



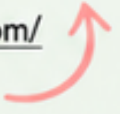
JP Maths

Revision



Attempt the paper
before watching the
solutions!

[https://www.youtube.com/
@JPMathsRevision](https://www.youtube.com/@JPMathsRevision)



HIGHER TIER

Histograms



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.



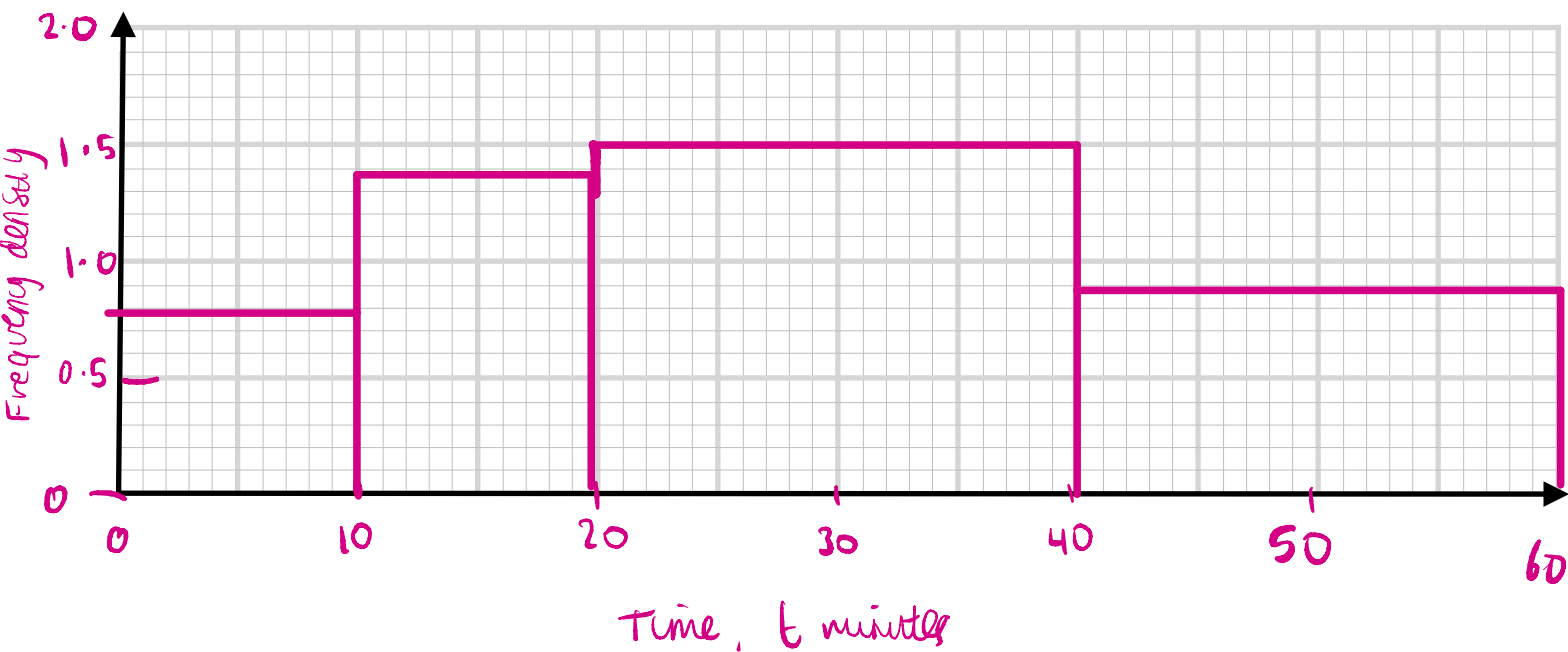
You've got this!

1. The table shows the times taken by some students to complete a puzzle.

Time, t minutes	Frequency	Frequency density
$0 < t \leq 10$	8	$8/10 = 0.8$
$10 < t \leq 20$	14	$14/10 = 1.4$
$20 < t \leq 40$	30	$30/20 = 1.5$
$40 < t \leq 60$	18	$18/20 = 0.9$

$$FD = \frac{\text{Freq}}{CW}$$

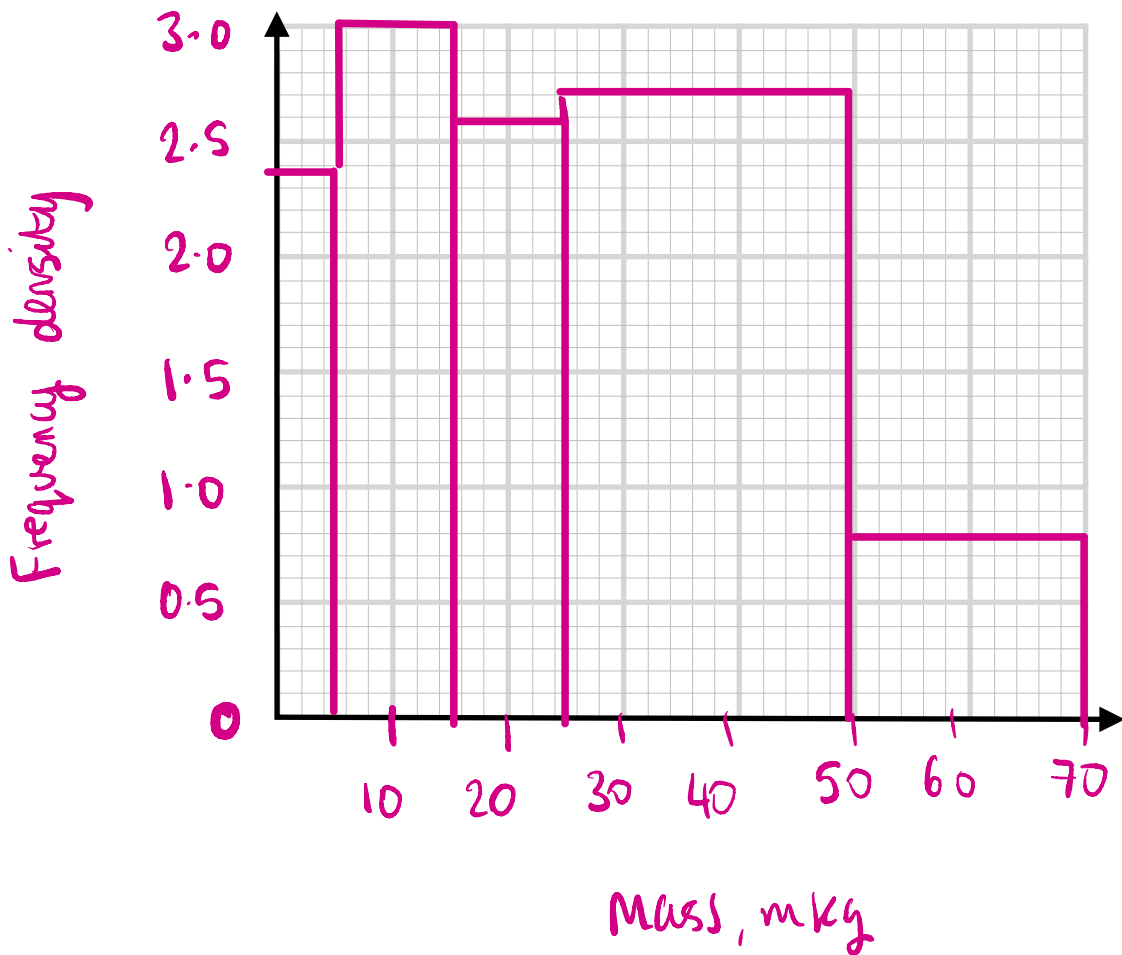
On the grid, draw a histogram to represent this information.



