JP Maths Revision

Attempt the paper before watching the solutions!

https://www.youtube.com/@JPMathsRevision

FOUNDATION / HIGHER TIER

Averages from Grouped Frequency Tables

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.*
- You must **show all your working.**
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- 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 marks for **each** question are shown in brackets– *use this as a guide as to how much time to spend on each question.*

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.

You've got this!

1. The table shows the ages of people at a sports club.

mid	Age, a	Frequency	
5	$0 < a \leq 10$	4	20
15	$10 < a \leq 20$	7	105
25	$20 < a \leq 30$	5	125
35	$30 < a \leq 40$	4	140
		20	390

(a) Estimate the mean age.

$390 \div 20 = 19.5$

19.5

(3)

(b) Write down the modal class

$10 < a \leq 20$

(1)

(c) Find the class that contains the median

$10 < a \leq 20$

(1)

(Total for Question 1 is 5 marks)

2. The table shows the heights of some plants.

	Height, h	Frequency	
10	$0 < h \leq 20$	3	30
30	$20 < h \leq 40$	8	240
50	$40 < h \leq 60$	6	300
70	$60 < h \leq 80$	3	210
		20	780

(a) Estimate the mean height.

780 ÷ 20

39

.....

(3)

(b) Write down the modal class

$20 < h \leq 40$

.....

(1)

(c) Find the class that contains the median

$20 < h \leq 40$

.....

(1)

(Total for Question 2 is 5 marks)

3. The table shows the number of texts sent by students in one day.

	Number of texts, t	Frequency	
10	$0 < t \leq 20$	5	50
30	$20 < t \leq 40$	12	360
50	$40 < t \leq 60$	18	900
70	$60 < t \leq 80$	10	700
90	$80 < t \leq 100$	5	450
		50	2460

(a) Estimate the mean number of texts.

$2460 \div 50 = 49.2$

49.2

(3)

(b) Write down the modal class

$40 < t \leq 60$

(1)

(c) Find the class that contains the median

$40 < t \leq 60$

(1)

(Total for Question 3 is 5 marks)

4. The table shows the speeds of some cars.

	Speed (mph)	Frequency	
25	$20 < t \leq 30$	4	100
35	$30 < t \leq 40$	9	315
45	$40 < t \leq 50$	15	675
55	$50 < t \leq 60$	7	385
65	$60 < t \leq 70$	5	325
		40	1800

(a) Estimate the mean number of texts.

1800 ÷ 40

45

(3)

(b) Write down the modal class

$40 < t \leq 50$

(1)

(c) Find the class that contains the median

$40 < t \leq 50$

(1)

(Total for Question 4 is 5 marks)

5. The estimated mean mass of 40 students is 58 kg.

The below table is incomplete.

	Mass (kg)	Frequency	
45	$40 < t \leq 50$	8	360
55	$50 < t \leq 60$	15	825
65	$60 < t \leq 70$	x	$65x$
75	$70 < t \leq 80$	5	375

Find the value of x.

$$\frac{1560 + 65x}{28 + x} = 58$$

$1560 + 65x = 58(28 + x)$

$1560 + 65x = 1624 + 58x$

$7x = 64$

$x = \frac{64}{7}$

.....

(3)

Explain why the calculated mean of 58 kg is only an estimate.

Used midpoints to represent each class

↳ may not be realistic.

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(1)

(Total for Question 5 is 4 marks)