

# Estimated Mean: Grouped Frequency Tables



1

Estimate the mean.

| Time, $t$ (min)  | Frequency | Midpoint | $f \times x$ |
|------------------|-----------|----------|--------------|
| $0 < t \leq 10$  | 4         | 5        | 20           |
| $10 < t \leq 20$ | 6         | 15       | 90           |
| $20 < t \leq 30$ | 8         |          |              |
| $30 < t \leq 40$ | 2         |          |              |
| <b>Total</b>     |           |          |              |

$$\text{Mean} \approx \frac{\quad}{\quad}$$

Estimated mean \_\_\_\_\_

2

Estimate the mean.

| Height, $h$ (cm) | Frequency | Midpoint | $f \times x$ |
|------------------|-----------|----------|--------------|
| $0 < h \leq 10$  | 5         | 5        | 25           |
| $10 < h \leq 20$ | 10        |          |              |
| $20 < h \leq 30$ | 3         |          |              |
| $30 < h \leq 40$ | 2         |          |              |
| <b>Total</b>     |           |          |              |

$$\text{Mean} \approx \frac{\quad}{\quad}$$

Estimated mean \_\_\_\_\_

3

Estimate the mean.

| Mass, $m$ (kg)   | Frequency | Midpoint | $f \times x$ |
|------------------|-----------|----------|--------------|
| $0 < m \leq 20$  | 2         | 10       | 20           |
| $20 < m \leq 40$ | 8         |          |              |
| $40 < m \leq 60$ | 6         |          |              |
| $60 < m \leq 80$ | 4         |          |              |
| <b>Total</b>     |           |          |              |

$$\text{Mean} \approx \frac{\quad}{\quad}$$

Estimated mean \_\_\_\_\_

4

Estimate the mean.

| Length, $l$ (cm) | Frequency | Midpoint | $f \times x$ |
|------------------|-----------|----------|--------------|
| $0 < l \leq 10$  | 3         | 5        | 15           |
| $10 < l \leq 20$ | 7         |          |              |
| $20 < l \leq 30$ | 6         |          |              |
| $30 < l \leq 40$ | 4         |          |              |
| <b>Total</b>     |           |          |              |

$$\text{Mean} \approx \frac{\quad}{\quad}$$

Estimated mean \_\_\_\_\_

5

Estimate the mean.

| Age, $a$ (years) | Frequency | Midpoint | $f \times x$ |
|------------------|-----------|----------|--------------|
| $10 < a \leq 20$ | 6         |          |              |
| $20 < a \leq 30$ | 9         |          |              |
| $30 < a \leq 40$ | 3         |          |              |
| $40 < a \leq 50$ | 2         |          |              |
| <b>Total</b>     |           |          |              |

$$\text{Mean} \approx \frac{\quad}{\quad}$$

Estimated mean \_\_\_\_\_

6

Estimate the mean.

| Distance, $d$ (km) | Frequency | Midpoint | $f \times x$ |
|--------------------|-----------|----------|--------------|
| $0 < d \leq 5$     | 4         |          |              |
| $5 < d \leq 10$    | 8         |          |              |
| $10 < d \leq 15$   | 6         |          |              |
| $15 < d \leq 20$   | 2         |          |              |
| <b>Total</b>       |           |          |              |

$$\text{Mean} \approx \frac{\quad}{\quad}$$

Estimated mean \_\_\_\_\_

7

Why is a mean worked out from a grouped frequency table only an estimate?

Answer \_\_\_\_\_

8

The group  $10 < t \leq 20$  has a frequency of 6. What total does the table use for this group?

