



H08-10min Quality Assurance and Control Charts: 10-minute Pack

EDEXCEL 1ST0 · Calculator allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

1 A quality inspector explains some of the vocabulary used with control charts.

(a) State what the central (mean) line on a control chart represents. (1)

(b) State what is plotted on the horizontal axis of a control chart. (1)

(Total for Question 1 is 2 marks)

2 A factory machine cuts steel bolts to a target shaft diameter of 25 mm. When the machine is working correctly, the population standard deviation of the diameters it produces is 0.8 mm. Workers take samples of 16 bolts at regular intervals and plot the mean diameter of each sample on a control chart.

(a) Work out the standard error of the sample mean. (2)

.....
(b) Work out the warning limits for this control chart. (2)

.....
(c) Work out the action limits for this control chart. (2)

.....
(Total for Question 2 is 6 marks)

Mark scheme · H08-10min Quality Assurance and Control Charts: 10-minute Pack

Question 1

- (a) **B1** the target mean (the process mean when the machine/process is working correctly), oe
- (a) **Answer: The target/process mean.**
- (b) **B1** time, or the sample number (the order in which the samples were taken), oe
- (b) **Answer: Time (the sample number/order in which samples were taken).**

Question 2

- (a) **M1** $0.8 / \sqrt{16}$, oe
- (a) **A1** 0.2 (mm) cao
- (a) **Answer: 0.2 mm**
- (b) **M1** $25 \pm 2 \times 0.2$, oe (ft their SE from (a))
- (b) **A1** 24.6 mm and 25.4 mm cao
- (b) **Answer: 24.6 mm and 25.4 mm**
- (c) **M1** $25 \pm 3 \times 0.2$, oe (ft their SE from (a))
- (c) **A1** 24.4 mm and 25.6 mm cao
- (c) **Answer: 24.4 mm and 25.6 mm**