Surname	Centre Number	Candidate Number
First name(s)		0

GCSE

3310U10-1

A20-3310U10-1

TUESDAY, 3 NOVEMBER 2020 – 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 **3**, 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.	**8**	
2.	**4**	
3.	**9**	
4.	**5**	
5.	**7**	
6.	**5**	
7.	**10**	
8.	**3**	
9.	**2**	
10.	**10**	
11.	**2**	
Total	**65**	

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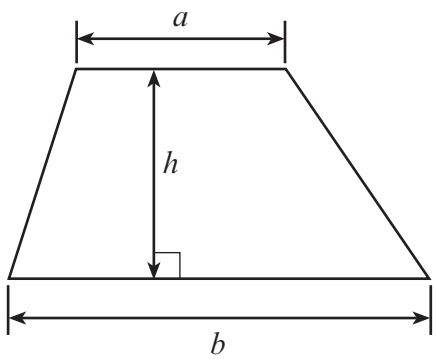
Formula List – Foundation Tier

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



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1.

(a) Mark, James and Aled visit the local sports centre.
They each choose a locker from those shown above.

(i) Mark chooses one of the lockers shown above at random.

Describe the chance that Mark chooses a locker with an odd number on it.
Circle the correct expression from those given below. [1]

impossible unlikely an even chance likely certain

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(ii) James chooses a locker with a number that is both a multiple of 6 and divisible by 9.
What number locker did James choose? [1]

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(iii) Aled chooses a locker with a number that is both an even number and a square number.
What number locker did Aled choose? [1]

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(b) The sports centre provides individual safes to store valuables.

Aled's passcode is the number eight thousand and seven.
Write this number using digits. [1]

.....

(c) On the way to the swimming pool in the sports centre, James and Aled have the following conversation:

James says

I'm going to swim one length of the pool.

Aled says

You will swim a distance of 25 miles.

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

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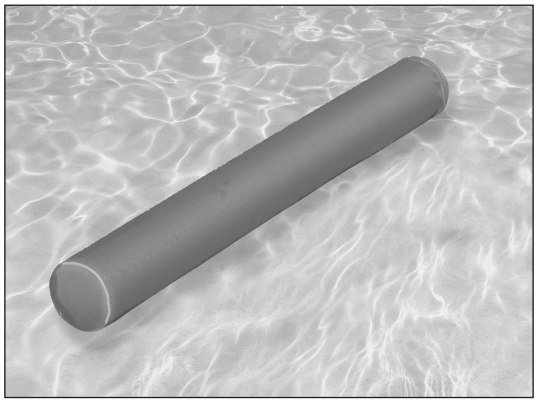
(d) The sports centre has swimming floats that people can use in the pool.
This is a picture of one of the floats.



What is the name given to the 3D shape that best represents the swimming float shown in the picture?
Circle your answer. [1]

sphere cylinder cube cone cuboid

(e) The number of people in the swimming pool is recorded at **regular intervals** each day.
The table below shows the times and the recorded numbers during the time that James, Aled and Mark were at the sports centre.

Time	Number of People
13:30	20
13:55	25
	28
	19
15:10	23
	32

Unfortunately, the manager forgot to put 3 times into his table.
Complete the time column in the table above. [2]

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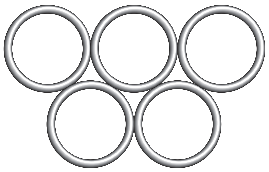
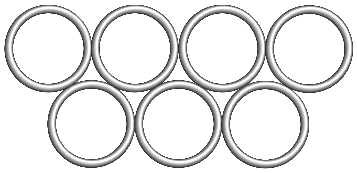
2. Brendon makes pendants for necklaces using circles.
The pendants come in a variety of sizes.
The first 3 sizes are shown below.

