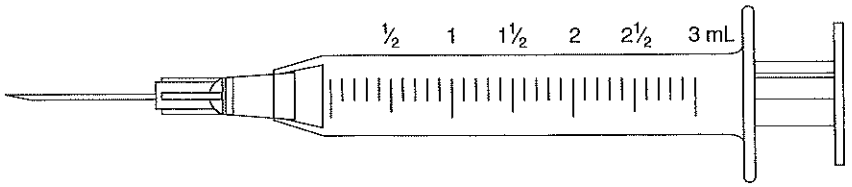
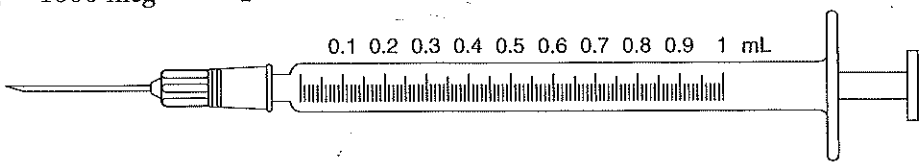
ANSWERS

CHAPTER 12 Dimensional Analysis—Worksheet, pp. 297–320

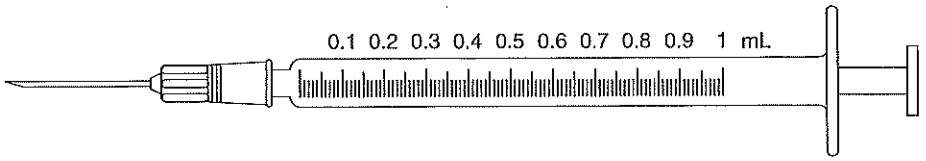
1. $x \text{ mL} = \dfrac{1 \text{ mL}}{400 \text{ mg}} \times \dfrac{500 \text{ mg}}{1} = 1.25 \text{ mL}$



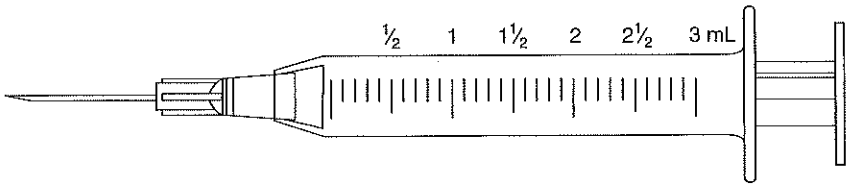
2. $x \text{ mL} = \dfrac{1 \text{ mL}}{0.25 \text{ mg}} \times \dfrac{1 \text{ mg}}{1000 \text{ mcg}} \times \dfrac{110 \text{ mcg}}{1} = 0.44 \text{ mL}$



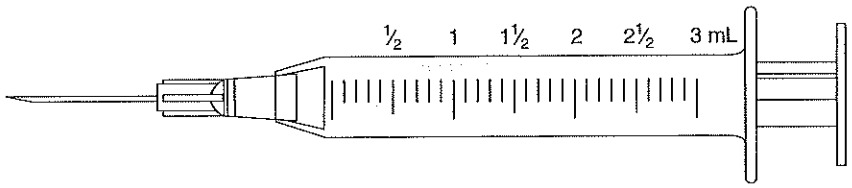
3. $x \text{ mL} = \dfrac{1 \text{ mL}}{0.4 \text{ mg}} \times \dfrac{0.3 \text{ mg}}{1} = 0.75 \text{ mL}$



4. $x \text{ mL} = \dfrac{1 \text{ mL}}{5 \text{ mg}} \times \dfrac{10 \text{ mg}}{1} = 2 \text{ mL}$



5. $x \text{ mL} = \dfrac{1 \text{ mL}}{25 \text{ mg}} \times \dfrac{50 \text{ mg}}{1} = 2 \text{ mL}$

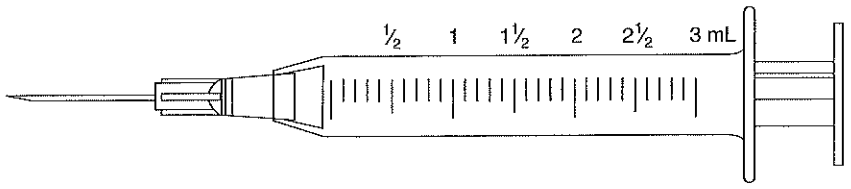


6. $x \text{ mL} = \dfrac{2.5 \text{ mL}}{1 \text{ g}} \times \dfrac{3 \text{ g}}{1} = 7.5 \text{ mL}$

