top.

The designer knows two of the angles. These are shown in the diagram below.

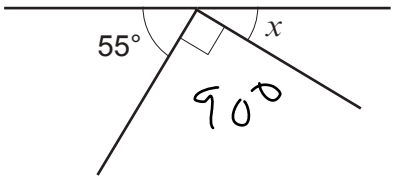

Diagram not drawn to scale

Calculate the size of angle x. [2]

$180 - (90 + 55) = 35°$

$x =$ 35 °

(e) The designer uses the following formula to calculate how much he will charge for a brooch.

Charge for a brooch (in £) = 2 × cost of materials + 14

A customer spends £30 on a brooch for a friend.

Calculate the cost of the materials for this brooch. [2]

$30 - 14 \div 2 = 8$

$30 = 2x + 14$

$30 - 14 = 2x$

$x = (30 - 14) \div 2 = 8$

Cost of materials is £ 8

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

Gerry plays the piano in a band.
He wants to buy a new digital piano.
The total cost of the piano is £800.

Gerry has already saved $\frac{3}{10}$ of the cost of the piano.

The manager of the band gives him 25% of the cost of the piano.

Gerry decides to save £80 per week.

How many weeks will it take Gerry to save enough money to buy the piano?
You must show all your working. [7 + 2 OCW]

£800 : 3/10 × 800 = £240

25% : 25/100 × 800 = £200

240 + 200 = £440

£800 − £440 = £360

1 week — £80

x — £360

x = 360 ÷ 80 = 4.5

4.5 weeks

Examiner only

6.

Tram timetable from Kemp Station to Rowe Place

Trams leave the station:

- every 12 minutes from 8 a.m. until 10 a.m.
- every 20 minutes from 10 a.m. until late.

It takes 22 minutes from Kemp Station to Rowe Place.

(a) At what time does the first tram after 20:30 leave Kemp Station?
Circle your answer. [1]

20:50 (20:40) 21:00 20:36 20:42

(b) Nesta looks at the timetable shown above.
She decides to take the latest possible tram from Kemp Station to be at Rowe Place by 10:15 a.m.

At what time will Nesta's tram arrive at Rowe Place?
You must show all your working. [3]

22 min Kemp to Rowe
Not later than 10:15 am
10:15 − 22 = 9:53am

8:00, 8:12, 8:24, 8:36, 8:48
9:00, 9:12, 9:24, 9:30, 9:48
10:00

22 mins to 9:48 = 10:10 am

Examiner only

7. Rosie is printing two different rectangular pictures of her dog.
The small picture has a height of 10 cm and a width of 5 cm.
The large picture has a height of 40 cm and a width of 15 cm.

Pictures not to scale

(a) The small picture costs £2 to print.

Each 1 cm^2 of the small picture costs the same to print as each 1 cm^2 of the large picture.

Calculate the cost of printing the large picture.
You must show all your working. [6]

Area of small: $10 \times 5 = 50 cm^2$
Large: $40 \times 15 = 600 cm^2$

$50 cm^2 = £2$
$100 cm^2 = £4$
$150 cm^2 = £6$
$300 cm^2 = £12$

$600 : 300 cm^2 \times 2 : £12 \times 2$
$\Rightarrow £24$

Examiner only

(b) To make a frame, it costs 40p for each centimetre of the total distance around the outside of the picture.

Diagram not drawn to scale

Calculate the cost of making a frame for the **small** picture. [3]

£1 = 100p

x = 40p

⇒ £0.4

10+5+10+5 = 30 × 0.4 = 12

Cost of making a frame for the **small** picture is £12

Examiner only

8. Martina is going to buy some milk to make pancakes.

Small
500 ml for 40p

Medium
1200 ml for £1.20

Large
2000 ml for £2.50

Which size carton of milk offers the best value for money?
You must show all your working. [3]

	Small	Medium	Large
ml for 10p	500 ÷ 4 = 12.5	1200 ÷ 12 = 100	2000 ÷ 25 = 80
p per 100ml	40 ÷ 5 = 8	12 ÷ 12 = 10	2.50 ÷ 20 = 12.5
£ per 600ml	12 × 0.4 = 4.80	5 × 1.2 = 6	3 × 2.5 = 7.5

Small

Examiner only

9. (a) (i) Hubert has a quote from a gardener to landscape his garden.
The gardener will charge a total of £175, excluding VAT.
This total charge includes £55 for plants.
The remainder of the charge is for labour.

