Write your name here

Surname		Other names

Centre Number   Candidate Number

Edexcel GCSE

Applications of Mathematics
Unit 1: Applications 1
For Approved Pilot Centres ONLY

Foundation Tier

Monday 11 June 2012 – Afternoon	Paper Reference
Time: 1 hour 45 minutes	**5AM1F/01**

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need*.
- **Calculators may be used.**
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.

Information

- The total mark for this paper is 100
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*
- Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed.

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

*Turn over* ▶

You must not write on this formulae page.
Anything you write on this formulae page will gain NO credit.

Area of trapezium $= \frac{1}{2}(a + b)h$
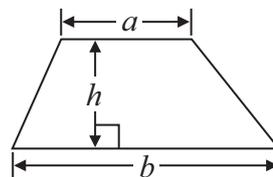
Volume of prism = area of cross section × length

P 4 0 6 5 4 A 0 2 2 8
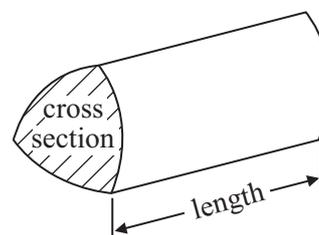
Answer ALL questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1   Lucy has one pound twenty two pence.
    Mary has three pounds eight pence.

    Work out the total amount of money Lucy and Mary have.

    £...

    (Total for Question 1 is 3 marks)

2   Emma buys online three tickets for a theatre show.
    Each ticket costs £40

    Emma also has to pay a booking fee.
    The booking fee is 10% of the price of the tickets.

    Work out the total amount Emma has to pay.

    £...

    (Total for Question 2 is 3 marks)

3 On Sunday, Ewa completely fills the petrol tank of her car.

On Monday, the petrol tank is $\frac{4}{5}$ full.

(a) What fraction of the full petrol tank has Ewa used?

....
(1)

Ewa buys 50 litres of petrol.
The petrol costs 141.4p per litre.

(b) Work out the total cost of the petrol.

£...
(3)

(Total for Question 3 is 4 marks)

4 A school bus takes students between 3 different schools.

There are 14 students on the bus when it leaves school A.
The bus goes from school A to school B.
At school B, 7 students get off the bus and 5 students get on the bus.

The bus then goes from school B to school C.
At school C, 10 students get off the bus and 6 students get on the bus.

How many students are now on the bus?

....

(Total for Question 4 is 3 marks)

5 Haseem and Alesha are drawing tiles.

Haseem says,

'My tile is a quadrilateral with all four angles of equal size.
My tile also has four sides equal in length.'

(a) (i) What special type of quadrilateral has Haseem drawn?

....

Alesha says,

'My tile is a quadrilateral with four sides of equal length.
My tile has two different pairs of angles of equal size.'

(ii) What special type of quadrilateral has Alesha drawn?

....

(2)

Here is an accurate drawing of a tile.

(b) (i) On the tile, draw all the lines of symmetry.

(ii) Measure the width of the tile.

.... cm

(4)

(Total for Question 5 is 6 marks)

6 Jim works in a cafe.
He sells coffee.
A cup of coffee costs £1.50

On Wednesday the number of cups of coffee Jim sells is c.
He sold these cups of coffee for a total of £75

(a) Write down an equation to represent this information.

....
(2)

(b) Work out how many cups of coffee Jim sold on Wednesday.

....
(2)

(Total for Question 6 is 4 marks)

*7 The table shows some information about the average temperatures in London and in Malaga each month from January to June.
The temperatures are in °C.

