All Averages from a Grouped Data Table

Core Worksheet

Worked Examples & Guided Practice

I Do (Teacher Model) The table gives information about the height, h cm, of 30 plants:

Height (h cm)	Frequency
$140 < h \leq 150$	4
$150 < h \leq 160$	8
$160 < h \leq 170$	12
$170 < h \leq 180$	6

(a) Write down the modal class. (b) Write down the class interval containing the median. (c) Calculate an estimate for the mean height.

We Do (Guided Practice) The table gives information about the time, t mins, taken by 50 people to complete a test:

Time (t mins)	Frequency
$0 < t \leq 10$	5
$10 < t \leq 20$	15
$20 < t \leq 30$	20
$30 < t \leq 40$	10

(a) Write down the modal class. (b) Write down the class interval containing the median. (c) Calculate an estimate for the mean time.

You Do (Independent Practice) The table gives information about the mass, m kg, of 20 parcels:

Mass (m kg)	Frequency
$0 < m \leq 20$	3
$20 < m \leq 40$	8
$40 < m \leq 60$	6
$60 < m \leq 80$	3

(a) Write down the modal class. (b) Write down the class interval containing the median. (c) Calculate an estimate for the mean mass.

Challenge (Extension) The table gives information about test scores:

Score (s)	Frequency
$0 < s \leq 20$	2
$20 < s \leq 40$	x
$40 < s \leq 60$	10
$60 < s \leq 80$	4

Given that the estimated mean score is 46, calculate the value of x.

Practice Perfect Questions

Q1. Identify the midpoint of the class interval $30 < x \leq 50$.

Q2. State why an estimated mean is calculated from grouped data instead of an exact mean.

Q3. Using the table in **I Do**, calculate the percentage of plants taller than 160 cm.

Q4. A frequency table has total frequency $n = 80$. Which position represents the median item?

Q5. Find the estimated mean for: $0 < x \leq 10$ (freq 2), $10 < x \leq 20$ (freq 8).

Q6. State the modal class for: $10 < w \leq 15$ (freq 11), $15 < w \leq 20$ (freq 19), $20 < w \leq 25$ (freq 14).

Answers & Worked Solutions

Model Solutions

- **I Do:** (a) $160 < h \leq 170$; (b) $160 < h \leq 170$; (c) Mean $= \frac{4850}{30} = 161.67$ cm
- **We Do:** (a) $20 < t \leq 30$; (b) $20 < t \leq 30$; (c) Mean $= \frac{1100}{50} = 22$ mins

You Do: (a) 20 < m ≤ 40; (b) 20 < m ≤ 40; (c) Mean = 780/20 = **39 kg**.
Challenge: Sum of f × midpoint = 800 + 30x; total frequency = 16 + x.
(800 + 30x)/(16 + x) = 46, so 800 + 30x = 736 + 46x.
64 = 16x, giving **x = 4**. Check: 920/20 = 46.

Practice Perfect Questions Solutions

Q1. 40

Q2. Exact individual values are unknown; midpoints act as estimates.

Q3. $\frac{12+6}{30} \times 100 = 60\%$

Q4. 40th position

Q5. $\frac{(5\times2)+(15\times8)}{10} = 13$

Q6. $15 < w \leq 20$