


Write your name here					
Surname			Other names		
<b>Edexcel</b>		Centre Number		Candidate Number	
<b>Functional Skills</b>		<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
<b>Mathematics</b>					
<b>Level 2</b>					
Wednesday 12 May 2010 <b>Time: 1 hour 15 minutes</b>				Paper Reference <b>FM201/01</b>	
<b>You must have:</b> Ruler graduated in centimetres and millimetres, protractor, pen, HB pencil, eraser, calculator.					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.*

### Information

- The total mark for this paper is 48.
- The marks for **each** question are shown in brackets  
– *use this as a guide as to how much time to spend on each question.*
- **Calculators may be used.**

### 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.

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**TASK 1: AIRCRAFT**

**Answer all questions in this task.**

**Write your answers in the spaces provided.**



**Where you see this sign you must show clearly how you get your answers as marks may be awarded for your working out.**

- 1** A travel company is going to hire planes to fly to Johannesburg in South Africa for the 2010 World Cup.

Passengers will be able to fly from London or Amsterdam or Frankfurt.

The diagram shows flying distances **in kilometres** between the airports.

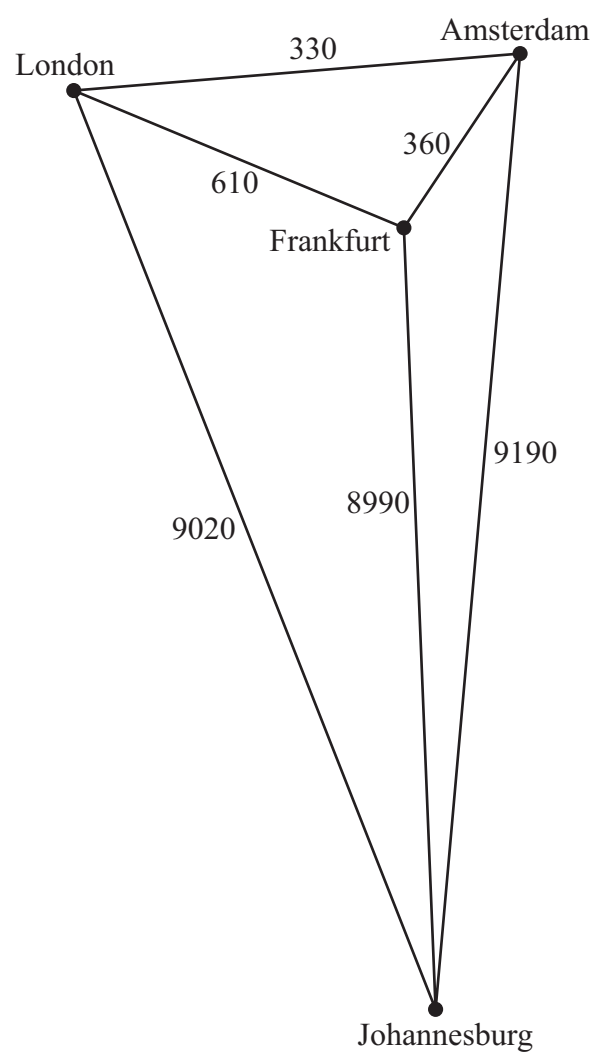


Diagram **NOT** accurately drawn



Display a table or chart to show the flying distances.

Use this box to show clearly your answer.



A large empty rectangular box for writing the answer.

(Total for Question 1 = 4 marks)



- 2 The travel company can hire four different types of plane to fly to Johannesburg. They can hire any number of each type of plane. The table below shows the maximum number of passengers each type can carry.

		Type of Plane			
		A	B	C	D
Maximum passenger number		380	450	280	365

The numbers of passengers that the travel company has to fly to Johannesburg are:

from London: 1225 passengers

from Amsterdam: 575 passengers

from Frankfurt: 600 passengers

Each plane can travel direct to Johannesburg or via one of the other airports to stop and pick up passengers.

**The total number of empty seats must be minimised.**

Work out which planes the company will use **and** the total number of empty seats.

Use this box to show clearly how you get your answer.



Use this box to show clearly how you get your answer.



A large, empty rectangular box intended for the student to show their work and answer the question.

