Candidate Name	Centre Number					Candidate Number				
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GCSE

MATHEMATICS - NUMERACY
UNIT 2: CALCULATOR - ALLOWED
FOUNDATION TIER

2nd SPECIMEN PAPER SUMMER 2017

1 HOUR 30 MINUTES

ADDITIONAL MATERIALS
A calculator will be required for this paper.
A ruler, protractor and a pair of compasses may be required.

INSTRUCTIONS TO CANDIDATES
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 in this booklet.

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.

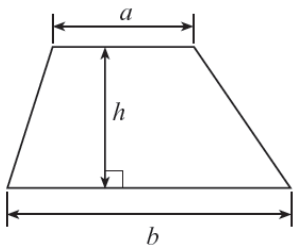
The number of marks is given in brackets at the end of each question or part-question.

The assessment will take into account the quality of your linguistic and mathematical organisation, communication and accuracy in writing in question **3.**

For Examiner's use only		
Question	**Maximum Mark**	**Mark Awarded**
1.	**9**	
2.	**4**	
3.	**8**	
4.	**4**	
5.	**4**	
6.	**5**	
7.	**2**	
8.	**4**	
9.	**9**	
10.	**6**	
11.	**4**	
12.	**8**	
TOTAL	**65**	

Formula list

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



1. Alys carried out a survey of 30 people to find out which vegetable, from a choice of cabbage, peas, broccoli and sprouts, they liked the most.
Her results are as follows.

Cabbage	Cabbage	Peas	Peas	Sprouts	Sprouts
Peas	Cabbage	Peas	Sprouts	Peas	Peas
Broccoli	Sprouts	Cabbage	Sprouts	Peas	Peas
Peas	Peas	Peas	Cabbage	Sprouts	Cabbage
Cabbage	Peas	Cabbage	Broccoli	Broccoli	Peas

(a) Use the data to draw a vertical line graph on the squared paper below.

[6]

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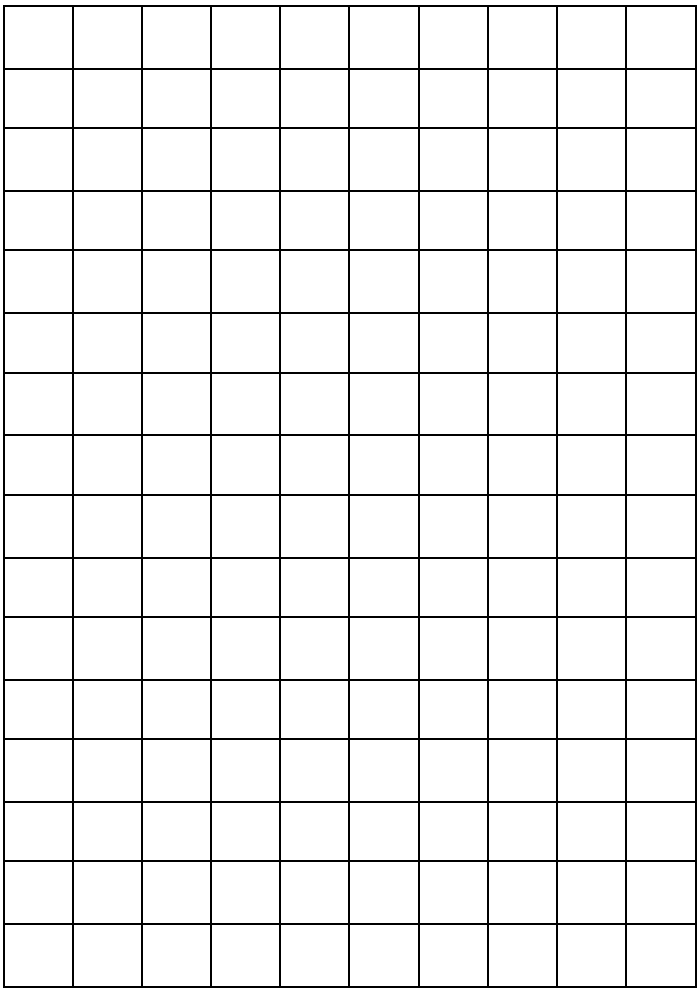

(b) Why would Alys collect her data in a frequency table using a tallying method?

[1]

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(c) Alys wanted to compare the popularity of different vegetables.
What is the modal vegetable?
Put a tick next to your answer.

[1]

Cabbage	
Peas	
There is no modal vegetable	
Broccoli	
Sprouts	

(d) Alys chose one person at random from the people that she had surveyed.
What is the probability that the person chosen said that broccoli was the vegetable that they liked the most?

[1]

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2.

Amelia is organising her 16th birthday party and decides to make the invitations for the party herself.

Each invitation is a rectangle measuring 6 cm by 8 cm.

She makes the invitations from coloured card measuring 18 cm by 16 cm.

(a) What is the maximum number of invitations that Amelia can cut from **one** piece of coloured card?

[2]

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Maximum number of invitations is …….

(b) Amelia wishes to invite 120 people to her birthday party.
What is the least number of pieces of coloured card, measuring 18cm by 16cm, that Amelia needs to buy?

[2]

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

Ashley usually works 32 hours a week at £6.50 per hour.

She pays one tenth of her earnings in tax and national insurance.
She gives £50 of her weekly earnings to her family for her room and food.
She spends £60 a week on socialising, clothing and other things.
She saves the rest of her earnings.

Ashley wants to book a week's holiday in Portugal costing £419.
How many weeks will it take her to save for her holiday?
You must show all your working.

[6 + OCW 2]

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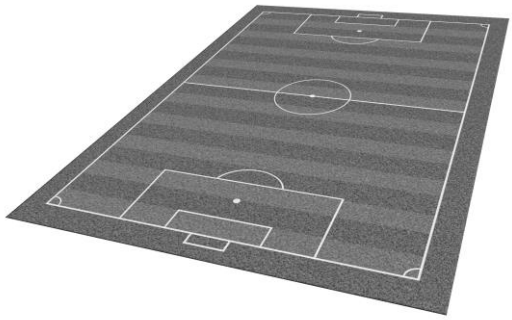
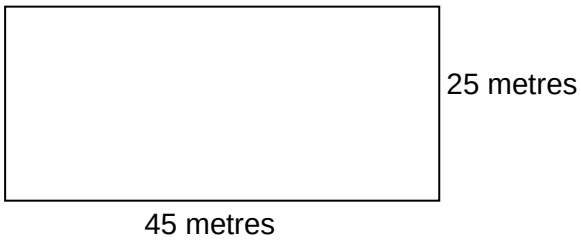


A local fitness centre wishes to build an outdoor 5-a-side football pitch of length 45 metres and width 25 metres.



The cost of building the outdoor 5-a-side football pitch is £85 per square metre.

Calculate the total cost of building the outdoor 5-a-side football pitch.

You must show your working.

[4]

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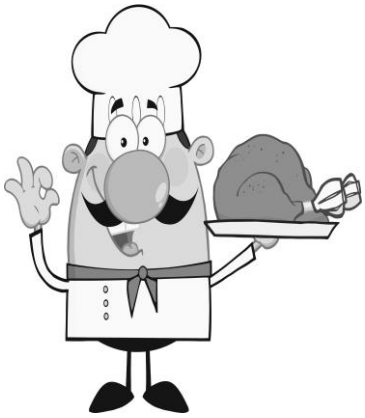
5.

A chef needs to cook a $4\frac{1}{2}$ kilogram turkey.
The following rule is used to calculate the cooking time:



"Cook for 40 minutes per kilogram and then add an extra 25 minutes."

The chef wants the turkey to be ready at 1:30pm.
What is the latest time that the chef should begin cooking the turkey?

[4]

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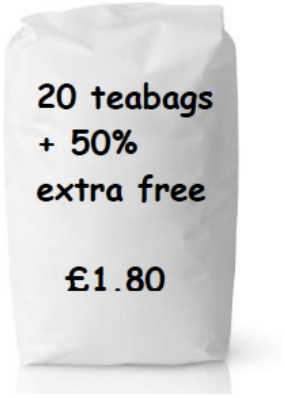
6. Teabags are on offer.

Offer A



Offer B

Which is the better buy?
Show all your calculations.

[5]

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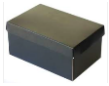
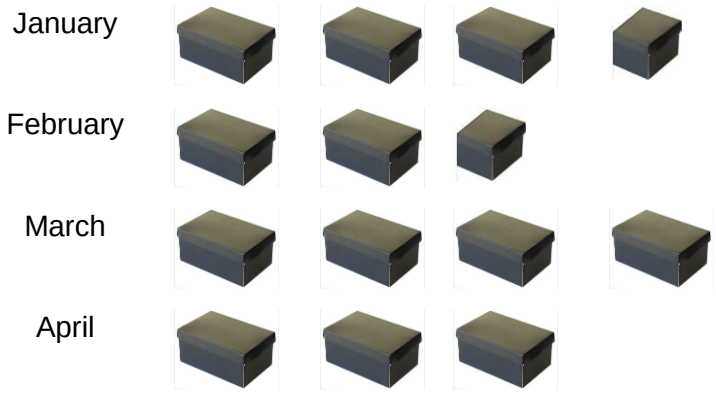
7. A pair of trainers is sold in a box.

The number of pairs of trainers sold each month from January to April is shown in the pictogram.

The symbol  represents 100 pairs of trainers



(a) What is the approximate range of the numbers of pairs of trainers sold each month?
Circle your answer.

[1]

100 150 200 250 300

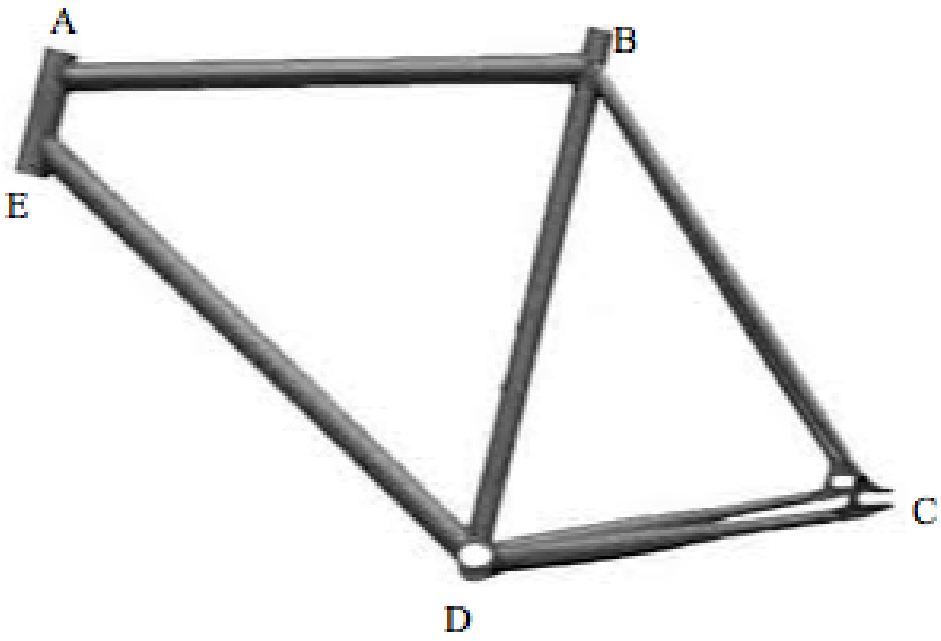
(b) The total number of trainers sold from January to April is 1300.
What is the mean of the number of pairs of trainers sold each month?
Circle your answer.

[1]

250 300 325 380 400

8. Bikes are built around a frame.

The diagram below is a scale drawing of a bike frame.
It is drawn to a scale of 1: 8.



(a) Write down an approximate length of the cross bar *AB*.
Give you answer in **metres**.

[2]

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(b) Is *AE* parallel to *BD*?
Use angle facts to explain your answer.

[2]

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9. Boat owners are charged to keep their boats in a harbour.

Charges for a North Wales harbour are given in the table below.

