Supporting pharmacy students with drug calculations

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Overview of pharmacy students

- Must have GCSE maths grade C/level 4.
- Must have chemistry A-level (minimum grade C) and a second science.
- Typically require a minimum of 96 UCAS points.
- Must attend and pass a selection event.

- Pharmacy is a 4-year, integrated Masters degree.
- Pharmacy graduates must complete a year of “pre-registration”.

Calculations requirements for pharmacists

- Regulatory body, GPhC, set a “registration assessment” which includes a 40 question, 2-hour calculations paper.
- Calculator (non-scientific) allowed.
- Free text answer.

Undergraduate support

- A “must pass” calculations test in each year.
- Standard format to questions:

An 8-year-old child is prescribed 125 mg of erythromycin, 4 times a day. An oral solution contains 25 mg/mL of erythromycin.

What is the volume of erythromycin oral solution, 25 mg/mL, that the patient takes for each dose?

- Small number of support workshops.
- Recommended textbooks.
- Online tests with immediate, video feedback.

Video feedback

You are required to prepare a solution for infusion by measuring out 10 mL of a 5 mg/mL glyceryl trinitrate solution and adding 5% w/v glucose up to a final volume of 500 mL.

What is the strength of glyceryl trinitrate in the final solution expressed in micrograms/mL?

Selected Answer: [None Given]

Correct Answer: E. 100 micrograms/mL

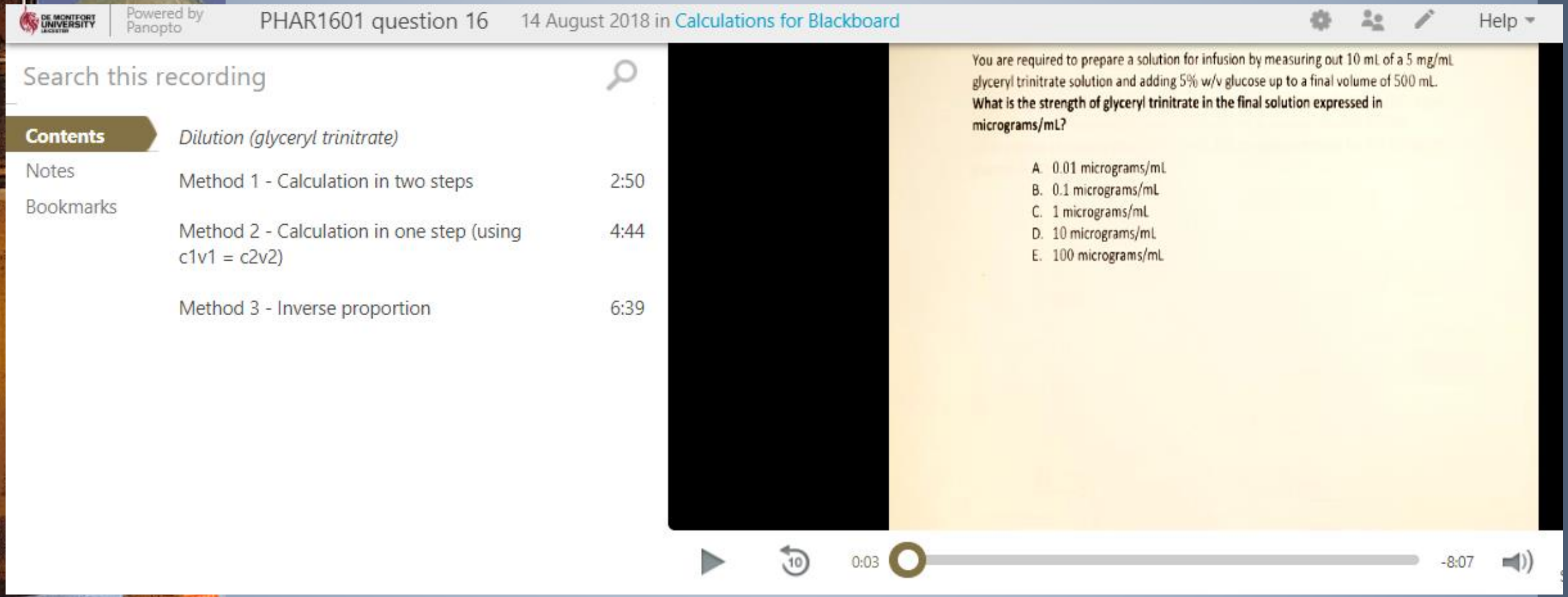
Response Feedback: Incorrect.

Here are some things to consider:

- Did you recognise this as a dilution question?
- Did you recognise that although you are told that the diluent is 5% w/v glucose, this value of 5% is irrelevant to the calculation as it refers to glucose rather than glyceryl trinitrate? (Note that in the real world, you need to know which diluent to use so it is relevant to the actual act of diluting but it is not relevant to the calculation associated with dilution).
- Did you make sure that the answer you arrived at were in the same units required by the question?

Now try the question again. If you are still struggling then watch the video below.

Video feedback



Our assessment process

Year 1	Year 2	Year 3	Year 4
MCQ	MCQ	MCQ	Free text answer
Non-calculator	Non-calculator	Non-calculator	Calculator
Mostly single layer	Some multi-layer	Around 30% multi-layer	Around 30% multi-layer
One or two extracts	Two or three extracts	Up to 5 extracts	Up to 5 extracts
Written by mathematician	Written by mathematician	Written by pharmacists	Written by pharmacists
Moderated by 2 pharmacists	Moderated by 2 pharmacists	Moderated by mathematician and 2 pharmacists	Moderated by mathematician and 2 pharmacists

Method of feedback and progress

- Students who fail are timetabled for a dedicated feedback session.
- Students who pass are invited for appointments to see their paper.
- All students receive an email detailing the questions they answered incorrectly with feedback on typical errors.

- DMU students recently ranked 4th for calculations.
- Working closely with the disability team to identify risks of dycalculia and/or dyslexia.

Support after graduation

- Universities are not responsible for pre-registration training.
- Pre-registration training varies in quality.

- DMU offers two revision days including two practice calculations tests.
- Video solutions for each question.

Happy to share resources

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