The gardener says it will take 8 hours to landscape Hubert's garden.
Calculate how much per hour the gardener is charging for labour. [2]

£(175 − 55) = £120

£120 ÷ 8 = £15 per hour

£15 per hour

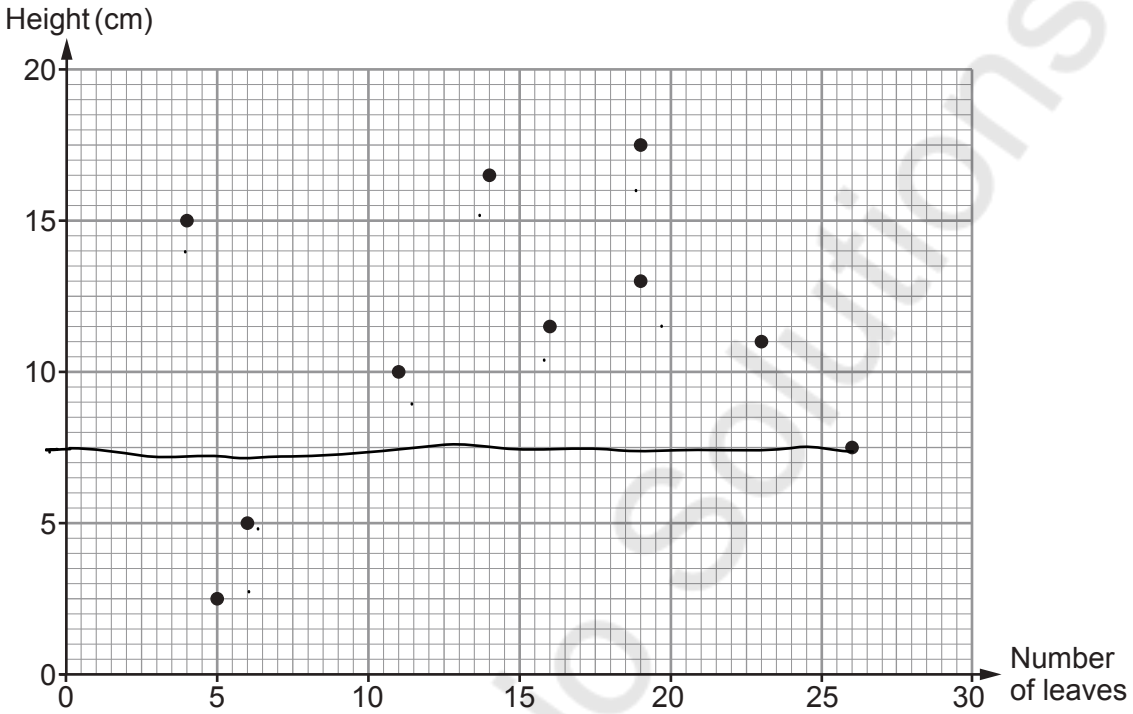
(ii) VAT at 20% is payable on the charge of £175.
Calculate the total charge of the landscaping, including the VAT. [3]

20% of £175 = £35

£175 + £35 = £210

Examiner only

(b) The following summer, Hubert picked 10 different flowers from his garden.
He measured the height of each flower.
He also counted the number of leaves on each flower.
Here are his results.



(i) Is it possible to estimate the number of leaves on a flower of height 6 cm?

Yes ☐ No ☑

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

No pattern

.....

.....

(ii) How tall is the flower with the greatest number of leaves?
Circle your answer. [1]

26 cm 2·5 cm 7·5 cm 5 cm 17·5 cm

Examiner only

(iii) There are two flowers that each have 19 leaves.
Calculate the difference in the heights of these two flowers.
You must show all your working. [2]

$17.5 - 13 = 4.5\text{cm}$

Difference in the heights is 4.5 cm

(iv) Calculate the percentage of the flowers that have **fewer than 23 leaves**. [2]

$80\% : 8 \div 10 = 0$

80 % of the flowers have **fewer than 23 leaves**.

Examiner only

10. Malik has some cherry trees.
Malik makes cherry jam using some of the fruit from his trees.

He makes and sells 200 jars of cherry jam.

It costs him £94 for all the ingredients to make the jam.
Malik pays 23p for each jam jar he uses.
He sells each jar of jam for £1.60.

Calculate the profit Malik makes from selling his 200 jars of jam. [5]

23p = £0.23

Cost: 200 × [1.63 − 0.23]
= 274

274 − 94 = 180

£180 or 18000p

END OF PAPER

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

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