Grouped Data, Percentiles & Modal Interval (Grade 10)

EXAM-STYLE CLASS TEST

MARKS	DURATION	QUESTIONS
26	40 minutes	2

Name: ..... Class: .....

Date: .....

MARK ____ / 26

INSTRUCTIONS AND INFORMATION

1. Answer **ALL** the questions in this question paper.
2. Answer QUESTION 1 by **circling** the letter (A–D) in the answer grid at the end of that section.
3. Show **ALL** calculations clearly.
4. Show all units where applicable.
5. Number the answers correctly according to the numbering system used in this question paper.
6. A non-programmable calculator may be used, unless stated otherwise.
7. Write neatly and legibly.

QUESTION 1 [10 MARKS]

Four options are given as possible answers to the following questions. Choose the correct answer and circle the letter (A–D) in the grid at the end of this section. If you want to change your choice, put a cross through the wrong letter and circle your new choice.

1.1 For the interval $20 \leq x < 30$, the MIDPOINT used to estimate the mean is ... (1)

A) 30 **B)** 20

C) 25 **D)** 10

1.2 The MODAL interval is the one with ... (1)

A) the widest class **B)** the highest frequency

C) the largest midpoint **D)** the middle position

1.3 Marks are grouped as 0–20 ($f = 4$), 20–40 ($f = 9$), 40–60 ($f = 12$) and 60–80 ($f = 5$). The MODAL interval is ... (1)

A) 60–80 **B)** 20–40

C) 0–20 **D)** 40–60

1.4 For that grouped data, the total number of learners is ... (1)

A) 12 **B)** 26

C) 30 **D)** 20

1.5 For that grouped data, the interval containing the MEDIAN is ... (1)

A) 0–20 **B)** 60–80

C) 20–40 **D)** 40–60

1.6 For that grouped data, the ESTIMATED MEAN is ... (1)

A) 42 **B)** 40

C) 1 260 **D)** 50

1.7 The mean of grouped data is only an ESTIMATE because ... (1)

A) the intervals are unequal **B)** the original values inside each interval are unknown

C) a mean is always approximate **D)** the frequencies are guesses

1.8 The 25th percentile of a data set is the same as ... (1)

A) the median **B)** the mode

C) Q_3 **D)** Q_1

1.9 The SEMI-interquartile range is ... (1)

A) $\frac{Q_3 - Q_1}{2}$ **B)** $Q_3 \times Q_1$

C) $Q_3 - Q_1$ **D)** $\frac{Q_3 + Q_1}{2}$

1.10 If $Q_1 = 18$ and $Q_3 = 34$, the semi-interquartile range is ... (1)

A) 16 **B)** 8

C) 26 **D)** 52

ANSWER GRID — CIRCLE YOUR ANSWERS FOR QUESTION 1

1.1	A	B	C	D
1.2	A	B	C	D
1.3	A	B	C	D
1.4	A	B	C	D
1.5	A	B	C	D
1.6	A	B	C	D
1.7	A	B	C	D
1.8	A	B	C	D
1.9	A	B	C	D
1.10	A	B	C	D

QUESTION 2 [16 MARKS]

The table below shows the times, in minutes, taken by 50 learners to complete a task.

Time (min)	$0 \leq t < 10$	$10 \leq t < 20$	$20 \leq t < 30$	$30 \leq t < 40$	$40 \leq t < 50$
Frequency	4	8	15	14	9

2.1 Complete a cumulative frequency table for the data. **(3)**

2.2 Calculate the estimated mean, using the midpoint of each interval. **(4)**

2.3 Determine the position of the UPPER QUARTILE, and the interval in which it lies. **(3)**

2.4 If $Q_1 = 21$ and $Q_3 = 37$, calculate the interquartile range and the semi-interquartile range, and state what the semi-interquartile range measures. **(3)**

2.5 Explain ONE advantage and ONE disadvantage of grouping data in this way. **(3)**

TOTAL: 26 marks

This question paper consists of 2 questions.

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