7. $x \text{ mL} = \dfrac{1 \text{ mL}}{10 \text{ mg}} \times \dfrac{5 \text{ mg}}{1} = 0.5 \text{ mL}$

8. $x \text{ mL} = \dfrac{1 \text{ mL}}{5 \text{ mg}} \times \dfrac{4 \text{ mg}}{1} = 0.8 \text{ mL}$

9. $x \text{ mL} = \dfrac{1 \text{ mL}}{10 \text{ mg}} \times \dfrac{30 \text{ mg}}{1} = 3 \text{ mL}$



10. $x \text{ mL} = \dfrac{1 \text{ mL}}{30 \text{ mg}} \times \dfrac{15 \text{ mg}}{1} = 0.5 \text{ mL}$

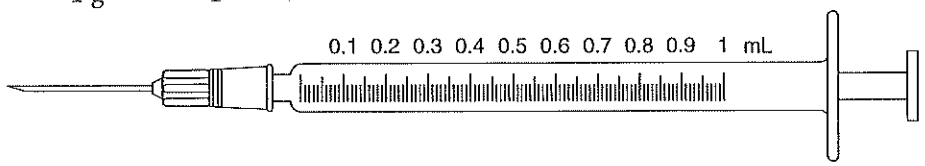
11. $x \text{ mL} = \dfrac{50 \text{ mL}}{44.6 \text{ mg}} \times \dfrac{25.8 \text{ mg}}{1} = 28.9 \text{ mL}$

12. $x \text{ mL} = \dfrac{1 \text{ mL}}{25 \text{ mg}} \times \dfrac{100 \text{ mg}}{1} = 4 \text{ mL}$

13. $x \text{ mL} = \dfrac{20 \text{ mL}}{100 \text{ mg}} \times \dfrac{350 \text{ mg}}{1} = 70 \text{ mL}$

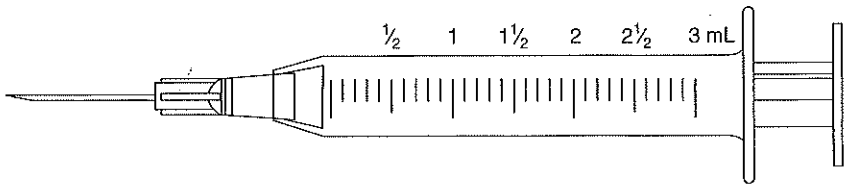
14. $x \text{ mL} = \dfrac{40 \text{ mL}}{400 \text{ mg}} \times \dfrac{300 \text{ mg}}{1} = 30 \text{ mL}$

15. $x \text{ mL} = \dfrac{2 \text{ mL}}{250 \text{ mg}} \times \dfrac{1000 \text{ mg}}{1 \text{ g}} \times \dfrac{0.05 \text{ g}}{1} = 0.4 \text{ mL}$

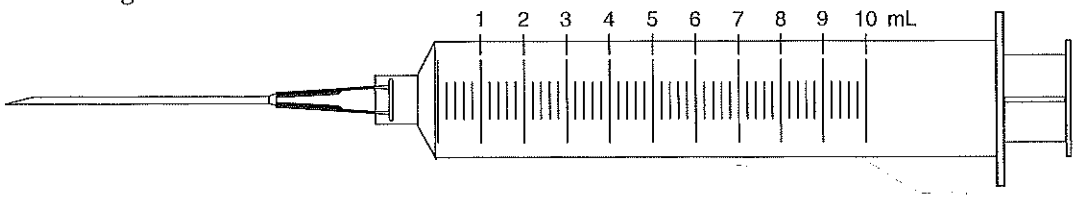


16. $x \text{ mL} = \dfrac{1 \text{ mL}}{0.4 \text{ mg}} \times \dfrac{0.6 \text{ mg}}{1} = 1.5 \text{ mL}$

17. $x \text{ mL} = \dfrac{2 \text{ mL}}{300 \text{ mg}} \times \dfrac{300 \text{ mg}}{1} = 2 \text{ mL}$