2. The table shows the masses of some parcels.

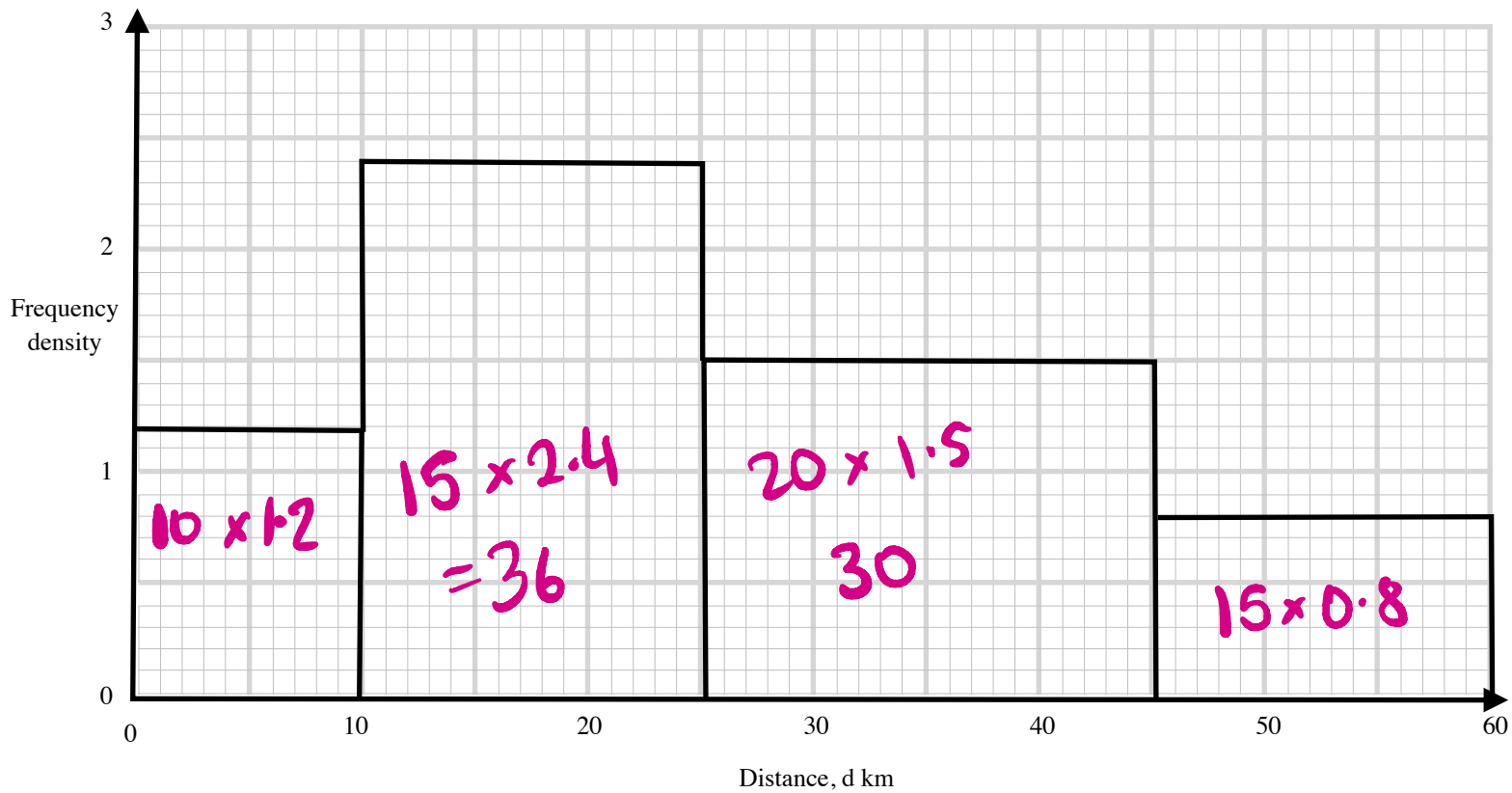
Mass, m kg	Frequency	FD
$0 < t \leq 5$	12	$12/5 = 2.4$
$5 < t \leq 15$	30	$30/10 = 3$
$15 < t \leq 25$	26	$26/10 = 2.6$
$25 < t \leq 50$	40	$40/15 = 2.7$
$50 < t \leq 70$	16	$16/20 = 0.8$

On the grid, draw a histogram to represent this information.



(Total for Question 2 is 3 marks)

