

Class summary sheet for a diagnostic multiple-choice test

Year 10 · Fractions, powers, standard form · October 2026 · two classes, 57 papers marked

Question numbers: those of the published sample paper (each pupil received a shuffled version). Data from optical scanning (Auto-Multiple-Choice);

3 completely blank papers are excluded as absences.

Mean

11,8 / 20

Median

11,8 / 20

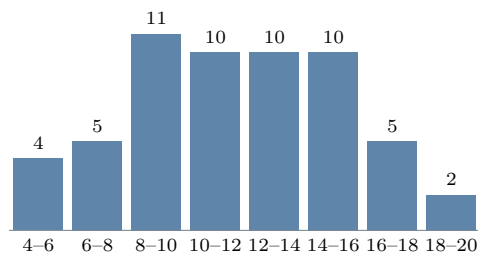
Lowest / highest

5,0 and 18,6

Standard deviation

3,6 points

1. Mark distribution and success rate by topic



Number of papers per 2-point band (out of 20).

Mean success rate for questions in each topic:

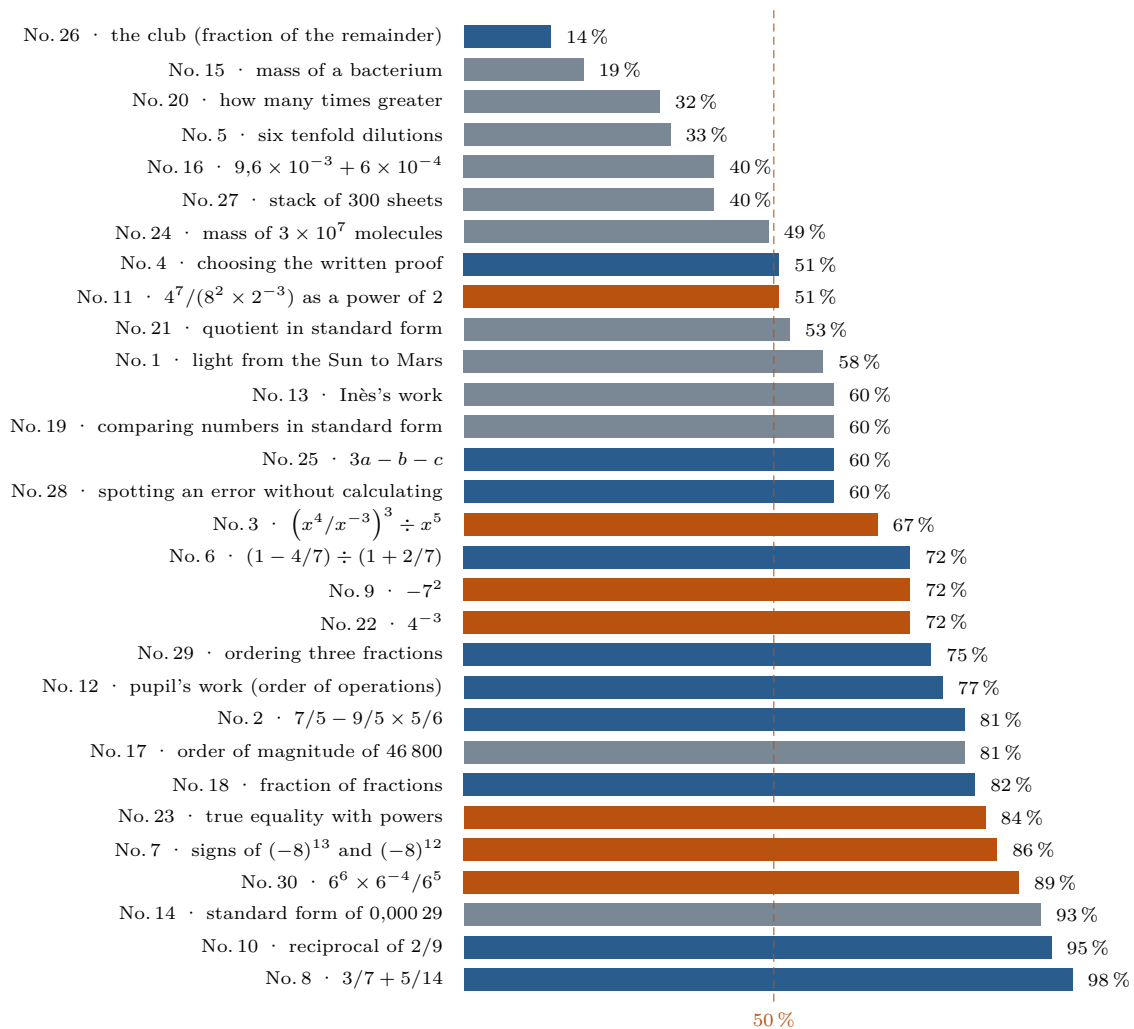
fractions: 70 %

powers: 74 %

standard form: 52 %

Standard form is the weak point of the chapter: four of the five lowest-scoring questions fall into this topic.

2. Question-by-question success rate



Bar colours: fractions, powers, standard form. A question is counted as correct if only the right box is ticked.

3. Four telling distractors

Each incorrect option corresponds to a specific error. When a distractor attracts many pupils, it tells us which error to rework.

Question	Problem	Pupils' choices and error revealed	Remediation
No. 26 (3 pt)	In a club, 1/6 of the members do judo, 1/2 tennis, 1/6 of the remainder swimming and the other 30 climbing. How many members?	 180: 56 % — “1/6 of the remainder” read as “1/6 of the total”  36: 16 % — stops at the remainder  90: 14 % — leaves out swimming  108: 14 % — correct answer	Bar model: the remainder is a new whole; “fraction of a quantity” written as a product, $\frac{1}{6} \times \frac{1}{3}$.
No. 20 (1 pt)	How many times greater is $6,3 \times 10^{13}$ than 7×10^8 ?	 9×10^5 : 49 % — $0,9 \times 10^5$ rewritten as 9×10^5 without adjusting the exponent  9×10^4 : 32 % — correct answer  9×10^{-6} : 12 % — exponents subtracted the wrong way round  $4,41 \times 10^{22}$: 2 %	Always write out the step $0,9 \times 10^5 = 9 \times 10^{-1} \times 10^5$; check by order of magnitude ($10^{14}/10^9$).