		
Size 1	Size 2	Size 3

(a) How many circles are used to make a Size 5 pendant? [1]

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(b) Which size of pendant has 17 circles? [1]

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(c) Brendon has 26 circles left over.
What is the largest size of pendant that he can make? [1]

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(d) Mary says,

To find the number of circles used in the next size up, you double the number of circles used in the size before it.

Is Mary correct?

Yes ☐ No ☐

Give a reason for your answer. [1]

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

A school raised £1200 for charity by holding a non-uniform day.

- A third of the money is given to a national children's charity.
- 20% of the money is given to a national animal charity.
- The rest of the money is shared equally between 4 local charities.

How much does each of the 4 local charities receive?
You must show all your working. [7 + 2 OCW]

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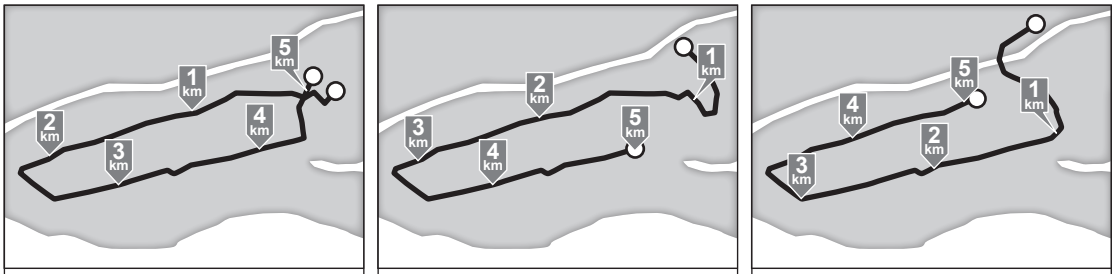
4. Maddi went running on three days last week.
The diagrams below show information for each of her three runs.
They show:

- the route taken,
- the length of the run in km,
- the time taken in minutes and seconds,
- the number of calories used.



Monday	Wednesday	Friday
5.07 km	**5** km	**5.02** km
34:03 time taken	**33:46** time taken	**32:52** time taken
384 calories	**375** calories	**381** calories

Use the data from Maddi's three runs last week to answer the following questions.

(a) What is the **total** number of calories that Maddi used in her three runs last week? [1]

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(b) Maddi thinks that she ran approximately the same distance each day.
Is she correct?

Yes ☐ No ☐

Give a reason for your answer. [1]

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(c) Maddi thinks that her shortest run took the least amount of time.
Is she correct?

Yes ☐ No ☐

Give a reason for your answer. [1]

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(d) What is the difference between the greatest and least time of her three runs? [2]

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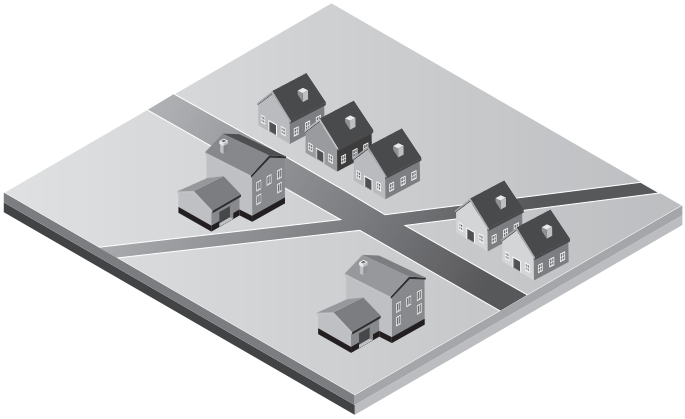
5.



(a) A plan for a new housing estate includes 2 roads crossing, as shown below.
One of the angles is 35°.

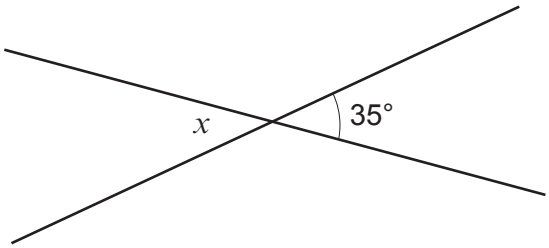


Diagram not drawn to scale

What is the size of angle x? [1]

.....

x = ... °

(b) The housing estate includes a park for children.
This park is triangular in shape.
A sketch of the park is shown below.

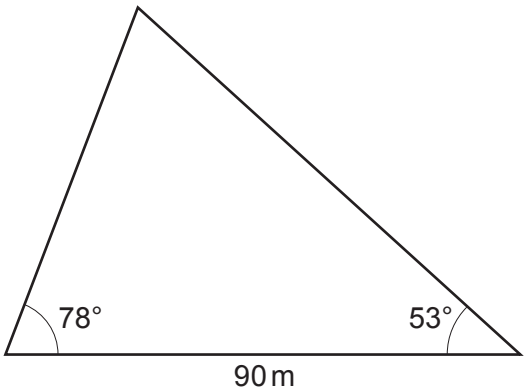


Diagram not drawn to scale

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Complete a scale drawing of the park.
Use a scale of 1 cm represents 10 m.
The 90 m line has been drawn for you.
Use your scale drawing to find the actual length of the other 2 sides of the park. [6]

1 cm represents 10 m

Actual lengths of the other 2 sides of the park are:

..... m and ..... m

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6. Marium buys some blueberries and strawberries.

Blueberries cost £4 per kg	Strawberries cost £3.60 per kg

Marium buys 1·5 kg of blueberries.
She receives £6.80 change from a £20 note.

Calculate the mass of the strawberries that Marium buys. [5]

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7. *(a)* Suzy buys a Jack Russell dog.
The dog costs her £450.
Pet insurance costs £18 per month.
Food for a Jack Russell costs £7 per week.

Calculate the total cost of buying, insuring and feeding Suzy's dog for the **first year**.
You must show all your working. [4]

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(b)

Remember:
1 inch ≈ 2·5 cm

The height of a fully-grown Jack Russell dog is between 25 cm and 30 cm.
A fully-grown Jack Russell dog has a mass of between 6 kg and 8 kg.

Complete each of the following statements.

(i) 'The height of a fully-grown Jack Russell dog is between

..... inches and ..... inches.' [3]

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(ii) 'A fully-grown Jack Russell dog has a mass of between

..... pounds and ..... pounds.' [3]

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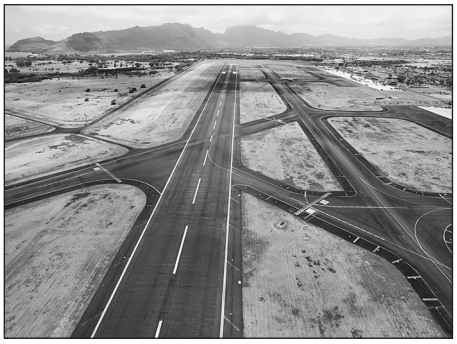
8. A new runway is to be built at an airport.

The plan below shows some of the angles.

Bryn has been asked to complete the plan by finding each of the missing angles, x, y and z.