3. The histogram shows the distances travelled by some cyclists.

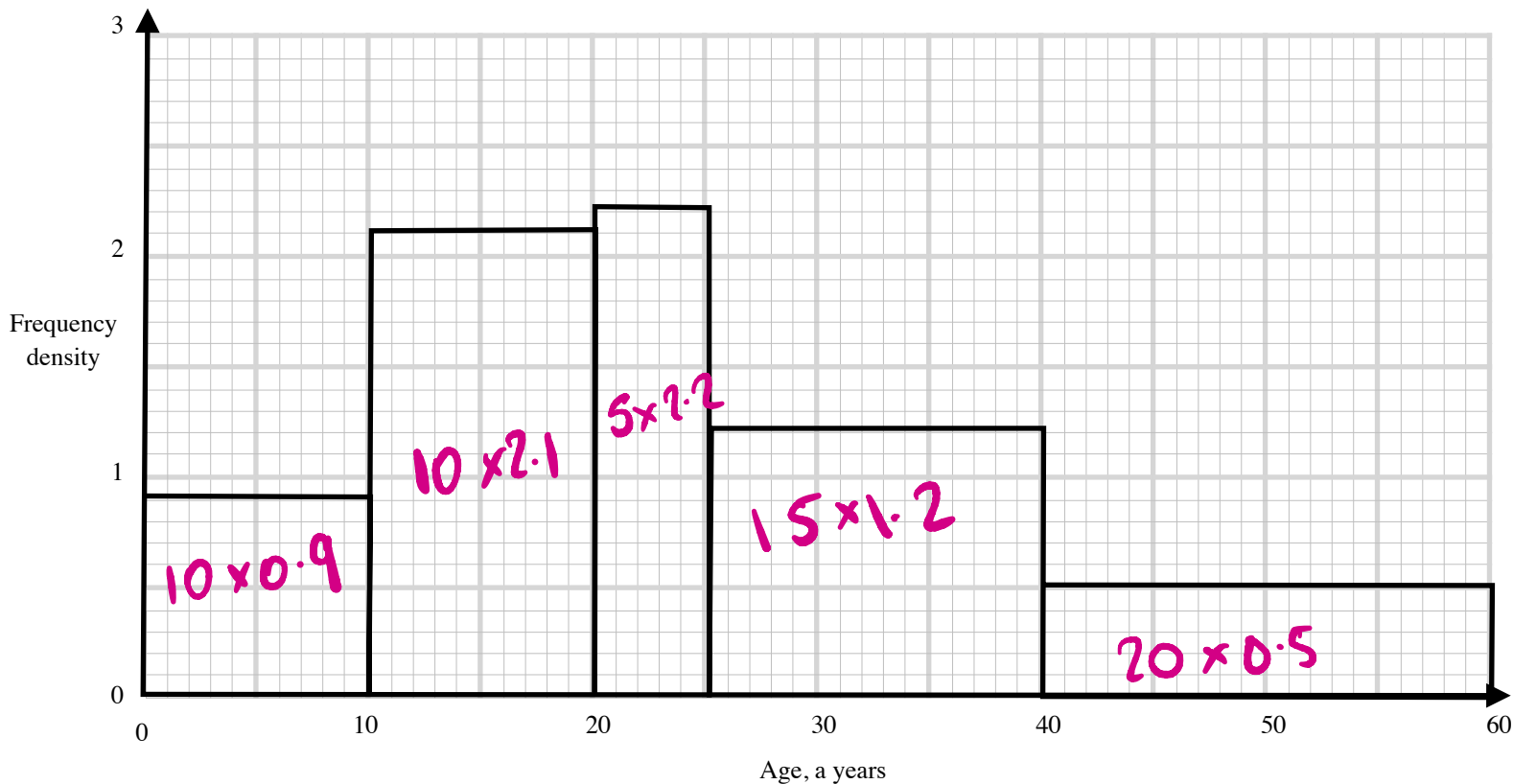


Use the histogram to complete the table.

Distance, d km	Frequency
$0 < t \leq 10$	12
$10 < t \leq 25$	36
$25 < t \leq 45$	30
$45 < t \leq 60$	12

(Total for Question 3 is 2 marks)

4. The histogram shows the ages of people at a swimming club.

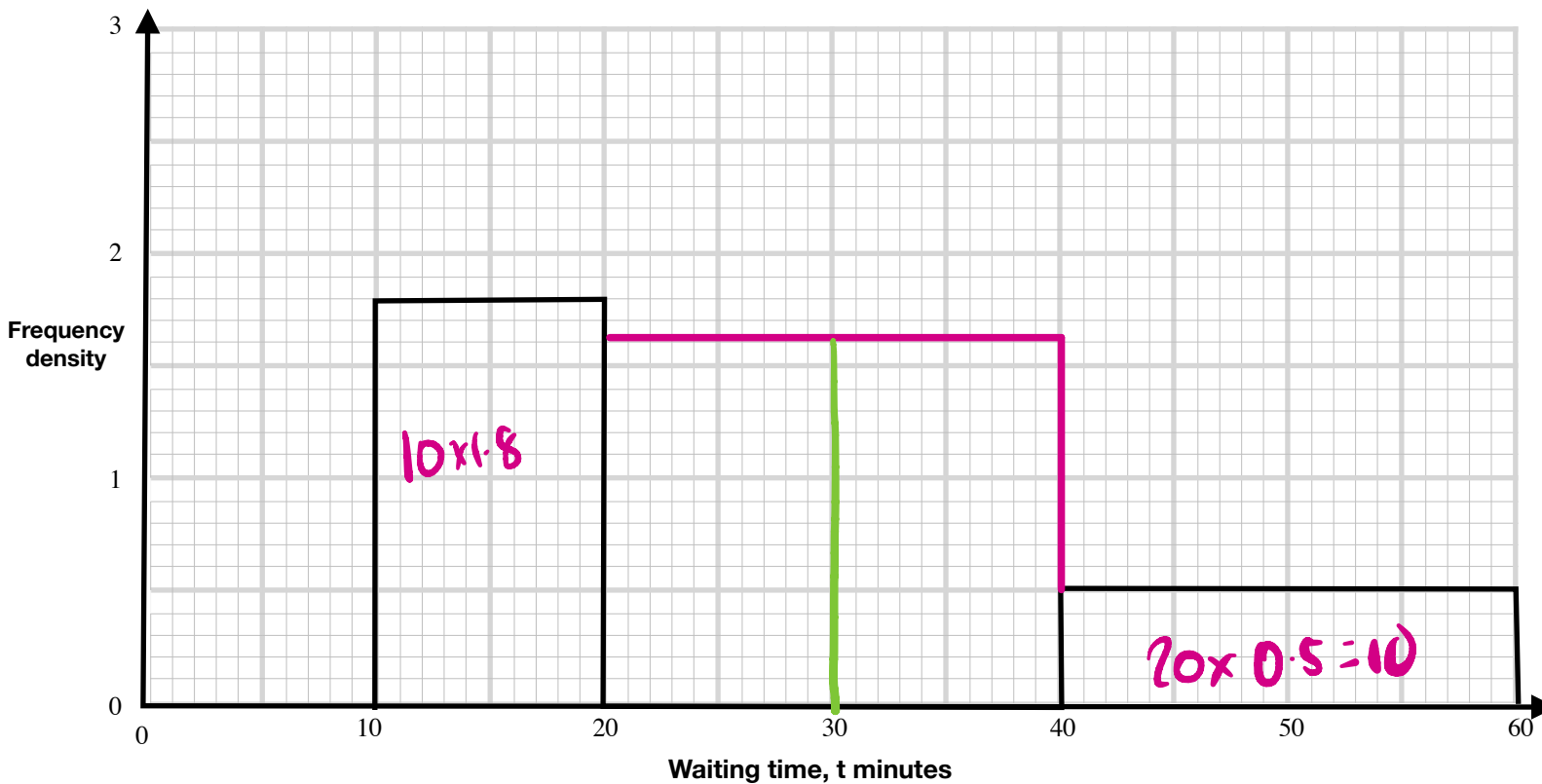


Use the histogram to complete the table.

Age, a years	Frequency
$0 < t \leq 10$	9
$10 < t \leq 20$	21
$20 < t \leq 25$	11
$25 < t \leq 40$	18
$40 < t \leq 60$	10

5. The table shows times people waited at a restaurant.

Waiting time, t minutes	Frequency	FD
$0 < t \leq 10$	6	$6/10 = 0.6$
$10 < t \leq 20$	18	1.8
$20 < t \leq 40$	32	$32 \div 20 = 1.6$
$40 < t \leq 60$	10	0.5



(a) Use the histogram to complete the table.

(2)

(b) Use the table to complete the histogram.

(2)

(c) How many people waited for more than 30 minutes?

$$10 \times 1.6 = 16$$

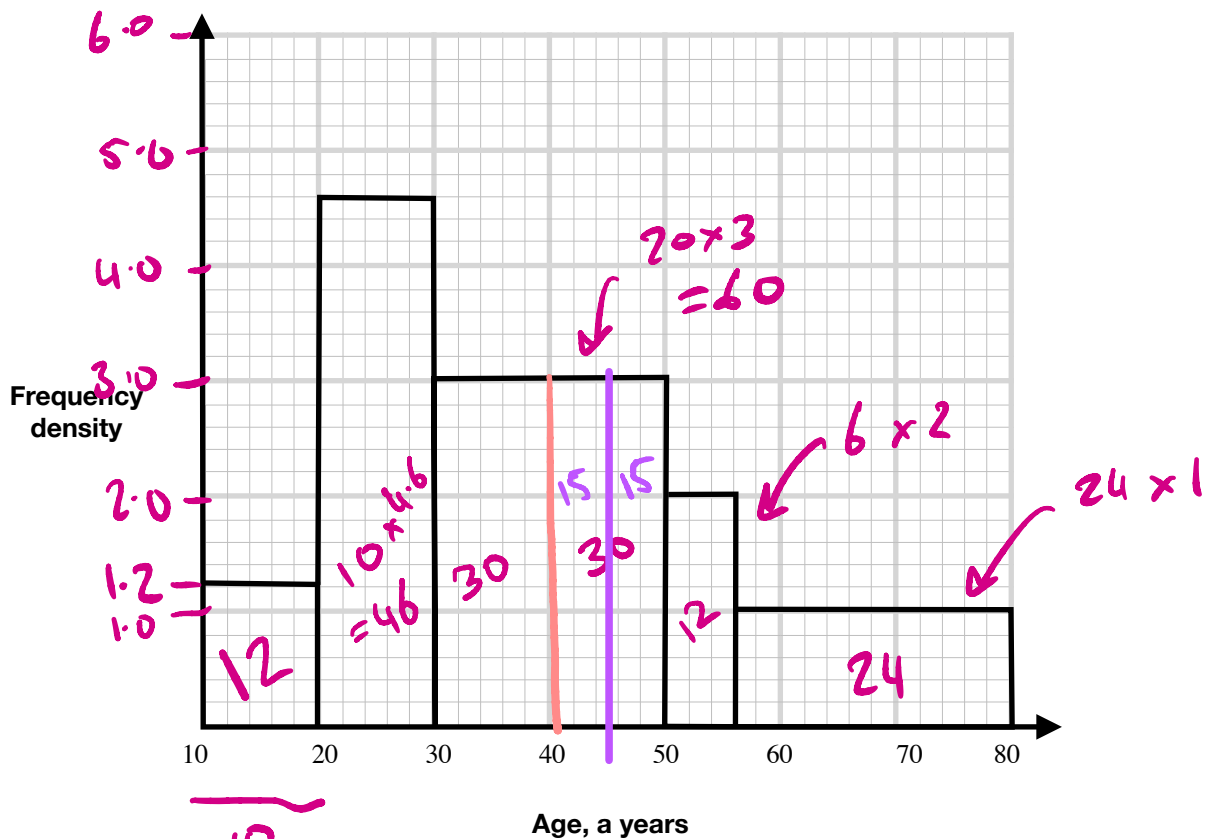
$$16 + 10 = 26$$

26

(2)

(Total for Question 5 is 6 marks)

6. The histogram shows the ages of some people at a gym.



$\underbrace{\hspace{10em}}_{10}$
 [12 people are aged between 10 and 20.]

Find the probability that a randomly selected person is older than 45.

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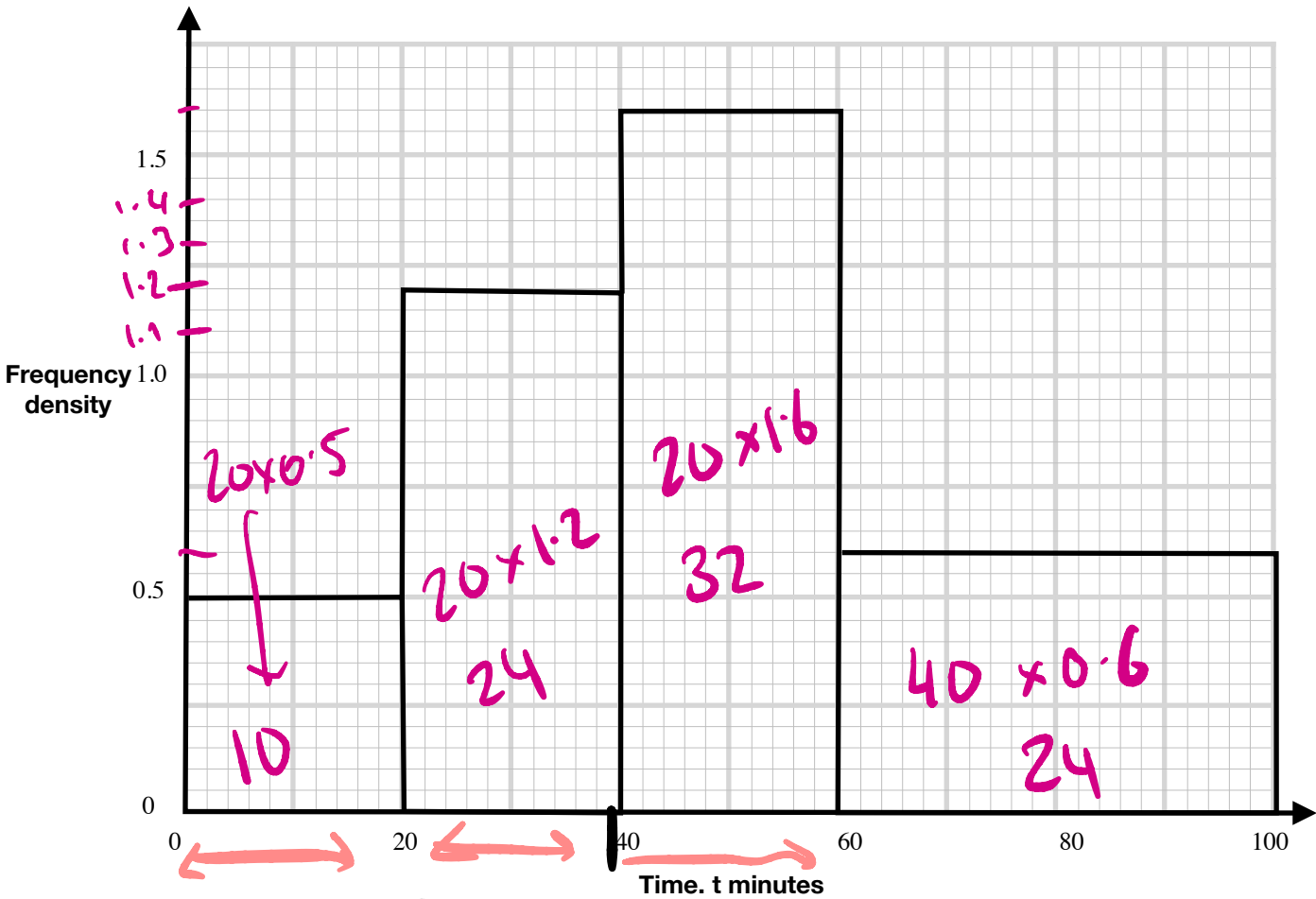
$$\begin{aligned} \text{Total} &= 12 + 46 + 60 + 12 + 24 \\ &= 154 \end{aligned}$$

$$15 + 12 + 24 = 51$$

$$\frac{51}{154}$$

(Total for Question 6 is 3 marks)

