Foundations exam practice

Student activity • class activity

YEAR 10 / LESSON 14 / CHEMISTRY + SCIENCE (DOUBLE AWARD)

The question

Can you apply foundation ideas accurately under timed conditions?

Complete six original exam-style questions worth 18 suggested classroom marks, then improve your reasoning using the separate staff guide. These are not official Pearson questions or an official grade boundary. All numerical sample data below are invented for practice.

Equipment

- Student booklet, pencil, ruler and calculator
- Periodic table if the teacher permits it
- Different-colour pen for corrections after the timed stage

Desk review only. Keep the working area clear. No practical apparatus or chemical samples are required.

Course coverage: Shared foundations application: mixtures, filtration, chromatographic evidence, atomic structure, weighted means and electronic configurations.

Your learning checkpoint

One topic I can explain; one topic I need to revisit:

Method and reasoning

Read the whole sequence before starting

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1. Read the task data and confirm the teacher's rules about notes and periodic-table use. Allow 25 minutes for the six questions on the final page.

2. Answer all six questions independently. Show working, units where applicable and the reasoning requested. Use the blank working space before the final answer lines if needed.

3. For question 2, explain the effect of the apparatus error rather than only naming it. For question 3, use distances measured from the same baseline.

4. At the end of the timed section, stop and retain your original answers. Use the staff mark guidance only when the teacher begins the review.

5. Record a score out of 3 for each question in the table. Identify whether any lost mark concerns a fact, a calculation or an explanation.

6. Correct your two most important errors in a different colour and explain how you would avoid them next time. Do not convert the score into an examination grade.

Cleanup

- Keep original answers and corrections together. Return shared calculators and reference sheets.

Record your evidence

Blank spaces are for your own work

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Reference and task data

Question 3: all distances start at the same pencil baseline, and spot P is measured to its centre. Question 5: use mass numbers as approximate isotope masses; the abundances are invented. Course group labels are 1–7 and 0. Rf = distance travelled by spot ÷ distance travelled by solvent front.

Question	Score / 3	Error type and correction
1		
2		
3		
4		
5		
6		

Show your calculations, labelled model or correction here.

Explain and evaluate

Use evidence and show calculation steps where relevant

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1. [3 marks] A pure substance is described as “always one element”. Give a counterexample, classify it, and explain why it is pure.

2. [3 marks] A student filters sand and salt solution but pours above the filter-paper rim. Explain why the filtrate may be cloudy, how to correct this, and what remains dissolved.

3. [3 marks] Invented chromatogram: the solvent front travels 8.0 cm and spot P travels 5.2 cm from the baseline. Calculate Rf, state its unit status, and explain why a single spot does not prove purity.

4. [3 marks] A neutral atom has atomic number 17 and mass number 37. Give its protons, neutrons and electrons.

5. [3 marks] Invented isotope values are 10 and 11, with abundances 30% and 70%. Show a weighted-mean calculation, give the answer, and explain why it lies nearer 11.

6. [3 marks] A neutral atom has electron arrangement 2,8,2. Identify its period and group, then explain the group assignment.