Same news, different denominator

Pupil task: a fictional survey

100 pupils were invited to an optional one-question survey. Each could choose audio or written-text reminders once. All counts below are invented for this task.

Section	Audio	Written text	No response	Invited
9A	18	6	16	40
9B	12	4	44	60
Total	**30**	**10**	**60**	**100**

Two headlines to check

A. "75% of pupils prefer audio reminders."

B. "Only 30% of pupils want audio reminders."

1. Check totals. How many responded? _____ How many were invited? _____

2. Write the fraction, percentage and group counted by each denominator.

   Audio among respondents: _____ / _____ x 100 = _____ %

   Invited pupils with a recorded audio choice: _____ / _____ x 100 = _____ %

3. Correct this: "The other 70 pupils chose written reminders."

_____

_____

4. Draw and label two 100% bars. Use words or patterns as well as any colour.

All invited pupils: audio / written text / no response

0% 100%

Respondents only: audio / written text

0% 100%

5. Write a fair headline and caption. Name the base and what is still unknown.

_____

_____

_____

Exit: 50 invited; 20 responded; 8 chose audio; 12 chose written text.

Audio: _____ % of respondents; _____ % of invited. Unknown: _____

Same news, different denominator

Teacher key

1. Frequency checks

9A: 18 + 6 + 16 = 40. 9B: 12 + 4 + 44 = 60.
Audio: 18 + 12 = 30. Written: 6 + 4 = 10. No response: 16 + 44 = 60.
Respondents = 30 + 10 = 40. Invited = 40 + 60 = 100.

2. Same numerator, different bases

Among respondents: 30 / 40 x 100 = 75%.
Among invited pupils: 30 / 100 x 100 = 30% recorded an audio choice.
A uses the first base; B uses the second. Both unqualified headlines can mislead: the preferences of all 100 invited pupils are not established.

3. Do not turn no response into a preference

The other 70 are 10 written-text choices plus 60 non-responses.
The file supplies no reasons for non-response. Silence is not a recorded choice.

4. Bar labels and comparison

Invited base 100: audio 30%, written text 10%, no response 60%.
Respondent base 40: audio 75%, written text 25%. Each bar totals 100%.
For 10 cm bars: first 3 cm / 1 cm / 6 cm; second 7.5 cm / 2.5 cm.
These are two views of one survey, not a measured rise or fall over time.

5. One accurate report

Headline: "Audio chosen by 30 of 40 survey respondents."
Caption: "100 pupils were invited; 40 responded and 60 did not. Of the respondents, 30 chose audio and 10 written text, so the results do not establish what all 100 prefer." Accept equivalent accurate reporting with the base/limit.

Exit and feedback

Exit: 8 / 20 x 100 = 40%; 8 / 50 x 100 = 16%; 30 gave no response.
Do not infer the preference of all 50 from these optional responses.
Assess: (a) correct denominator/calculation, (b) unknowns preserved, (c) accurate revision with evidence. Use 0-2 points for each; 6 available.
Accept oral/scribed explanations. Allow a calculator and accessible table/bar descriptions; judge the reasoning separately from spelling or neatness.

Curriculum: CBSE Class IX Mathematics 2026-27, Unit VI, printed p. 12.
Original activity, not a prescribed textbook exercise or official marking scheme.