

Section 4.3



Medicine In Exercises 15–18, use the information below.

Subjects in a study receive daily doses of a medicine for 10 weeks. In the first week, they receive 100 milligrams each day. Each week thereafter, the dosage decreases 10% from the previous week.



15. Write a formula that represents the daily dosage during each week.
16. Make a table showing the daily dosage during the 10 weeks.
17. Sketch a graph showing the decrease in the daily dosage during the 10 weeks.
18. The half-life of the medicine is 24 hours. How much of the medicine received in a dose during week 10 remains in the patient’s bloodstream after 24 hours?

Technetium In Exercises 19–22, use the information below.

Most technetium is man-made in nuclear reactors. There are many isotopes of technetium, two of which are technetium-99 and technetium-99m. The half-life of technetium-99 is 210,000 years.

19. How much of a 120-gram sample of technetium-99 will remain after 630,000 years?



20. A vial contains 10 grams of technetium-99m. Use the spreadsheet to determine how long it will take the 10 grams of technetium-99m to decay to about 2.1 grams.

	A	B
1	Years	Grams Remaining
2	0	10.0
3	1.5	8.4
4	3	7.1
5	4.5	5.9
6	6	5.0
7	7.5	4.2
8		

21. What is the half-life of technetium-99m? Explain your reasoning.
22. A solution containing technetium-99m is often injected into a patient to help diagnose problems in the body. Explain why a hospital or veterinary clinic should not order excessive amounts of technetium-99m with the intent of placing it in storage.



This technetium scan helped veterinarians diagnose this cat with hyperthyroidism.