	Jan	Feb	Mar	Apr	May	Jun
London	2	5	9	14	16	20
Malaga	10	14	18	23	28	34

Show this information in a suitable chart or diagram.
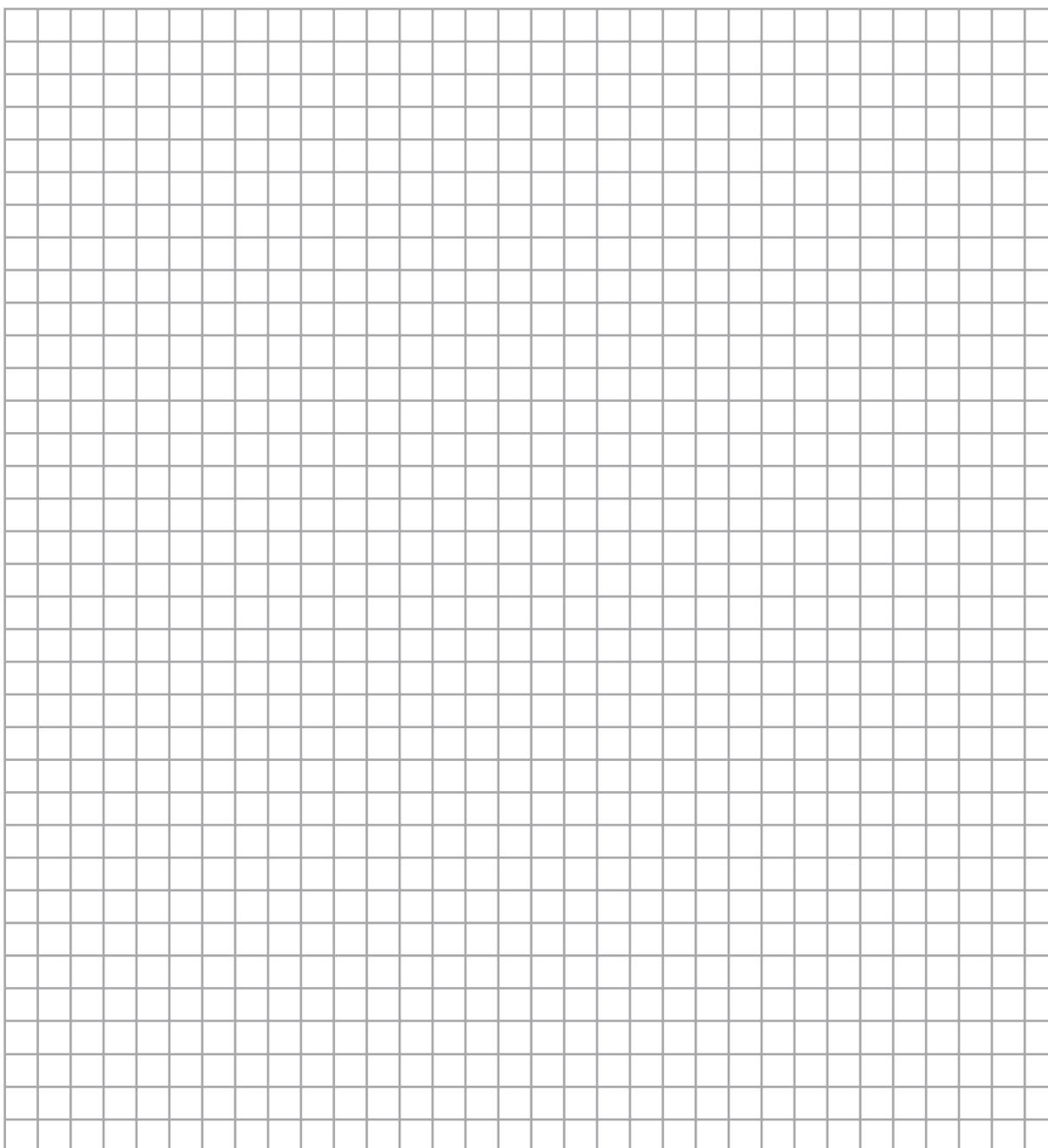
(Total for Question 7 is 4 marks)

