Many nurses will be taking their prescribing exam this year.

It is a requirement of the Nursing and Midwifery Council (NMC) that nurses complete a numeracy assessment in order to gain the prescribing qualification. The numeracy assessment is related to prescribing and calculations regarding medicines and must be passed with a score of 100%.

The actual numeracy assessment varies across Universities, for example, some may be multiple choice questions carried out on a computer whereas as some may require handwritten answers on the exam paper. Many allow students to use calculators but the answer should always be checked with a measure of common sense to reduce the risk of inputting errors on the calculator eg pressing digits twice.

Typically, there will be 5 questions to test nurses' ability to perform a range of calculations, such as:

Change units eg nanograms to micrograms to milligrams to grams to kilograms and vice versa.

Calculate how many tablets to give per dose / day / course / month.

Calculate the cost per prescription / month / year.

Calculate the patient's dose where the dosage is based on weight eg mg/kg.

Calculate what volume of liquid to prescribe where you have already calculated the required dose in milligrams.

Calculate the percentage dose reduction, for example in renal or liver impairment.

These exercises provide some extra practice for those undertaking the exam. These are also useful for anyone who wants to test their calculation skills. Extra practice can also be gained using SN@P at https://snap-services.org/education/index.php (free but registration is required) or for a more basic refresher of GCSE level maths BBC Bitesize is useful at https://www.bbc.com/education/examspecs/z8sg6fr

Converting units

1. Express 1000 mg in grams 1g

2. Express 500 microgram in milligrams. 0.5mg

3. Express 0.25 mg in micrograms. 250 micrograms

4. A depot injection contains 150mg/1ml of drug A. How much of drug A does 1 ml depot contain in grams? 0.15g

Calculating total quantity

5. Your patient requires a daily dose of 300 milligrams of Drug B. Tablets are available in 75 milligrams. How many tablets should the patient take each day? 4

6. The dose of Drug C is 1 mg bd. Drug C is only available as 250 microgram tablets. How many tablets should be prescribed for 7 days treatment? 56 tablets

7. A patient is prescribed Drug D inhaler, to take two puffs twice a day. The inhaler contains 100 doses. How many days should the inhaler last if the patient is using it as prescribed? 25 days

8. Your patient requires treatment of 28 days duration and the recommended dose of Drug E is 1 gram twice daily. Drug E is only available as 250 mg tablets. How many tablets should be prescribed? 224

9. A patient uses an inhaler of Drug F, two metered inhalations twice a day. The inhaler strength is 500 micrograms per metered inhalation. Assume good compliance and good inhaler technique. How much of Drug F does the patient inhale each day in milligrams? 2mg

10. Drug G is to be given as an intravenous infusion at a rate of 6 mg/hour. How many milligrams would have been given after 4 hours? 24mg

11. Your patient has been prescribed 7 days of triple therapy for H.pylori eradication, which is a combination of:

    Drug H 30 mg twice a day Drug J 1 g twice a day Drug K 500 mg twice a day.
    Drug H is a 30mg capsule. Drug J is only available as 500 mg capsules. Drug K is a 500mg tablet. Assuming full compliance, how many tablets/capsules in total must the patient take over 7 days to complete the course?

    56

Calculating cost

12. One pack of 28 tablets of Drug L costs £33. How much would one year's supply cost? Assume 12 packs per year. £396

Weight based dosage

13. Your patient needs Drug M. The BNF suggests a dose of 750 mg/kg daily. The patient weighs 12 kg. How much of drug M should be prescribed daily in grams?

    9g

14. A dose of 7.5 mg/kg is needed to treat your patient who weighs 80 kg. What dose does the patient require? 600mg

Calculating volume of liquid

15. You decide that your patient needs 5 days treatment of Drug N, at a dosage of 500 mg three times per day. Drug N is available as a suspension of 50 mg/ml. What volume of suspension, in millilitres, should be prescribed for the 5 days treatment?
150ml

16. You wish to prescribe Drug P for your patient. The recommended daily dose is 50 micrograms / kg. Your patient weighs 60 kg. Drug P is available as a liquid, and the strength is 1mg/5ml. How many millilitres should be given each day? 15ml

17. You wish to give Drug Q to a patient who weighs 25 kg. The BNF suggests a dose of 8 mg/kg daily. Drug Q is available as suspension of 100 mg/5ml. What volume of suspension is needed for each daily dose? 10mls

18. Your patient needs a daily dose of 2 mg of Drug R. Drug R is only available in 250 micrograms/5ml liquid doses. What volume of Drug R liquid in millilitres should the patient take each day? 40ml

19. Your patient needs a daily dose of 500 mg of Drug S. Drug S is only available in 1g/5ml liquid doses. How much liquid in millilitres should the patient take each day?
2.5ml

20. A baby needs to take 62.5 mg of drug T three times a day for 5 days. Drug T is only available in 125mg/5ml liquid. What total volume of drug T should be prescribed?
37.5ml

Calculating percentage dose reduction

21. You are prescribing for a patient with liver disease and the manufacturer directs you to initiate treatment at 60% of the usual adult dose. The usual adult dose of Drug U is 500 mg daily? What daily dose of Drug U should be initiated for this patient?
300mg

22. The usual adult dose of drug V is 200mg daily. The dose needs to be reduced to 25% of the usual dose in renal impairment. What dose should be prescribed in a patient with renal impairment 50mg

23. The manufacturer of drug W recommends prescribing 25% less than the usual dose in elderly patients. The usual dose is 200mg daily. How much should you prescribe for your elderly patient? 150mg