Step by step guide_Frequency Distribution Tables (Grouped)

Pre-Class Preparation

- Prepare group assignments (4-5 students per group).
- Have chart paper and colored markers ready.
- Prepare number cards or slips with the test scores.
- Write anchor activity data on the board or prepare handouts.
- Prepare worked examples on cards or slides.
- Have calculators available.

Phase 1: Problem-Solving and Discovery (15 minutes)

[0-2 minutes] Introduction

[SAY] "Good morning! Imagine you have test scores for 1000 students. Would you list all 1000 numbers?"

[LISTEN] Students say: No, too many!

[SAY] "Exactly! Today we learn how to GROUP data into intervals to make large datasets manageable!"

[2-3 minutes] Group Formation

[DO] Divide students into groups of 4-5.

[DO] Distribute chart paper and markers.

[3-5 minutes] Explain the Activity

[SAY] "A teacher has 25 test scores. The data is jumbled and hard to understand."

[WRITE on board] "12, 34, 45, 23, 8, 36, 41, 29, 15, 48, 33, 25, 38, 19, 44, 27, 31, 49, 22, 14, 5, 42, 39, 28, 35"

[SAY] "Your tasks: (a) Find lowest and highest scores, (b) Group into intervals 0–9, 10–19, 20–29, 30–39, 40–49, (c) Identify which interval has most students. You have 10 minutes."

[5-13 minutes] Group Work

[DO] Circulate among groups, observing their organization strategies.

[LISTEN] to how they sort the data.

[ASK] "What's the lowest score? Highest?"

[ASK] "How are you keeping track of which scores go in which interval?"

[DO] Guide groups to use tally marks.

[ASK] "Which interval has the most students?"

[13-15 minutes] Group Sharing

[SAY] "Group 1, what is the range?"

[LISTEN] Students say: Lowest = 5, Highest = 49, Range = 44

[SAY] "Group 2, show us your frequency table."

[LISTEN] Students present:

0–9: 2 students

10–19: 4 students

20–29: 6 students

30–39: 7 students

40–49: 6 students

[WRITE] the frequency table on the board.

[ASK] "Which interval has the highest frequency?"

[LISTEN] Students say: 30–39 (7 students)

[SAY] "What does this tell us about class performance?"

[LISTEN] Students explain: Most students scored in the 30s.

Phase 2: Structured Instruction (10 minutes)

[15-17 minutes] Purpose of Grouping

[SAY] "Grouping data helps us see PATTERNS in large datasets."

[SAY] "Instead of looking at 25 jumbled numbers, we see: most students scored 30–39!"

[WRITE] "Grouping reveals patterns"

[17-19 minutes] Important Trade-off

[SAY] "But there's a trade-off. Do we know the EXACT scores after grouping?"

[LISTEN] Students say: No, we only know the interval.

[SAY] "Correct! We lose exact values. So calculations from grouped data are ESTIMATES, not exact."

[WRITE] "Grouped data → Estimates (not exact)"

[19-22 minutes] Key Terms

[WRITE] "Class Interval: A range of values (e.g., 0–9, 10–19)"

[WRITE] "Frequency: Count of data points in each interval"

[WRITE] "Class Width: Number of values in interval (COUNT, don't subtract!)"

[EXAMPLE] "Interval 0–4 includes 0, 1, 2, 3, 4 → Width = 5"

[SAY] "Common error: Students subtract 4 - 0 = 4. Wrong! Count the values: 5!"

[22-25 minutes] Table Structure

[SAY] "Grouped frequency tables have THREE columns:"

[WRITE] "Column 1: Class Interval"

[WRITE] "Column 2: Tally (visual counting)"

[WRITE] "Column 3: Frequency (final count)"

[SAY] "Always verify: Total frequency = Total data points!"

Phase 3: Practice and Application (15 minutes)

[25-35 minutes] Worked Example 3.1.36 (Daily Earnings)

[SAY] "Example: Daily earnings of 20 freelance workers:"

[WRITE] "45, 62, 58, 41, 75, 50, 48, 66, 72, 55, 43, 60, 52, 78, 49, 64, 57, 70, 44, 69"

[SAY] "Construct grouped frequency table with width 10, starting at 40–49."

[DO] Work through together:

[WRITE] "Step 1: Define intervals: 40–49, 50–59, 60–69, 70–79"

[SAY] "Step 2: Count how many in each group. Let's do 40–49 together."

[DO] Circle on board: 45, 41, 48, 43, 49, 44

[WRITE] "40–49: 6 values"

[SAY] "Now you count 50–59 with your partner."

[LISTEN] Students count: 58, 50, 55, 52, 57 = 5

[WRITE] "50–59: 5 values"

[DO] Continue for remaining intervals:

[WRITE] "60–69: 5 values (62, 66, 60, 64, 69)"

[WRITE] "70–79: 4 values (75, 72, 78, 70)"

[SAY] "Step 3: Create the table."

[DO] Draw table on board with intervals and frequencies.

[SAY] "Step 4: Verify total: 6 + 5 + 5 + 4 = 20 ✓"

[SAY] "Always check your total matches the number of data points!"

Phase 4: Assessment (5 minutes)

[35-40 minutes] Exit Ticket Review

[SAY] "Question 1: Chess club ages table. Total members?"

[DO] Quick check: 8 + 12 + 5 = 25 total

[SAY] "Members aged 20 or older?"

[DO] 12 + 5 = 17

[SAY] "Question 2: Class width for intervals 0–4, 5–9, 10–14, 15–19?"

[ASK] "Who subtracted and got 4?"

[SAY] "Remember: COUNT the values! 0, 1, 2, 3, 4 = 5 values. Width = 5!"

[SAY] "Question 3: Cycling distances - construct table for 0–9, 10–19, 20–29"

[DO] Quick count: 0–9 (4), 10–19 (4), 20–29 (2)

[SAY] "Remember: Grouping helps see patterns, but we lose exact values!"

[DO] Collect exit tickets.

Teaching Tips

- Emphasize the trade-off: patterns vs exact values.
- Use tally marks - visual counting reduces errors.
- Always verify total frequency = number of data points.
- Stress: Class width = COUNT values, don't subtract!
- Use real Kenyan contexts: exam scores, earnings, distances.
- Show both ungrouped and grouped data side by side for comparison.

Common Student Errors to Watch For

- Calculating class width by subtracting limits instead of counting values.
- Not using tally marks and making counting errors.
- Creating overlapping intervals (e.g., 0–10, 10–20).
- Forgetting to verify total frequency matches data points.
- Misplacing boundary values (e.g., where does 10 go in 0–9, 10–19?).
- Thinking grouped data gives exact values (forgetting it's estimates).