7. The histogram shows the times spent by students revising.



34

Work out an estimate for the median.

$$10 + 24 + 32 + 24 = 90$$

45th

$$60 - 40 = 20$$

$$20 \div 32 = 0.625$$

$$11 \times 0.625 = 6.875$$

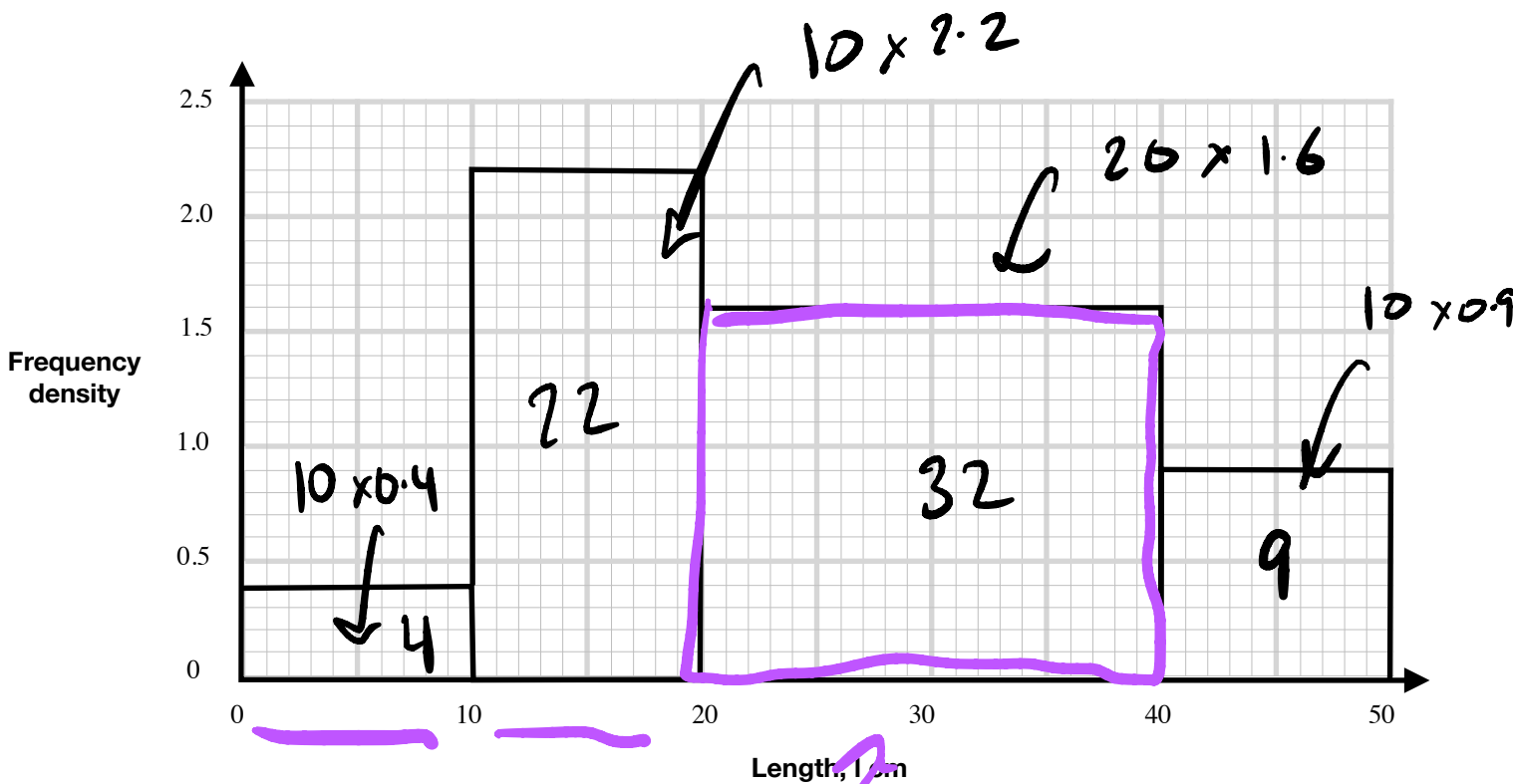
$$40 + 6.875 = 46.875$$



46.9

(Total for Question 7 is 4 marks)

8. The histogram shows the lengths of some fish.



Work out an estimate for the median.

