

GCSE Maths: Averages from grouped frequency tables (Foundation): worksheet

GCSE Maths - Statistics - Foundation - Lesson 24.5

Name: _____

Date: _____

Score: _____

13 questions. Write your answers in the spaces. Answers and step-by-step help are free at websink.site/gcse/maths/ch24-statistics/foundation/averages-from-grouped-frequency-tables/

Exercise 24E Averages from grouped frequency tables

Calculator allowed

1 Write down the modal class from each table.

(a)

Class	Frequency
$0 < x \leq 10$	5
$10 < x \leq 20$	9
$20 < x \leq 30$	4
$30 < x \leq 40$	2

Answer: _____

(b)

Class	Frequency
$10 < x \leq 20$	6
$20 < x \leq 30$	12
$30 < x \leq 40$	8
$40 < x \leq 50$	4

Answer: _____

(c)

Class	Frequency
$100 < x \leq 120$	8
$120 < x \leq 140$	10
$140 < x \leq 160$	15
$160 < x \leq 180$	7

Answer: _____

2 Write down the class that contains the median from each table.

(a)

Class	Frequency
$0 < x \leq 10$	5
$10 < x \leq 20$	9
$20 < x \leq 30$	4
$30 < x \leq 40$	2

Answer:

(b)

Class	Frequency
$10 < x \leq 20$	6
$20 < x \leq 30$	12
$30 < x \leq 40$	8
$40 < x \leq 50$	4

Answer:

(c)

Class	Frequency
$100 < x \leq 120$	8
$120 < x \leq 140$	10
$140 < x \leq 160$	15
$160 < x \leq 180$	7

Answer:

3 Work out an estimate for the mean from each table. Give each answer to 1 decimal place where necessary.

(a)

Class	Frequency
$0 < x \leq 10$	5
$10 < x \leq 20$	9
$20 < x \leq 30$	4
$30 < x \leq 40$	2

Answer:

(b)

Class	Frequency
$10 < x \leq 20$	6
$20 < x \leq 30$	12
$30 < x \leq 40$	8
$40 < x \leq 50$	4

Answer:

(c)

Class	Frequency
$100 < x \leq 120$	8
$120 < x \leq 140$	10
$140 < x \leq 160$	15
$160 < x \leq 180$	7

Answer:

4 The table shows the times, in minutes, that 40 customers waited at a bank.

Waiting time	Frequency
$0 < t \leq 10 \text{ min}$	3
$10 < t \leq 20 \text{ min}$	8
$20 < t \leq 30 \text{ min}$	14
$30 < t \leq 40 \text{ min}$	10
$40 < t \leq 50 \text{ min}$	5

(a) Write down the modal class. (b) Which class contains the median? (c) Work out an estimate for the mean waiting time.

(a) Modal class

Answer:

(b) Median class

Answer:

(c) Estimated mean

Answer:

5 The grouped table shows the number of goals scored by players in a season.

Goals	Frequency
0–4	6
5–9	9

10–14	7
15–19	3

Work out an estimate for the mean number of goals. Give your answer to 1 decimal place.

Answer:

- 6 The table shows the lengths of phone calls. The classes have different widths.

Length	Frequency
$0 < t \leq 10$ min	6
$10 < t \leq 30$ min	10
$30 < t \leq 60$ min	4

Work out an estimate of the mean length of a call.

Answer:

- 7 Ten people have ages 12, 18, 21, 25, 27, 31, 34, 36, 41, 45. (a) Work out the exact mean age. (b) Put the ages into the classes $10 \leq a < 20$, $20 \leq a < 30$, $30 \leq a < 40$ and $40 \leq a < 50$ and work out an estimate of the mean from the grouped table. (c) Compare your answers.

(a) Exact mean

Answer:

(b) Grouped table and estimated mean

Answer:

(c) Compare

Answer:

- 8 Explain why you cannot work out the exact median or range from a grouped frequency table.

Answer:

- 9 The table shows the masses of 50 parcels.

Mass	Frequency
$0 < m \leq 20$ g	8
$20 < m \leq 40$ g	18
$40 < m \leq 60$ g	14
$60 < m \leq 80$ g	10

(a) Which class contains the median? (b) How many parcels weigh more than 40 g? (c) What percentage of the parcels weigh 20 g or less?

(a) Median class

Answer:

(b) Parcels heavier than 40 g

Answer:

(c) Percentage 20 g or less

Answer:

- 10** A grouped table has classes $0 < x \leq 20$, $20 < x \leq 40$ and $40 < x \leq 60$ with frequencies 8, 14 and 18. Work out an estimate for the mean.

Answer:

- 11** The table shows the times, in seconds, taken by 30 runners to complete a race.

Time	Frequency
$40 < t \leq 50$ s	3
$50 < t \leq 60$ s	9
$60 < t \leq 70$ s	12
$70 < t \leq 80$ s	6

(a) Write down the modal class. (b) Which class contains the median? (c) Work out an estimate for the mean time.

(a) Modal class

Answer:

(b) Median class

Answer:

(c) Estimated mean

Answer:

- 12** Use the estimated mean time of the 30 runners in the last question to estimate the total time taken by all 30 runners together.

Answer:

- 13** Lee says: "If the classes in a grouped table are very narrow, then the mean from the table is exactly the true mean." Is Lee right? Explain.

Answer: