

Statistics Worksheet

Estimated Mean from Grouped Frequency Tables

I Do

The table gives information about the masses, m kg, of 50 luggage bags:

Mass (m kg)	Frequency
$0 < m \leq 5$	6
$5 < m \leq 10$	14
$10 < m \leq 15$	18
$15 < m \leq 20$	8
$20 < m \leq 25$	4

Calculate an estimate for the mean mass of the 50 luggage bags.

We Do

The table gives information about the distances, d km, travelled by 40 delivery vans:

Distance (d km)	Frequency
$0 < d \leq 10$	8
$10 < d \leq 20$	12
$20 < d \leq 30$	15
$30 < d \leq 40$	5

Calculate an estimate for the mean distance travelled.

You Do

The table gives information about the time, t minutes, taken by 40 students to complete a puzzle:

Time (t mins)	Frequency
$10 < t \leq 20$	5
$20 < t \leq 30$	10
$30 < t \leq 40$	12
$40 < t \leq 50$	8
$50 < t \leq 60$	5

Calculate an estimate for the mean time taken.

Challenge

The table gives information about the heights, h cm, of 24 plants.

Height (h cm)	Frequency
$0 < h \leq 10$	x
$10 < h \leq 20$	10
$20 < h \leq 30$	6

Given that the total number of plants is 24, find the value of x and calculate an estimate for the mean height.

Answers & Worked Solutions

• I Do:

Find the midpoint (x) of each class interval and multiply by the frequency (f):

$$2.5 \times 6 = 15, \quad 7.5 \times 14 = 105, \quad 12.5 \times 18 = 225, \quad 17.5 \times 8 = 140, \quad 22.5 \times 4 = 90$$

Sum of frequencies (Σf) = 50. Sum of products (Σfx) = 15 + 105 + 225 + 140 + 90 = 575

$$\text{Mean} = \frac{\Sigma fx}{\Sigma f} = \frac{575}{50} = 11.5 \quad \text{Answer: 11.5 kg}$$

• We Do:

Midpoints: 5, 15, 25, 35. Products (fx): 40, 180, 375, 175

$$\Sigma f = 40. \quad \Sigma fx = 40 + 180 + 375 + 175 = 770$$

$$\text{Mean} = \frac{770}{40} = 19.25 \quad \text{Answer: 19.25 km}$$

• You Do:

Midpoints: 15, 25, 35, 45, 55. Products (fx): 75, 250, 420, 360, 275

$$\Sigma f = 40. \quad \Sigma fx = 75 + 250 + 420 + 360 + 275 = 1380$$

$$\text{Mean} = \frac{1380}{40} = 34.5 \quad \text{Answer: 34.5 minutes}$$

• Challenge:

$$\text{Total frequency} = 24 \implies x + 10 + 6 = 24 \implies x = 8$$

Midpoints: 5, 15, 25. Products (fx): 40, 150, 150

$$\Sigma fx = 40 + 150 + 150 = 340$$

$$\text{Mean} = \frac{340}{24} = \frac{85}{6} \approx 14.167 \quad \text{Answer: } x = 8, \text{ Mean} \approx 14.2 \text{ cm}$$