Turn over ▶

8 Fiona is a pupil at a primary school.
Fiona is using a simple grid to design a map of an island.

The grid is shown below.
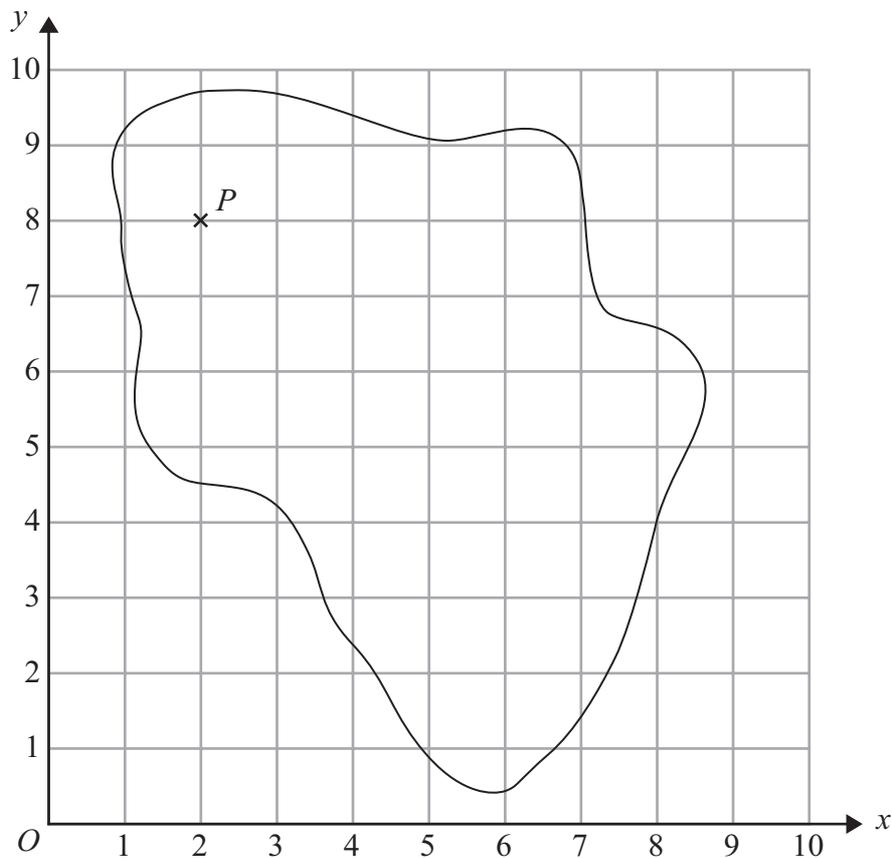
The cross at *P* shows a palm tree on the island.

(a) Write down the coordinates of the palm tree.

(.............................. , ...)

(1)

Fiona is going to show a coconut tree at the point (6, 2).

(b) Mark with a cross (✗) the position of the coconut tree.
Label this point *C*.

(1)

Fiona wants to show the position of some treasure.
She is going to show the position of the treasure exactly halfway between the two trees.

(c) Work out the coordinates of the position of the treasure.

(.............................. , ...)

(2)

(Total for Question 8 is 4 marks)

9 Caitlin is planning a school disco.

She wants to find out the types of music people like.

Design a suitable table for a data collection sheet she could use to collect this information.

(Total for Question 9 is 3 marks)

10 A club sells metal badges and cloth badges.

The metal badge is an equilateral triangle.
The length of each side is 2 cm.

Diagram **NOT**
accurately drawn

2 cm
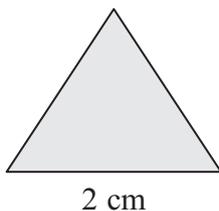
The cloth badge is mathematically similar to the metal badge.

(a) What is the size of each angle of the cloth badge?

....°

(1)

The length of a side of the cloth badge is 3 times the length of a side of the metal badge.

(b) Work out the length of each side of the cloth badge.

.... cm

(2)

(Total for Question 10 is 3 marks)

11 Here is a parcel on some scales.
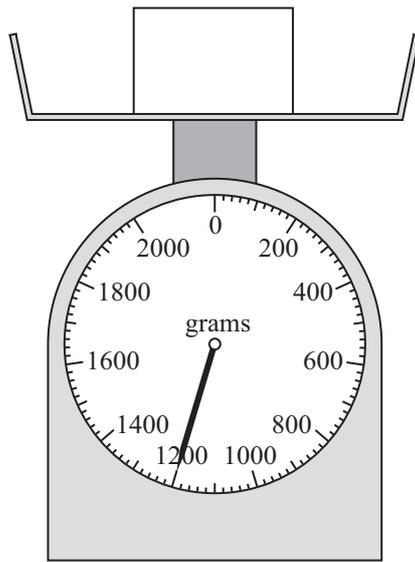
(a) (i) Write down the weight, in grams, shown on the scales.

....g

Colin wants to know the weight of the parcel in kilograms.

(ii) Change the weight of the parcel into kilograms.

....kg

(2)

Colin drives to the post office to post his parcel.
This scale shows the speed of Colin's car.
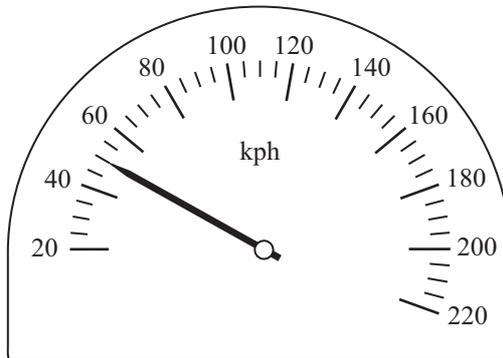
(b) Write down the speed shown on this scale.

.... kph

(1)

(Total for Question 11 is 3 marks)

12 Mr Whittle put this bar chart on his classroom wall.
The bar chart shows some information about the month in which the students in his class have their birthday.

Birthdays of Students
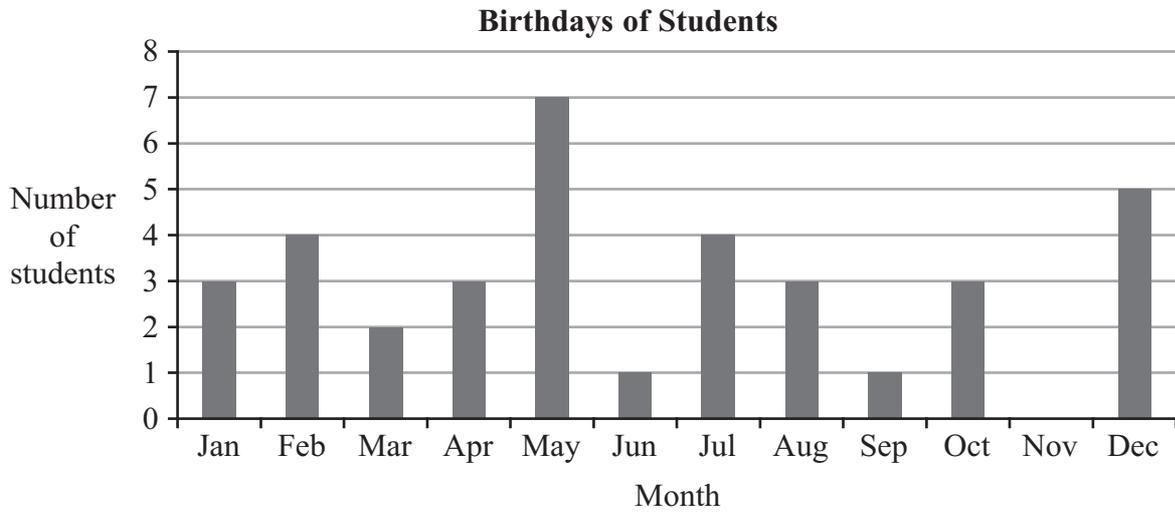
(a) Write down the month in which most of the students have a birthday.

....

(1)

(b) Work out the number of students in Mr Whittle's class.

....

(2)

(Total for Question 12 is 3 marks)

13 Rick is making a window in the shape of a circle.
The glass in each sector of the circle will be a different colour.

The diagram shows the sizes of the angles in some of the sectors of the circle.
AOB is a diameter of the circle.
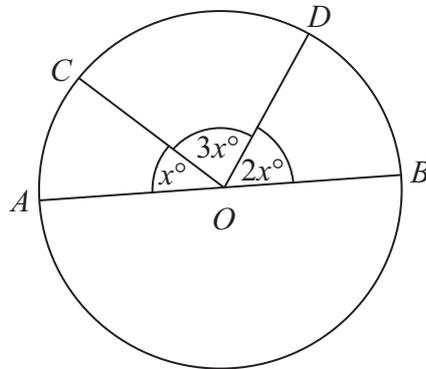
Diagram **NOT**
accurately drawn

(a) Work out the value of *x*.

....

(3)

(b) Write down the mathematical name for the line *OC*.

....

(1)

(c) Write down the mathematical name for the part of the circle *AC*.

....

(1)

(Total for Question 13 is 5 marks)

P 4 0 6 5 4 A 0 1 5 2 8

14 This table shows some information about four computers.

Computer	Price (£)	Weight (kg)	RAM (Gb)	Storage Capacity (Gb)
Ace 38	600	2.8	4	320
Ace 40	475	2.6	3	250
Ace 45	613	2.7	4	320
Ace 50	624	2.7	4	500

(a) Which is the heaviest computer?

....
(1)

(b) Which computers have the same storage capacity?

....
(1)

(c) How much RAM does the Ace 40 have?

.... Gb
(1)

The Ace 40 is the cheapest computer.

(d) From the information in the table, give a reason why.

....