**(Total for Question 2 = 4 marks)**



H 3 5 5 1 5 A 0 5 2 4

- 3 Two planes are due to fly to Barbados at the same time.  
The first plane has 380 passengers.  
The second plane has 228 passengers.

One of the planes is cancelled.  
There are only seats for 450 passengers on the other plane.  
Some passengers will have to delay their journey.

To get passengers to agree to delay their journey, the airline offers an incentive to passengers of both planes.  
Only one incentive is to be offered to passengers.

	Incentive	Percentage of passengers delaying journey
A	A free flight to any destination in Europe	Up to 20%
B	A free flight to any destination in Europe and travel vouchers to the value of £250	Up to 40%
C	A free flight to any destination in Europe and travel vouchers to the value of £500	Up to 50%

Which incentive would the airline offer?

Use the box to show clearly how you get your answer.



Use the box below to show clearly how you get your answer.



A large empty rectangular box for writing the answer.

(Total for Question 3 = 4 Marks)



H 3 5 5 1 5 A 0 7 2 4

4 Three airlines fly from East Midlands airport to Florence airport in Italy.

If a passenger's luggage weighs more than the luggage allowance the passenger has to pay an **excess luggage charge**.

**MARBLE**

**Ticket Price**  
£100

**Luggage Allowance (kg)**  
15

**Excess Luggage Charge**  
£10 per kg

**FLY TIM**

**Ticket Price**  
£126.50

**Luggage Allowance (kg)**  
18

**Excess Luggage Charge**  
£9 per kg

**BLUE JEX**

**Ticket Price**  
£126

**Luggage Allowance (kg)**  
20

**Excess Luggage Charge**

1 - 2kg	£20
2 - 3kg	£42
3 - 5kg	£62
above 5kg	£84





The total cost for a passenger is the ticket price plus any excess luggage charge.

Carmelo is going to fly from East Midlands airport to Florence airport.  
His luggage will weigh between 15 kg and 27 kg.

Compare the costs of flying to Italy with luggage weighing from **15 kg to 27 kg**.

**Use the boxes on pages 9 and 10 and/or the graph paper on page 11 to show clearly any calculations, graphs, charts or diagrams you have used when making your comparisons.**



A large empty rectangular box for writing or drawing.



