HIGHER

H19-10min Estimating from Samples (Higher): 10-minute Pack

Total Marks

EDEXCEL 1ST0 · Calculator allowed · about 10 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 A bakery takes a random sample of 10 loaves from a batch of 4500 loaves baked in one day. The mass, in grams, of each loaf in the sample is:

812, 805, 798, 810, 807, 795, 802, 809, 800, 806

(a) Work out the mean mass of the loaves in the sample. **(2)**

.....

(b) Estimate the total mass, in kg, of all 4500 loaves in the batch. **(2)**

(Total for Question 1 is 4 marks)

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2 A PE teacher records the time, in seconds, taken by a sample of 15 pupils to run 100 m. The times, in order, are:

13.1, 13.4, 13.6, 13.9, 14.0, 14.2, 14.3, 14.5, 14.7, 14.9, 15.0, 15.3, 15.6, 15.9, 16.4

The school has 480 pupils in the year group.

(a) Find the median running time for this sample. **(1)**

.....

(b) Use the median to estimate how many of the 480 pupils in the year group ran 100 m in under 14.5 seconds. **(3)**

(Total for Question 2 is 4 marks)

3 A student wants to estimate the average number of hours per week that adults in her town spend exercising. She plans to stand outside a gym on a weekday morning and ask people leaving the gym how many hours they exercise each week.

(a) Give one reason why this sample of gym-goers is unlikely to be representative of all adults in the town. **(1)**

(b) Give two ways the student could improve her sampling method so that it better represents all adults in the town. **(2)**

(Total for Question 3 is 3 marks)

Mark scheme · H19-10min Estimating from Samples (Higher): 10-minute Pack

Question 1

- (a) **M1** (812+805+798+810+807+795+802+809+800+806) / 10, oe
- (a) **A1** 804.4 (g) cao
- **(a) Answer: 804.4 g**
- (b) **M1** 804.4 x 4500, oe (ft their mean from (a))
- (b) **A1** 3619.8 (kg) cao
- **(b) Answer: 3619.8 kg**

Question 2

- (a) **B1** 14.5 (seconds) cao
- **(a) Answer: 14.5 seconds**
- (b) **M1** identifies that 7 of the 15 sample times are less than 14.5 (the median itself is the 8th value, not below it)
- (b) **M1** 7/15 x 480, oe
- (b) **A1** 224 cao
- **(b) Answer: 224**

Question 3

- (a) **B1** people leaving a gym are likely to exercise more than a typical adult in the town, so the sample is biased towards people who already exercise regularly, oe
- **(a) Answer: The sample only includes gym-goers, who probably exercise more than typical adults in the town.**
- (b) **B1** select a random sample of adults from across the whole town (e.g. from the electoral register), not just gym users, oe
- (b) **B1** survey people at a range of different times and locations across the town, not only one place at one time, oe
- **(b) Answer: Take a random sample of adults from across the whole town, and sample at a range of times and locations.**