....
(1)

(Total for Question 14 is 4 marks)

15 Jill has a cafe.
Jill asks 100 people the type of coffee they buy most often.

The two-way table gives some information about Jill's results.

	Americano	**Latte**	**Cappuccino**	**Total**
Small	3	5	7	
Medium	23		21	65
Large		7		
Total	35			100

Complete the two-way table for Jill.

(Total for Question 15 is 3 marks)

16 Philip works in a shoe shop.
Here are the sizes of 15 pairs of shoes Philip sold.

    3   3   4   4   4   4   4   5   6   6   6   7   7   8   9

(a) (i) Write down the mode.

....

   (ii) Write down the median.

....

(2)

Philip has to order some more shoes to sell.
He wants to use an average shoe size to help him decide the shoe size to order.

(b) Which average should he use?
Give a reason for your answer.

....

....

....

(1)

(Total for Question 16 is 3 marks)

*17 Amy is on holiday in Spain.
In Spain a watch costs €14
In England the same type of watch costs £12

The exchange rate is £1 = €1.20

In which country is the watch better value?
You must show all your working.

(Total for Question 17 is 3 marks)

18 Sui Lin buys items needed for winter sports.
She then sells these items.

Sui Lin sets up a spreadsheet as shown below.
Here is an extract of the spreadsheet.

	A	B	C	D
1	**Item**	**Buys (£)**	**Sells (£)**	**Profit or Loss (£)**
2	Skis	50	55	
3	Snowboard	200	180	
4	Shovel	45	55	
5	Poles	10	8	
6	Bindings			
7	**Total**			

Sui Lin buys bindings for £90
She sells the bindings for £102

(a) Put this information in the spreadsheet.

(2)

(b) Write down the formulas to go into each of the cells D2 and B7

D2..

B7..

(3)

(Total for Question 18 is 5 marks)

*19 Josie and Rose both play the guitar in a band.
The band plays for 120 minutes.

Josie plays her guitar for 70% of this time.

Rose plays her guitar for $\dfrac{4}{5}$ of this time.

Who plays the guitar for the longest time?

(Total for Question 19 is 3 marks)

20
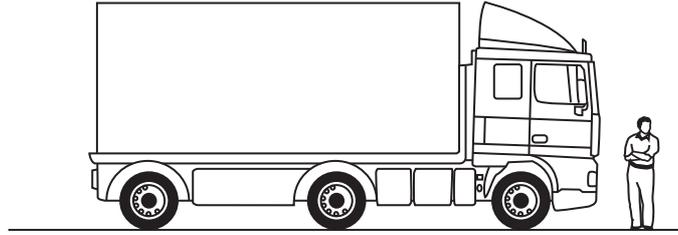
The picture shows a lorry driver standing next to his lorry.
The lorry driver and the lorry are drawn to the same scale.

The lorry driver wants to drive the lorry into a car park.
The entrance to the car park is 2.1 metres high.

Can the lorry driver safely drive the lorry into the car park?
You must clearly show how you got your answer.

(Total for Question 20 is 3 marks)

21 An internet bookshop uses this advert.

> **Each day every 3rd customer gets a mystery prize.**
>
> **Each day every 20th customer gets free postage and packaging.**

On Tuesday the internet bookshop had 150 customers.

(a) How many of the 150 customers got a mystery prize?

....

(2)

(b) How many of the 150 customers got free postage and packaging?

....

(2)

(c) How many of the 150 customers got both a mystery prize **and** free postage and packaging?

....

(2)

(Total for Question 21 is 6 marks)

*22 Alan, Ben and Clara are playing a game with cards.

Alan has p cards.
Ben has twice as many cards as Alan.
Clara has 3 cards less than Ben.

They have a total of 17 cards.

Work out how many cards each person has.

(Total for Question 22 is 5 marks)

*23 Here are three oil cans.

Diagrams **NOT** accurately drawn

38 litres

9 gallons

70 pints

A

B

C

Given that 8 pints = 1 gallon,
put the cans in order of capacity.

(Total for Question 23 is 4 marks)

24 The diagram shows the top of Justin's birthday cake.

The cake is in the shape of a cross.
Each edge of the cross has a length of 4 cm.
All the corners are right angles.
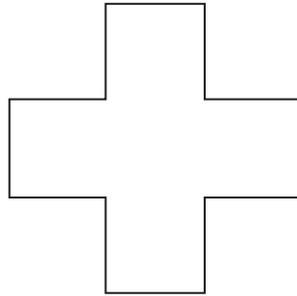
Diagram **NOT**
accurately drawn

Justin covers all of the top of the cake with chocolate.