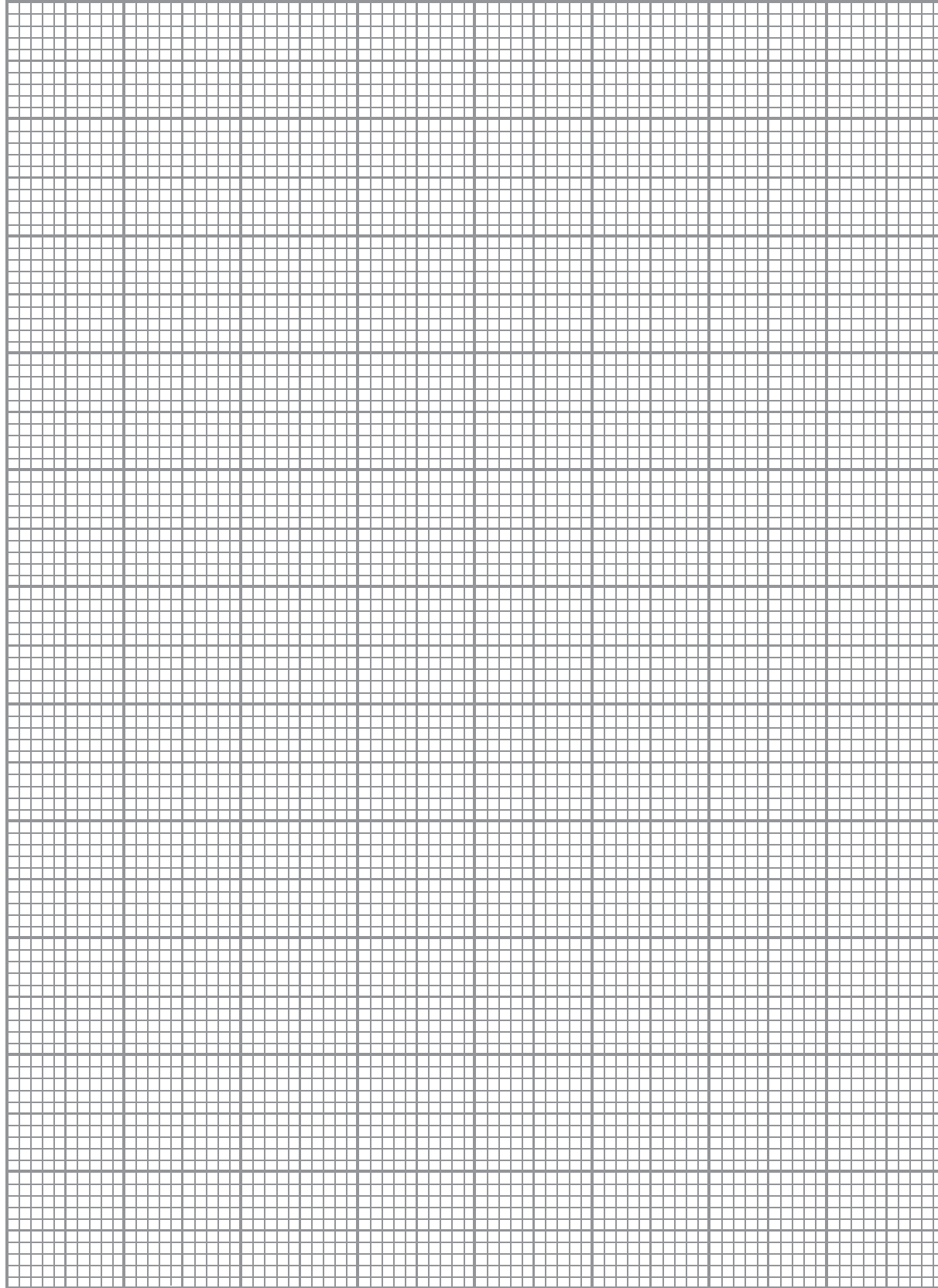
Use this box to show clearly how you get your answer.



A large, empty rectangular box intended for showing the work or steps to solve a problem.



You can draw any graphs or charts on the grid below.



(Total for Question 4 = 8 Marks)



H 3 5 5 1 5 A 0 1 1 2 4

**TASK 2: CINEMA**

**Answer all questions in this task.**

**Write your answers in the spaces provided.**

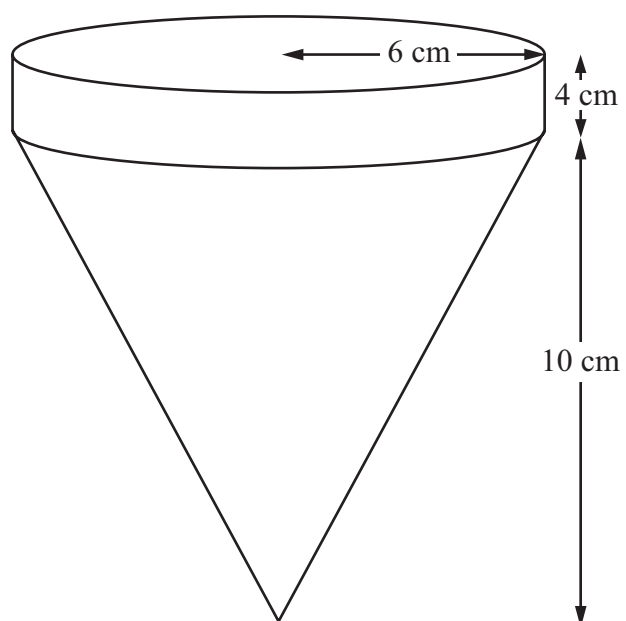


**Where you see this sign you must show clearly how you get your answers as marks may be awarded for your working out.**

5 The diagram shows a small container.

The ratio of the dimensions of the small container to a large container is 2:3

Diagram **NOT** accurately drawn



The table shows the values of  $r$ ,  $x$  and  $h$  for the diagram.

