8.7 Exercises

1. Suppose that the population of a certain town grows at an annual rate of 6%. If the population is currently 5,000, what will it be in 7 years? Round your answer to the nearest integer.

2. Suppose that the population of a certain town grows at an annual rate of 5%. If the population is currently 2,000, how many years will it take for it to double? Round your answer to the nearest hundredth.

3. Suppose that a certain radioactive isotope has an annual decay rate of 7.2%. How many years will it take for a 227 gram sample to decay to 93 grams? Round your answer to the nearest hundredth.

4. Suppose that a certain radioactive isotope has an annual decay rate of 6.8%. How many years will it take for a 399 gram sample to decay to 157 grams? Round your answer to the nearest hundredth.

5. Suppose that the population of a certain town grows at an annual rate of 8%. If the population is currently 4,000, how many years will it take for it to double? Round your answer to the nearest hundredth.

6. Suppose that a certain radioactive isotope has an annual decay rate of 19.2%. Starting with a 443 gram sample, how many grams will be left after 9 years? Round your answer to the nearest hundredth.

7. Suppose that a certain radioactive isotope has an annual decay rate of 17.4%. What is the half-life (in years) of the isotope? Round your answer to the nearest hundredth.

8. Suppose that the population of a certain town grows at an annual rate of 7%. If the population is currently 8,000, how many years will it take for it to reach 18,000? Round your answer to the nearest hundredth.

9. Suppose that a certain radioactive isotope has an annual decay rate of 17.3%. Starting with a 214 gram sample, how many grams will be left after 5 years? Round your answer to the nearest hundredth.

10. Suppose that the population of a certain town grows at an annual rate of 7%. If the population grows to 2,000 in 7 years, what was the original population? Round your answer to the nearest integer.

11. Suppose that the population of a certain town grows at an annual rate of 3%. If the population is currently 3,000, how many years will it take for it to double? Round your answer to the nearest hundredth.

12. Suppose that a certain radioactive isotope has an annual decay rate of 12.5%. Starting with a 127 gram sample, how many grams will be left after 6 years? Round your answer to the nearest hundredth.

13. Suppose that a certain radioactive isotope has an annual decay rate of 13.1%.

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Starting with a 353 gram sample, how many grams will be left after 7 years? Round your answer to the nearest hundredth.

14. Suppose that the population of a certain town grows at an annual rate of 2%. If the population grows to 9,000 in 4 years, what was the original population? Round your answer to the nearest integer.

15. Suppose that the population of a certain town grows at an annual rate of 2%. If the population is currently 7,000, how many years will it take for it to double? Round your answer to the nearest hundredth.

16. Suppose that a certain radioactive isotope has an annual decay rate of 5.3%. How many years will it take for a 217 gram sample to decay to 84 grams? Round your answer to the nearest hundredth.

17. Suppose that a certain radioactive isotope has an annual decay rate of 18.7%. How many years will it take for a 324 gram sample to decay to 163 grams? Round your answer to the nearest hundredth.

18. Suppose that the population of a certain town grows at an annual rate of 8%. If the population is currently 8,000, how many years will it take for it to reach 18,000? Round your answer to the nearest hundredth.

19. Suppose that a certain radioactive isotope has an annual decay rate of 2.3%. If a particular sample decays to 25 grams after 8 years, how big (in grams) was the original sample? Round your answer to the nearest hundredth.

20. Suppose that the population of a certain town grows at an annual rate of 4%. If the population is currently 7,000, how many years will it take for it to reach 17,000? Round your answer to the nearest hundredth.

21. Suppose that a certain radioactive isotope has an annual decay rate of 9.8%. If a particular sample decays to 11 grams after 6 years, how big (in grams) was the original sample? Round your answer to the nearest hundredth.

22. Suppose that the population of a certain town grows at an annual rate of 5%. If the population grows to 6,000 in 3 years, what was the original population? Round your answer to the nearest integer.

23. Suppose that the population of a certain town grows at an annual rate of 8%. If the population is currently 6,000, what will it be in 5 years? Round your answer to the nearest integer.

24. Suppose that a certain radioactive isotope has an annual decay rate of 15.8%. What is the half-life (in years) of the isotope? Round your answer to the nearest hundredth.

25. Suppose that the population of a certain town grows at an annual rate of 9%. If the population grows to 7,000 in 5 years, what was the original population? Round your answer to the nearest integer.

26. Suppose that a certain radioactive isotope has an annual decay rate of 18.6%. If a particular sample decays to 41 grams after 3 years, how big (in grams) was the original sample? Round your answer to the nearest hundredth.
27. Suppose that a certain radioactive isotope has an annual decay rate of 5.2%. What is the half-life (in years) of the isotope? Round your answer to the nearest hundredth.

28. Suppose that a certain radioactive isotope has an annual decay rate of 6.5%. What is the half-life (in years) of the isotope? Round your answer to the nearest hundredth.

29. Suppose that the population of a certain town grows at an annual rate of 8%. If the population is currently 2,000, how many years will it take for it to reach 7,000? Round your answer to the nearest hundredth.

30. Suppose that a certain radioactive isotope has an annual decay rate of 3.7%. If a particular sample decays to 47 grams after 8 years, how big (in grams) was the original sample? Round your answer to the nearest hundredth.

31. Suppose that the population of a certain town grows at an annual rate of 6%. If the population is currently 7,000, what will it be in 7 years? Round your answer to the nearest integer.

32. Suppose that the population of a certain town grows at an annual rate of 4%. If the population is currently 1,000, what will it be in 3 years? Round your answer to the nearest integer.

In Exercises 33-40, use the fact that the decay rate of carbon-14 is 0.012%. Round your answer to the nearest year.

33. Suppose that only 8.6% of the normal amount of carbon-14 remains in a fragment of bone. How old is the bone?

34. Suppose that only 5.2% of the normal amount of carbon-14 remains in a fragment of bone. How old is the bone?

35. Suppose that 90.1% of the normal amount of carbon-14 remains in a piece of wood. How old is the wood?

36. Suppose that 83.6% of the normal amount of carbon-14 remains in a piece of cloth. How old is the cloth?

37. Suppose that only 6.2% of the normal amount of carbon-14 remains in a fragment of bone. How old is the bone?

38. Suppose that only 1.3% of the normal amount of carbon-14 remains in a fragment of bone. How old is the bone?

39. Suppose that 96.7% of the normal amount of carbon-14 remains in a piece of cloth. How old is the cloth?

40. Suppose that 84.9% of the normal amount of carbon-14 remains in a piece of wood. How old is the wood?
8.7 Answers

1. 7610 people
3. 12.39 yrs
5. 8.66 yrs
7. 3.98 yrs
9. 90.11g
11. 23.10 yrs
13. 141.10g
15. 34.66 yrs
17. 3.67 yrs
19. 30.05g
21. 19.80g
23. 8,951 people
25. 4,463 people
27. 13.33 yrs
29. 15.66 yrs
31. 10,654 people
33. 20445 years
35. 869 years
37. 23172 years
39. 280 years