Period	Price per metre (£ per metre) **exclusive** of VAT	Notes
Annual	320	Minimum length of boat 9 m
Six monthly	180	Minimum length of boat 7 m
Monthly	40	No minimum length

Notes

- VAT is charged at a rate of 20%.
- All charges are **per metre**; any part metre is charged as a complete metre.
- Combinations of the periods are allowed.
  For example, for exactly 7 months, pay for 6 months then pay for an extra month, or pay monthly for each of the 7 months.

(a) **Including VAT**, how much would the **monthly** charge be for a 10 m boat? Circle your answer.

[1]

£40 £48 £400 £480 £4800

(b) **Excluding VAT**, how much would the **six monthly** charge be for an 8·2 m boat?

[1]

£180 £1440 £1620 £1944 £1728

(c)(i) Lars owns a 9·3 m boat.
He wants to keep his boat in the harbour for 11 months.
Which option should he choose?

You should consider all possibilities, including VAT.
Show all your working.

[6]

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(ii) What is the greatest saving that Lars could make by selecting your option?

[1]

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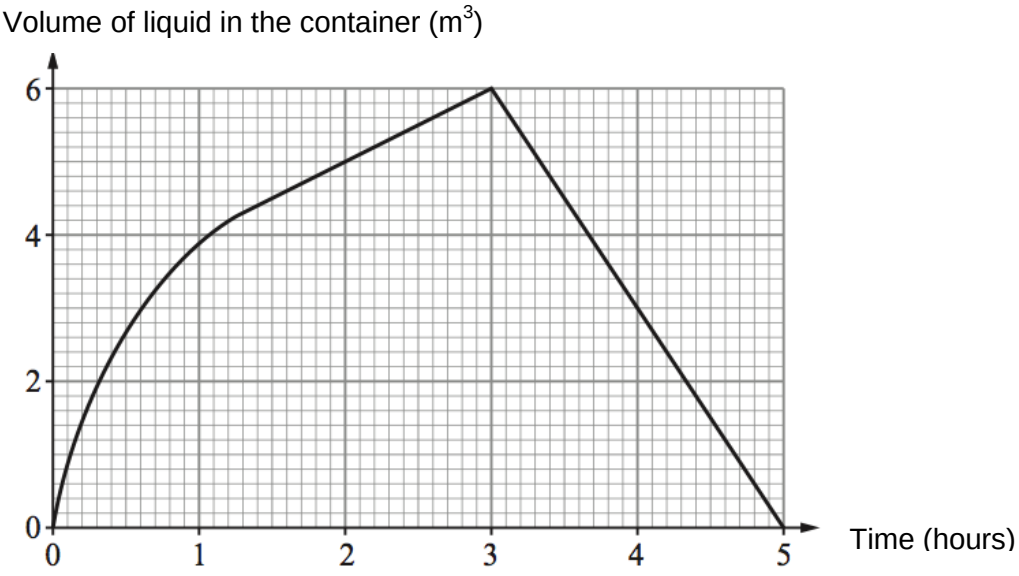
Greatest possible saving is £ ……

10. A container is used to collect the liquid produced by a factory.
As soon as the container is full, it starts to empty the liquid into a tanker.
As soon as the container is empty, it starts to fill again.

The graph shows the process of the container being filled and emptied into the tanker.



(a) What is the volume of the liquid in the container $2\frac{1}{2}$ hours into the process?

…… m^3

[1]

(b) How long does it take to half fill the container?
Give your answer in minutes.

[2]

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(c) The container is empty at 8:36 a.m.
At what other times is the container empty between 9 a.m. and 9 p.m.?

[2]

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(d) Put a tick in the box next to the correct statement.

[1]

The container fills at a constant rate from when it is empty to when it is full.	
The container fills at a constant rate to start with, then slows down.	
After starting to fill, the rate at which the container fills up increases.	
The container starts to fill quickly, then slows down to a constant rate.	
It is not possible to tell whether or not the rate at which the tank fills up remains the same.	

11. Newspapers often give temperatures in both degrees Fahrenheit (°F) and degrees Celsius (°C).

In the formula below, c represents a temperature in Celsius and f represents a temperature in Fahrenheit.

$$9c + 160 = 5f$$

(a) Complete the following statement.