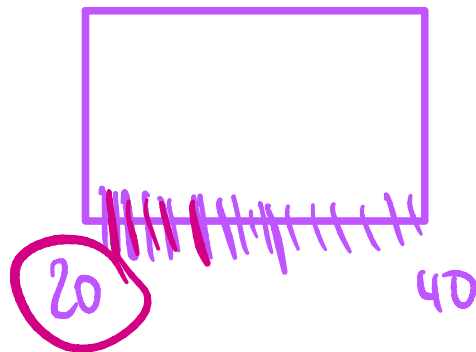
$$4 + 22 + 32 + 9 = 67$$

$$67 \div 2 = 33.5$$

↳ 34th

$$8 \times 0.625 = 5$$

$$20 + 5 = 25$$

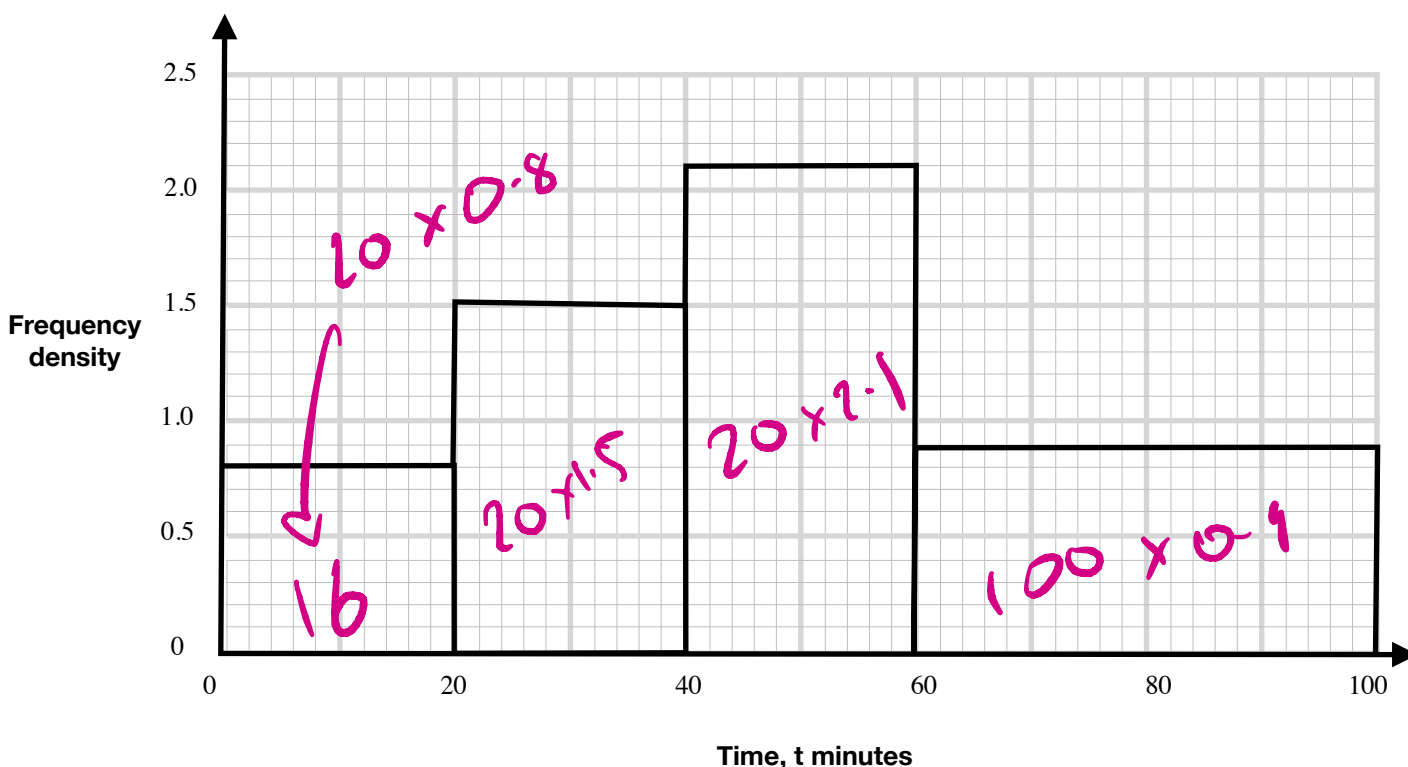


$$\frac{40 - 20}{32} = 0.625$$

25

(Total for Question 8 is 4 marks)

9. The histogram shows the times students spent exercising.



Work out an estimate for the mean time taken.

| time, $t$ , mins  | Freq | mid | $F \times m$ |
|-------------------|------|-----|--------------|
| $0 < t \leq 20$   | 16   | 10  | 160          |
| $20 < t \leq 40$  | 30   | 30  | 900          |
| $40 < t \leq 60$  | 42   | 50  | 2100         |
| $60 < t \leq 100$ | 90   | 80  | 7200         |
|                   | 178  |     | 10360        |

$$10360 \div 178 = 58.2$$

58.2

(Total for Question 9 is 4 marks)