No. 15 (2 pt)	600 ng contain 2×10^6 bacteria; 1 ng = 10^{-9} g. Mass of one bacterium?	 3×10^{-4} g: 35 % — division done in nanograms, without converting  3×10^{-15} g: 32 % — 600 replaced by 6: the factor 10^2 is lost  3×10^{-13} g: 19 % — correct answer  3×10^{-7} g: 11 % — division by 10^6 forgotten	Convert first (600 ng = 6×10^{-7} g), then calculate; write each number in standard form before calculating.
No. 5 (1 pt)	A 6×10^{-3} mol/L solution is diluted tenfold, then undergoes 5 further identical dilutions. Final concentration?	 6×10^{-9} mol/L: 33 % — correct answer  6×10^{-8} mol/L: 33 % — 5 dilutions counted instead of 6  6×10^{-6} mol/L: 25 % — number of divisions by 10 miscounted  1×10^{-4} mol/L: 5 %	Have pupils write down the sequence of concentrations, one line per dilution, before writing the power of 10.

4. From errors to working groups

Pupils are grouped by type of error, not by mark. An error made by more than half the pupils calls for a whole-class review; the others warrant targeted workshops.

Type of error (ticked answer)	Pupils	Share	Decision
unit conversion (No. 15: 3×10^{-4} g or any error on No. 27)	41	72 %	whole-class review
mantissa left outside [; 10[(No. 20: 9×10^5 , No. 16: $10,2 \times 10^{-3}$ or No. 24: $13,95 \times 10^{-16}$)	35	61 %	whole-class review
fraction of the remainder read as fraction of the total (No. 26: 180)	32	56 %	whole-class review
5 dilutions counted instead of 6 (No. 5: 6×10^{-8})	19	33 %	targeted workshop
600 written without its factor 10^2 (No. 15: 3×10^{-15})	18	32 %	targeted workshop
adding without aligning powers of 10 (No. 16: $1,56 \times 10^{-2}$)	17	30 %	targeted workshop

A pupil may appear in more than one row. Counts computed paper by paper from the ticked boxes.