	$r$	$x$	$h$
Small container	6	4	10
Large container			



This formula is used to find the total volume of the large container.

$$V = \pi r^2 x + \frac{1}{3} \pi r^2 h$$

$V$  = The volume (cm<sup>3</sup>)

$$\pi = 3.14$$

The values of  $r$ ,  $x$  and  $h$  are the values for the container.

Work out the volume of the **large** container.

Use the box below to show clearly how you get your answer.



(Total for Question 5 = 5 marks)



- 6 On Sunday, several staff cannot work because they are ill.  
The cinema manager draws up a table showing the number of **extra** staff needed on Sunday.

The cinema manager asks the staff if any of them can do an extra four hour shift between 11:00 and 19:00.  
Three members of staff agree.

Agency staff will be used for the rest of the time.

Time	Number of extra Staff needed
11:00 - 12:30	2
12:30 - 15:00	3
15:00 - 17:30	2
17:30 - 19:00	3

(a) Show how these staff can be used on Sunday from 11:00 to 19:00.

(4)

Use the box below to show clearly how you get your answer.



The agency will charge the cinema £26.70 per hour for their staff.  
The manager will pay cinema staff 30% more than their normal pay of £7 an hour for their extra four hour shifts.

(b) What is the total cost of the extra staff needed in the plan for Sunday?

(4)

Use the box below to show clearly how you get your answer.



(Total for Question 6 = 8 marks)



### TASK 3: CAR PARKING

Answer all questions in this task.

Write your answers in the spaces provided.



Where you see this sign you must show clearly how you get your answers as marks may be awarded for your working out.

7 A company is going to move to a two floor office block.

The ground floor is rectangular. The floor space is 20m by 45m.

The first floor is rectangular. The floor space is 15m by 35m.

#### Council regulations:

- Offices must have no more than **one** car park space for a standard user per 75m<sup>2</sup> of floor space.
- Offices must have at least **one** car park space for a disabled user per 200m<sup>2</sup> of floor space.

The office block has **20** parking spaces for standard users and **five** parking spaces for disabled users.

Does the office block car park meet with the council regulations?

Use this box to show clearly how you get your answer.





Use this box to show clearly how you get your answer.



A large, empty rectangular box provided for the student to show their work and calculations.

**(Total for Question 7 = 4 Marks)**



H 3 5 5 1 5 A 0 1 7 2 4

8 The company decides to make **four** more parking spaces for disabled users.

**Council regulations:**

Dimensions for Parking Spaces

Car – Standard User	4.8m by 2.4m
Car – Disabled User	4.8m by 2.4m plus 1.2m wide strip along the longest side of the parking space. This strip may be shared by two parking spaces.

The company will place these **four** new disabled user parking spaces in one row.

What is the area needed for the new disabled user parking spaces?

Use this box to show clearly how you get your answer.



Use this box to show clearly how you get your answer.



A large empty rectangular box for writing the answer.

(Total for Question 8 = 5 marks)



- 9 The owner of three car parks wants to compare the number of cars using each car park.

Data was collected on the use of the car parks.

Each number in the table is an average of several readings taken over a three month period.

Each number in the table is rounded to the nearest ten.

The table shows information about the number of cars using each of the three car parks.

**Car Park Use In A Three Month Period**

	St Agnes'			St Botolph's			St Cuthbert's		
	Maximum of 250 cars			Maximum of 280 cars			Maximum of 430 cars		
	Mon	Wed	Fri	Mon	Wed	Fri	Mon	Wed	Fri
<b>8am</b>	150	150	130	190	170	170	170	180	200
<b>10am</b>	230	200	230	220	250	230	380	340	350
<b>12 noon</b>	240	240	240	210	240	230	390	380	400
<b>2pm</b>	220	170	190	200	200	190	350	430	400
<b>4pm</b>	180	150	170	200	150	170	200	380	220
<b>6pm</b>	90	80	80	190	160	130	180	300	130
<b>8pm</b>	c l o s e d			150	130	220	130	280	150

Compare the number of cars that use the three car parks.

Use the box below and on page 21 and/or the graph paper on page 22 to show clearly any calculations, graphs, charts or diagrams you have used when making your comparisons.



Use this box to show clearly how you get your answer.

