Estimated Mean from a Grouped Table

1

The table shows how long 20 customers queued at a post office.
Estimate the mean time.

Time, t (min)	Frequency	Midpoint	Midpoint × frequency
$0 < t \leq 10$	3	5	15
$10 < t \leq 20$	8	15	
$20 < t \leq 30$	6		
$30 < t \leq 40$	3		
Total			

Estimated mean = ☐ ÷ ☐

Estimated mean _____

2

The table shows the masses of 25 parcels at a sorting office. Estimate the mean mass.

Mass, m (kg)	Frequency	Midpoint	Midpoint × frequency
$0 < m \leq 2$	4	1	
$2 < m \leq 4$	9		
$4 < m \leq 6$	7		
$6 < m \leq 8$	5		
Total			

Estimated mean = ☐ ÷ ☐

Estimated mean _____

3

The table shows the ages of 40 people at a climbing wall. Estimate the mean age.

Age, a (years)	Frequency	Midpoint	Midpoint × frequency
$10 < a \leq 20$	12		
$20 < a \leq 30$	15		
$30 < a \leq 40$	9		
$40 < a \leq 50$	4		
Total			

Estimated mean = ☐ ÷ ☐

Estimated mean _____

4

The table shows the speeds of 50 cars on a village road. Estimate the mean speed.

Speed, s (mph)	Frequency		
$15 < s \leq 20$	6		
$20 < s \leq 25$	19		
$25 < s \leq 30$	17		
$30 < s \leq 35$	8		
Total			

_____

Estimated mean _____

5

The table shows the times 35 students took to solve a puzzle.

(a) Write down the modal class.
(b) Which class contains the median?

Time, t (s)	Frequency	Running total
$0 < t \leq 30$	4	
$30 < t \leq 60$	9	
$60 < t \leq 90$	8	
$90 < t \leq 120$	14	

_____

(a) _____

(b) _____

6

The table shows the rainfall on each of the 30 days in June. Estimate the mean daily rainfall, to 1 decimal place.

Rainfall, r (mm)	Frequency	Midpoint	Midpoint × frequency
$0 < r \leq 2$	12		
$2 < r \leq 5$	8		
$5 < r \leq 10$	6		
$10 < r \leq 20$	4		
Total			

_____

Estimated mean _____

7

A table of journey times has the classes $10 < t \leq 20$ and $20 < t \leq 30$ (minutes).

(a) Write down a time that is in the class $20 < t \leq 30$.
(b) Leo's journey took exactly 20 minutes. Which class is it in?
(c) Why is a mean worked out from a grouped table only an estimate?

(a) _____

(b) _____

(c) _____

8

Mia estimates the mean time 20 students spent on homework. She works out $580 \div 3 = 193.3$. Explain her mistake and find a correct estimate.

Time, t (min)	Frequency	Midpoint	Midpoint × frequency
$0 < t \leq 20$	6	10	60
$20 < t \leq 40$	9	30	270
$40 < t \leq 60$	5	50	250
Total	20		580

_____

Estimate _____

Estimated Mean from a Grouped Table *further practice*

9

The table shows how long 45 phone batteries lasted. Estimate the mean time, to 1 decimal place.

Time, h (hours)	Frequency		
$0 < h \leq 4$	5		
$4 < h \leq 8$	14		
$8 < h \leq 12$	18		
$12 < h \leq 16$	8		
Total			

Estimated mean _____

10

27 newborn lambs were weighed.

(a) Estimate the mean, to 1 decimal place.
(b) Write down the modal class.
(c) Which class contains the median?

Mass, m (kg)	Frequency		
$2 < m \leq 3$	3		
$3 < m \leq 4$	10		
$4 < m \leq 5$	6		
$5 < m \leq 6$	8		
Total			

(a) _____

(b) _____ **(c)** _____

11

One frequency is missing from this table of worm lengths.

(a) Find the missing frequency.
(b) Estimate the mean, to 1 decimal place.

Length, l (cm)	Frequency	Midpoint	Midpoint × frequency
$0 < l \leq 10$	6	5	30
$10 < l \leq 20$		15	
$20 < l \leq 30$	4	25	100
Total			340

(a) _____

(b) _____

12

A gym says its members' mean workout lasts over 45 minutes. The table shows 25 workouts. Is the gym right? Explain.

Time, t (min)	Frequency	Midpoint	Midpoint × frequency
$0 < t \leq 30$	8		
$30 < t \leq 60$	14		
$60 < t \leq 90$	3		
Total			

Answer _____

13

Ella timed 20 journeys, in minutes. Complete the table and estimate the mean.

12, 25, 30, 8, 17, 21, 10, 28, 33, 15, 20, 26, 38, 19, 24, 31, 14, 27, 22, 35

Time, t (min)	Frequency		
$0 < t \leq 10$			
$10 < t \leq 20$			
$20 < t \leq 30$			
$30 < t \leq 40$			
Total			

Estimated mean _____

14

(a) A grouped table of 25 values has an estimated mean of 18.4. What is the total of its midpoint × frequency column?
(b) Another table's midpoint × frequency column adds up to 660. Its estimated mean is 16.5. How many values are in the table?

(a) _____

(b) _____

15

Ana says the modal class is $20 < t \leq 30$, because it has the biggest midpoint × frequency. Is she right? Explain.

Time, t (min)	Frequency	Midpoint	Midpoint × frequency
$0 < t \leq 10$	9	5	45
$10 < t \leq 20$	12	15	180
$20 < t \leq 30$	8	25	200
$30 < t \leq 40$	5	35	175
Total	34		600

Answer _____

16

The table shows how long 38 calls to a helpline lasted. Kai says the median is in the middle row, $10 < t \leq 15$. Is he right? Explain.

Time, t (min)	Frequency
$0 < t \leq 5$	14
$5 < t \leq 10$	11
$10 < t \leq 15$	6
$15 < t \leq 20$	4
$20 < t \leq 25$	3

Answer _____