Answer \_\_\_\_\_

# Estimated Mean: Grouped Frequency Tables *further practice*



9

The table shows how long 30 patients waited at a doctor's surgery. Estimate the mean waiting time.

| Time, $t$ (min)  | Frequency |  |  |
|------------------|-----------|--|--|
| $0 < t \leq 10$  | 5         |  |  |
| $10 < t \leq 20$ | 12        |  |  |
| $20 < t \leq 30$ | 9         |  |  |
| $30 < t \leq 40$ | 4         |  |  |
| <b>Total</b>     | 30        |  |  |

Estimated mean \_\_\_\_\_

10

The table shows the ages of 40 visitors to a museum. Estimate the mean age, to 1 decimal place.

| Age, $a$ (years) | Frequency |  |  |
|------------------|-----------|--|--|
| $0 < a \leq 10$  | 6         |  |  |
| $10 < a \leq 20$ | 9         |  |  |
| $20 < a \leq 40$ | 15        |  |  |
| $40 < a \leq 80$ | 10        |  |  |
| <b>Total</b>     | 40        |  |  |

Estimated mean \_\_\_\_\_

11

The table shows the masses of 50 parcels. One frequency is missing. Estimate the mean mass.

| Mass, $m$ (kg) | Frequency |  |  |
|----------------|-----------|--|--|
| $0 < m \leq 1$ | 8         |  |  |
| $1 < m \leq 2$ | 19        |  |  |
| $2 < m \leq 3$ |           |  |  |
| $3 < m \leq 4$ | 9         |  |  |
| <b>Total</b>   | 50        |  |  |

Estimated mean \_\_\_\_\_

12

The table shows how long 25 customers queued at Café A. At Café B the estimated mean queuing time is 4.2 minutes. Which café has the shorter queue on average?

| Time, $t$ (min) | Frequency |  |  |
|-----------------|-----------|--|--|
| $0 < t \leq 2$  | 4         |  |  |
| $2 < t \leq 4$  | 8         |  |  |
| $4 < t \leq 6$  | 9         |  |  |
| $6 < t \leq 8$  | 4         |  |  |
| <b>Total</b>    | 25        |  |  |

Answer \_\_\_\_\_

13

The lengths, in cm, of 16 fish are 12, 25, 18, 33, 21, 27, 14, 38, 22, 29, 17, 24, 31, 26, 19, 23. Complete the table and estimate the mean length.

| Length, $l$ (cm) | Frequency |  |  |
|------------------|-----------|--|--|
| $10 < l \leq 20$ |           |  |  |
| $20 < l \leq 30$ |           |  |  |
| $30 < l \leq 40$ |           |  |  |
| <b>Total</b>     |           |  |  |

Estimated mean \_\_\_\_\_

14

Zara estimates the mean distance 20 cyclists rode. She works out  $(5 + 15 + 25 + 35) \div 4 = 20$ . Explain her mistake and find a correct estimate.

| Distance, $d$ (km) | Frequency |  |  |
|--------------------|-----------|--|--|
| $0 < d \leq 10$    | 2         |  |  |
| $10 < d \leq 20$   | 3         |  |  |
| $20 < d \leq 30$   | 9         |  |  |
| $30 < d \leq 40$   | 6         |  |  |
| <b>Total</b>       | 20        |  |  |

Estimate \_\_\_\_\_

15

A van can carry 600 kg. The table shows the masses of 40 boxes. Estimate the total mass of the boxes. Is the van likely to carry them all in one trip?

| Mass, $m$ (kg)   | Frequency |  |  |
|------------------|-----------|--|--|
| $0 < m \leq 10$  | 12        |  |  |
| $10 < m \leq 20$ | 15        |  |  |
| $20 < m \leq 30$ | 10        |  |  |
| $30 < m \leq 40$ | 3         |  |  |
| <b>Total</b>     | 40        |  |  |

Answer \_\_\_\_\_

16

The table shows the times 20 students took to finish a puzzle. Ravi says the actual mean time could be 26 minutes. Is he right? Explain.

| Time, $t$ (min)  | Frequency |
|------------------|-----------|
| $10 < t \leq 20$ | 12        |
| $20 < t \leq 30$ | 8         |
| <b>Total</b>     | 20        |

Answer \_\_\_\_\_