(a) Work out the area Justin covers with chocolate.

.... cm^2

(3)

Justin is going to put a ribbon around the edge of the cake.

(b) Work out the length of ribbon Justin needs.

.... cm

(2)

(Total for Question 24 is 5 marks)

25 Anna is making crumble.

She makes the crumble from flour, sugar and butter.
Anna needs twice as much butter as sugar.
She needs one and a half times as much flour as butter.

Anna is going to make 900 g of crumble.

Calculate the amount of sugar Anna needs.

....g

(Total for Question 25 is 4 marks)

26 Here is a flowchart to calculate tax on inheritance.

```
                    ┌─────────────┐
                    │    START    │
                    └──────┬──────┘
                           │
                     ╱─────────────╱
                    ╱   Input H   ╱
                   ╱─────────────╱
                           │
                           ▼
                      ◇─────────◇                 ╱──────────────────╱
                     ╱ H > 325000 ╲──── No ─────▶╱  Output T = 0    ╱
                      ◇─────────◇               ╱──────────────────╱
                           │                             │
                          Yes                            │
                           ▼                             │
                  ┌─────────────────┐                    │
                  │ W = H − 325000  │                    │
                  └────────┬────────┘                    │
                           │                             │
                           ▼                             │
                  ┌─────────────────┐                    │
                  │  T = 0.4 × W    │                    │
                  └────────┬────────┘                    │
                           │                             │
                     ╱───────────╱                       │
                    ╱  Output T ╱◀──────────────────────┘
                   ╱───────────╱
                           │
                    ┌─────────────┐
                    │    Stop     │
                    └─────────────┘
```
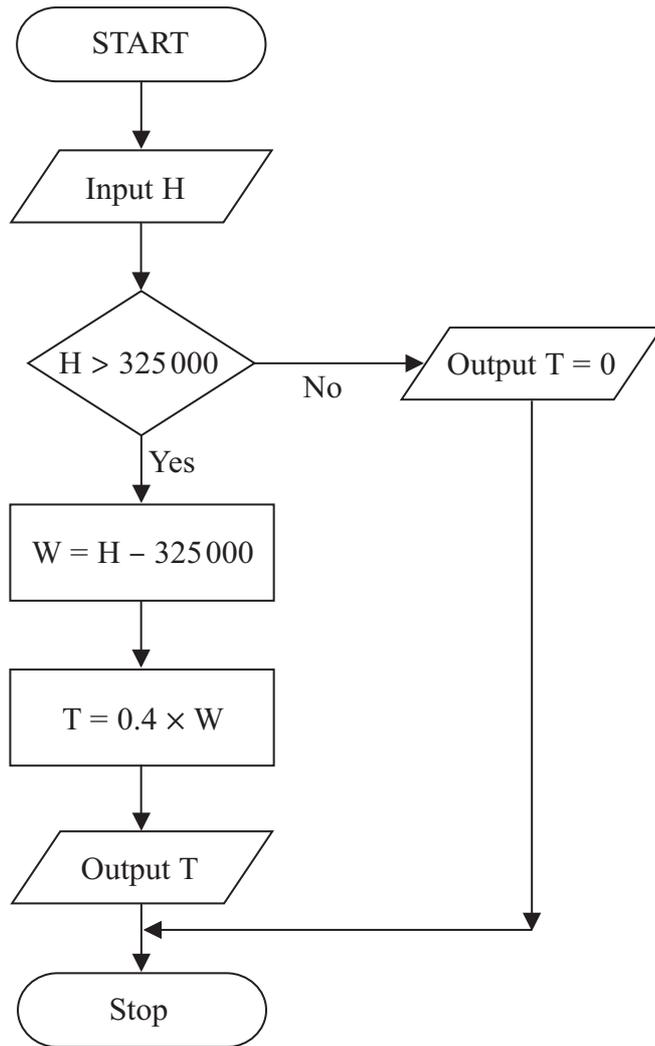
An inheritance, £H, is £100 000

(a) Use the flowchart to calculate the tax, £T.

T = ...
(1)

An inheritance is £400 000

(b) Calculate the tax.

T = ...
(3)

(Total for Question 26 is 4 marks)

TOTAL FOR PAPER IS 100 MARKS

BLANK PAGE