



S16-test Grouped Frequency Tables: Test Pack

EDEXCEL 1ST0 · Calculator allowed · about 15 minutes

Total Marks

Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

1 For each statement about grouped frequency tables, write down whether it is True or False.

(i) The frequency column of a grouped frequency table always adds up to the total number of data values collected. **(1)**

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(ii) Once data has been grouped into class intervals, you can always identify the exact largest and smallest values in the original data set. **(1)**

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(Total for Question 1 is 2 marks)

- 2** 20 pupils were asked how many text messages they sent yesterday. The results are shown below.

3, 14, 27, 8, 35, 19, 42, 11, 25, 6, 31, 16, 39, 22, 9, 44, 17, 28, 5, 33

- (a)** Using a class width of 10, starting with $0 < x \leq 10$, complete a grouped frequency table for this data. **(2)**

Texts sent	Frequency
$0 < x \leq 10$	
$10 < x \leq 20$	
$20 < x \leq 30$	
$30 < x \leq 40$	
$40 < x \leq 50$	
Total	

- (b)** A classmate suggests using a class width of 5 instead of 10. Give one advantage and one disadvantage of using this narrower class width. **(2)**

(Total for Question 2 is 4 marks)

3 A PE teacher wants to investigate how many minutes Year 10 students spend exercising outside school each week.

- (a)** Plan: write down a suitable question the teacher could ask each student to collect this data. (1)

- (b)** Collect and process: the teacher recorded the following times, in minutes, from 20 students. (2)

15, 45, 90, 30, 120, 60, 10, 75, 105, 40, 55, 95, 20, 80, 130, 65, 35, 100, 50, 85

Using a class width of 30, starting with $0 < t \leq 30$, complete a grouped frequency table for this data.

Time (minutes)	Frequency
$0 < t \leq 30$	
$30 < t \leq 60$	
$60 < t \leq 90$	
$90 < t \leq 120$	
$120 < t \leq 150$	
Total	

- (c)** Interpret: write down the modal class from your completed table. (1)

- (d)** Interpret: use the modal class to comment on what this suggests about Year 10 students' exercise habits outside school. (1)

(Total for Question 3 is 5 marks)

- 4 The grouped frequency table shows the distance travelled to work, in km, by 50 employees at a company. The frequency for the class $15 < d \leq 25$ is unknown and is shown as x .

Distance (km)	Frequency
$0 < d \leq 5$	12
$5 < d \leq 15$	20
$15 < d \leq 25$	x
$25 < d \leq 40$	6
Total	50

- (a) Find the value of x . (2)

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(b) Use linear interpolation to estimate the median distance travelled to work. (3)

(Total for Question 4 is 5 marks)

Mark scheme · S16-test Grouped Frequency Tables: Test Pack

Question 1

- (i) **B1** True cao
- (i) **Answer: True**
- (ii) **B1** False cao
- (ii) **Answer: False**

Question 2

- (a) **B1** at least four of the five frequencies tallied correctly
- (a) **B1** all five frequencies correct: 5, 5, 4, 4, 2 (total 20)
- (a) **Answer: 5, 5, 4, 4, 2**
- (b) **B1** valid advantage, e.g. narrower classes show more detail/pattern in how the data is spread within the original range 0-50
- (b) **B1** valid disadvantage, e.g. more classes are needed so the table becomes longer, and some classes may end up with very low or zero frequencies
- (b) **Answer: Advantage: shows more detail. Disadvantage: more classes, some with low frequencies.**

Question 3

- (a) **B1** a suitable, answerable question with a numerical response, e.g. 'How many minutes in total did you spend exercising outside school last week?' oe
- (a) **Answer: e.g. 'How many minutes did you spend exercising outside school last week?'**
- (b) **B1** at least three of the five frequencies tallied correctly
- (b) **B1** all five frequencies correct: 4, 6, 5, 4, 1 (total 20)
- (b) **Answer: 4, 6, 5, 4, 1**
- (c) **B1** $30 < t \leq 60$ cao, ft from (b)
- (c) **Answer: $30 < t \leq 60$**
- (d) **B1** sensible comment in context, e.g. most Year 10 students exercise for between half an hour and an hour a week outside school, though a few exercise for much longer, oe
- (d) **Answer: e.g. Most students exercise between 30 and 60 minutes a week outside school.**

Question 4

- (a) **M1** $12 + 20 + 6$, oe (=38)
- (a) **A1** $x = 12$ cao
- (a) **Answer: $x = 12$**
- (b) **M1** identifies the median class as $5 < d \leq 15$ using cumulative frequencies 12, 32, 44, 50 and $n \div 2 = 50 \div 2 = 25$
- (b) **M1** correct substitution: $5 + ((25 - 12) / 20) \times 10$, oe
- (b) **A1** 11.5 cao
- (b) **Answer: 11.5 km**