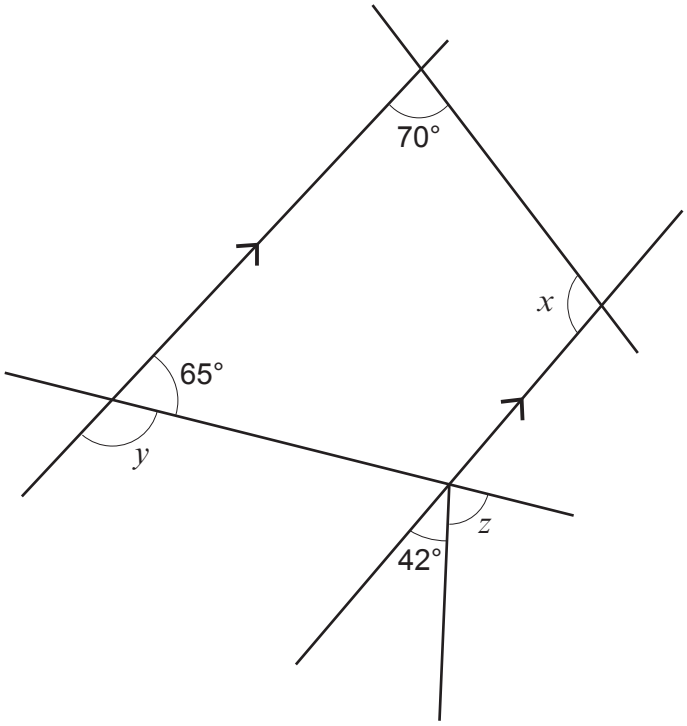


Diagram not drawn to scale

Calculate the size of each of the angles x, y and z. [3]

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x = ... ° y = ... ° z = ... °

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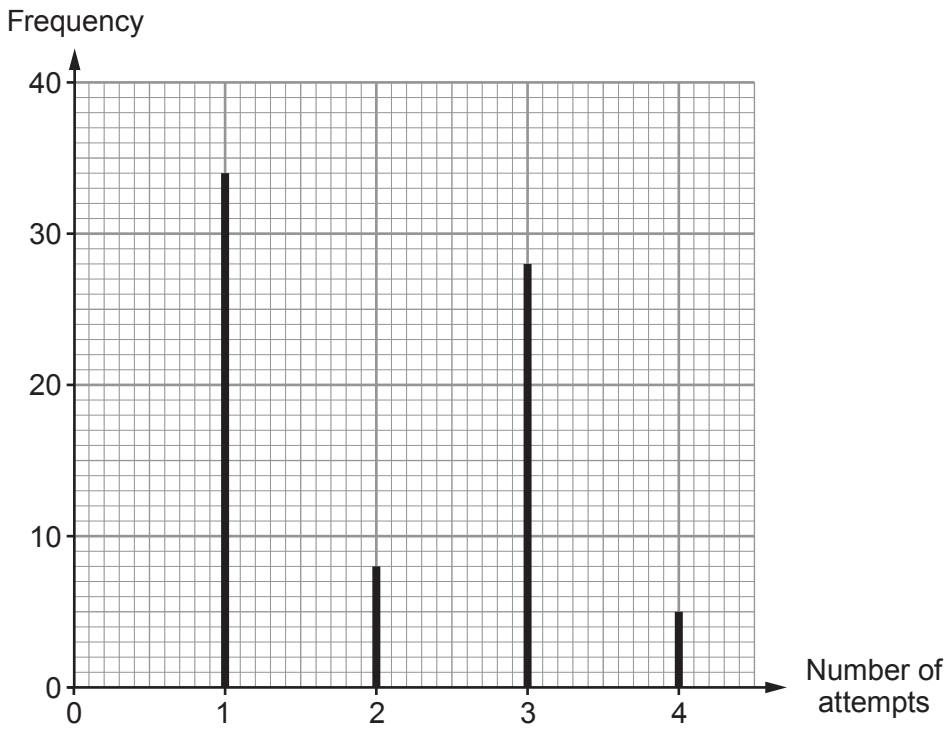
9. In an office, the ICT technician recorded the number of attempts each of 75 employees took to enter their correct password into a computer.

The results are displayed below.



(a) What was the modal number of attempts taken to enter the correct password? Circle your answer. [1]

1 2 2·5 3 4

.....

(b) What was the median number of attempts taken to enter the correct password? Circle your answer. [1]

1 2 2·5 3 4

.....

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10. *(a)* Rowan is going to make some muffins.

To make the muffins, he buys:
- muffin cases,
- ingredients,
- 1 flag per muffin, for decoration.

A pack of 16 muffin cases costs 22p.
The ingredients to make 6 muffins cost 25p.
A bag of 12 flags costs 40p.

Rowan buys 4 bags of flags.

Rowan plans to make as many muffins as possible and have no cases, ingredients or flags left over.

He will sell the muffins for 30p each.

Calculate Rowan's profit when he sells all the muffins he makes.
You must show all your working. [8]

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(b) Gerry makes biscuits.
Each box of biscuits costs him 80p to make.
He sells them for £4 a box.

Calculate the percentage profit Gerry makes on each box sold. [2]

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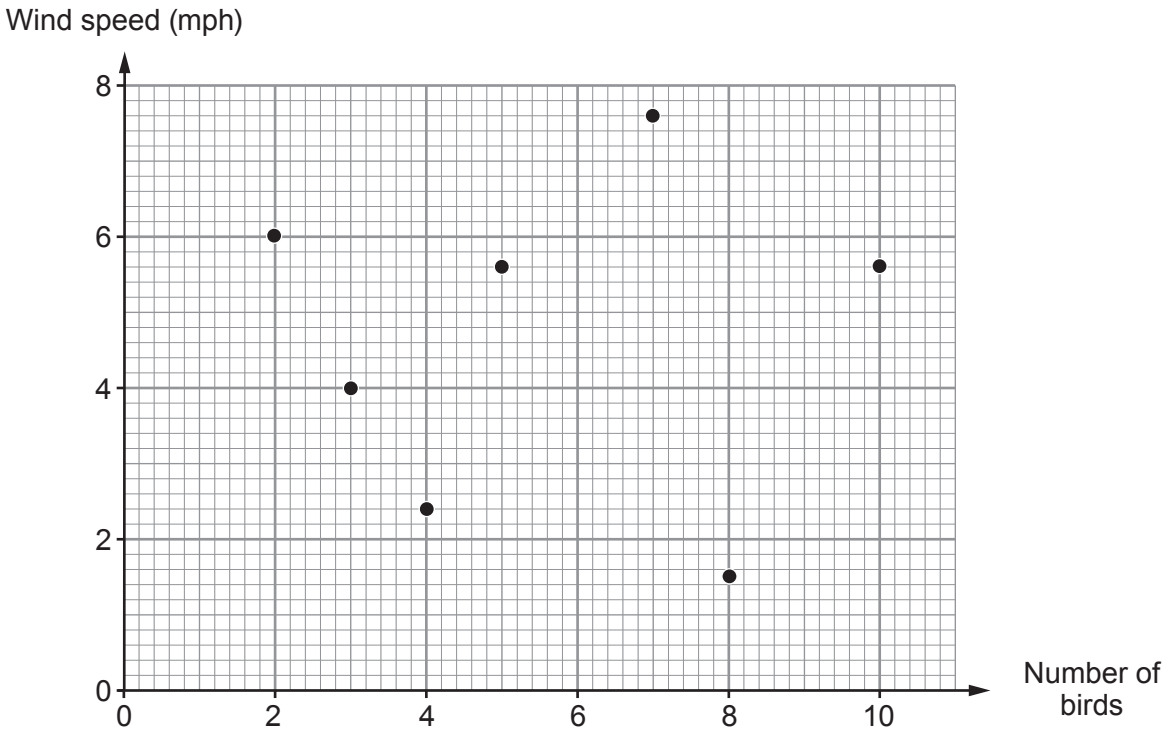
11. At 3 p.m. each day last week, Rosie recorded the wind speed and the number of birds feeding in her garden.



(a) Was there a correlation between wind speed and the number of birds feeding in Rosie's garden last week?

Yes ☐ No ☐

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

.....

(b) The greatest wind speed at 3 p.m. last week was on Tuesday.
How many birds were feeding in Rosie's garden at this time? [1]

..... birds

END OF PAPER

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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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