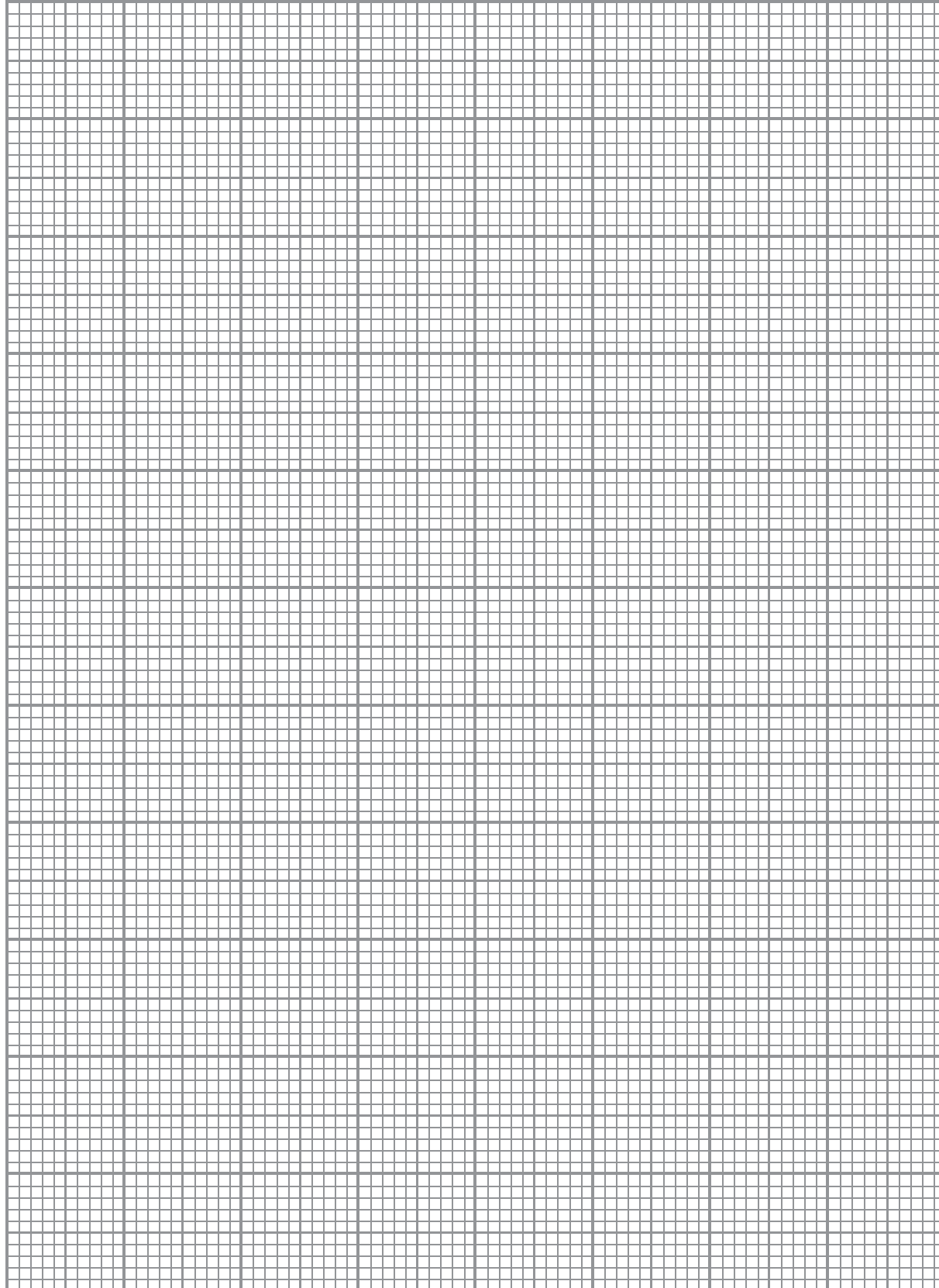


A large, empty rectangular box intended for the student to show their work and answer the question.



H 3 5 5 1 5 A 0 2 1 2 4

You can draw any graphs or charts on the grid below.



**(Total for Question 9 = 6 marks)**

**TOTAL FOR PAPER = 48 MARKS**



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