$10°C$ is the same as …….. $°F$.

[2]

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(b) Make c the subject of the formula.

$$9c + 160 = 5f$$

[2]

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12. A construction company is working on plans to lay a new gas pipeline.
The gas pipeline is to run from Abermor to Brentor to Cantefore then continue on to another town.

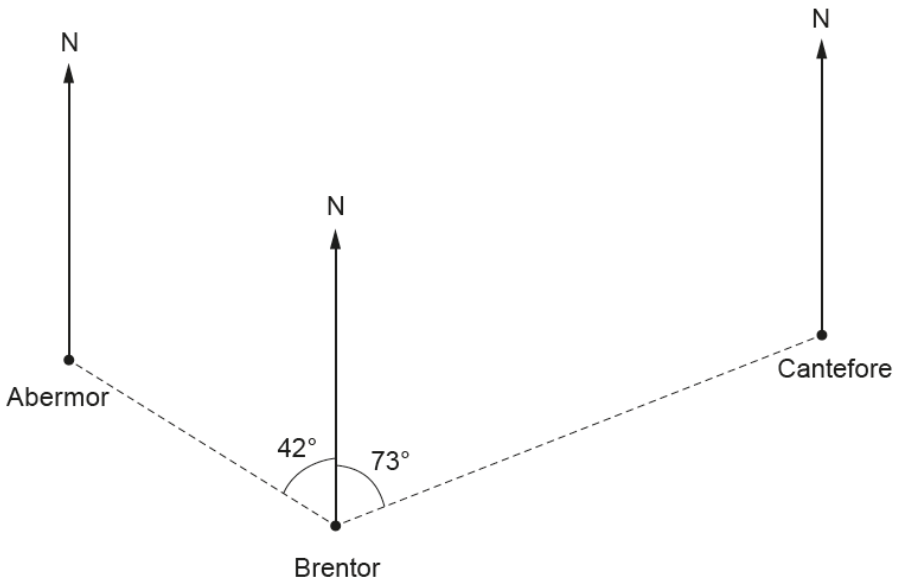

Diagram not drawn to scale

(a) The above diagram shows the section of gas pipeline from Abermor to Cantefore.

(i) The bearing of Brentor from Cantefore is

073° 107° 163° 253° 287°

(ii) Write down the bearing of Abermor from Brentor.

[3]

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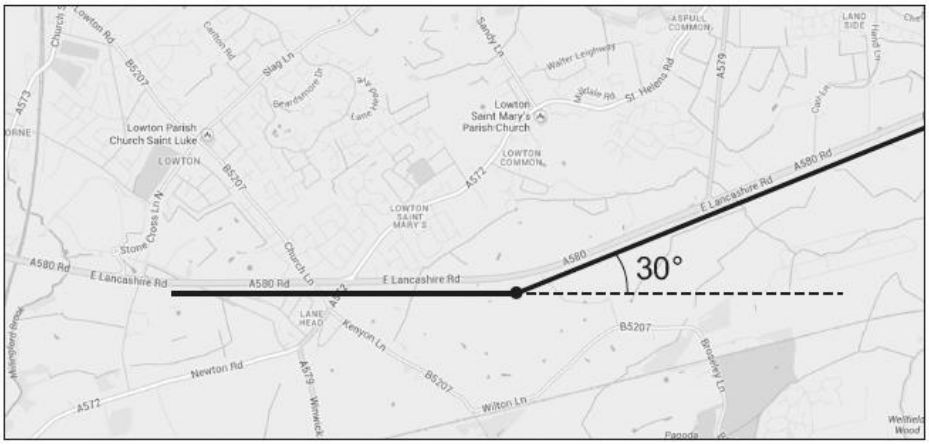
(b) As the gas pipeline continues towards the next town, it has to make a 30° turn so that it follows the road, as shown in the sketch.



Using a pair of compasses and a ruler, construct a line that shows the direction of the gas pipeline as it follows the road after the 30° turn.
You must show all of your construction lines and arcs.

[3]

END OF PAPER