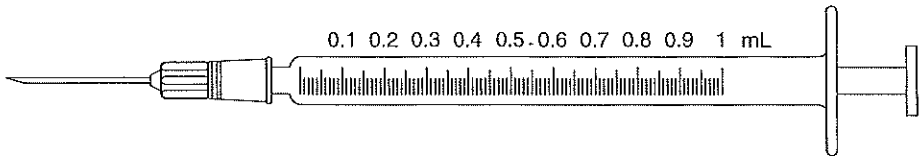
18. $x \text{ mL} = \dfrac{10 \text{ mL}}{10 \text{ mg}} \times \dfrac{6 \text{ mg}}{1} = 6 \text{ mL}$



19. $x \text{ mL} = \dfrac{1 \text{ mL}}{50 \text{ mg}} \times \dfrac{25 \text{ mg}}{1} = 0.5 \text{ mL}$

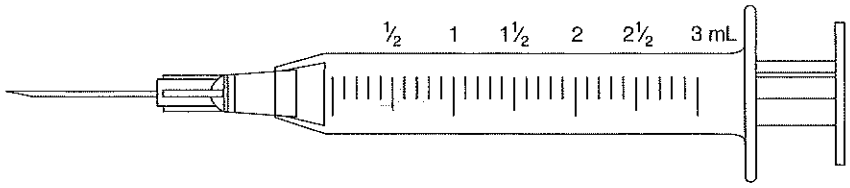
20. $x \text{ mL} = \dfrac{1 \text{ mL}}{4 \text{ mg}} \times \dfrac{1 \text{ mg}}{1} = 0.25 \text{ mL}$

21. $x \text{ mL} = \dfrac{1 \text{ mL}}{20 \text{ mg}} \times \dfrac{10 \text{ mg}}{1} = 0.5 \text{ mL}$



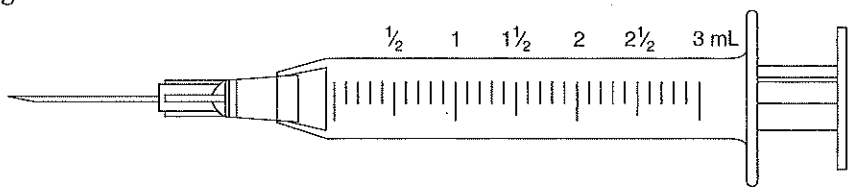
22. $x \text{ mL} = \dfrac{2 \text{ mL}}{500 \text{ mg}} \times \dfrac{400 \text{ mg}}{1} = 1.6 \text{ mL}$

23. $x \text{ mL} = \dfrac{1 \text{ mL}}{5 \text{ mg}} \times \dfrac{7.5 \text{ mg}}{1} = 1.5 \text{ mL}$



24. $x \text{ mL} = \dfrac{1 \text{ mL}}{30 \text{ mg}} \times \dfrac{15 \text{ mg}}{1} = 0.5 \text{ mL}$

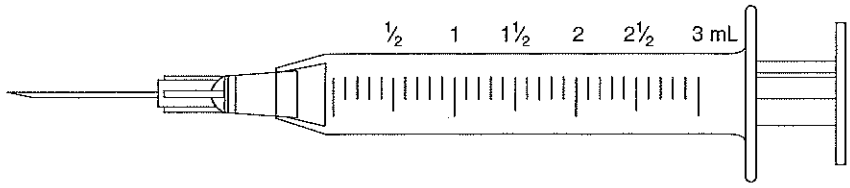
25. $x \text{ mL} = \dfrac{1 \text{ mL}}{10 \text{ mg}} \times \dfrac{1000 \text{ mg}}{1 \text{ g}} \times \dfrac{0.01 \text{ g}}{1} = 1 \text{ mL}$



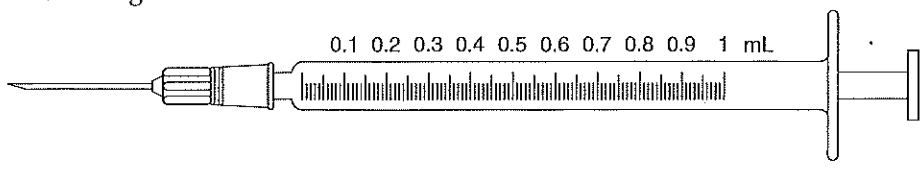
26. $x \text{ mL} = \dfrac{40 \text{ mL}}{400 \text{ mg}} \times \dfrac{1000 \text{ mg}}{1 \text{ g}} \times \dfrac{0.2 \text{ g}}{1} = 20 \text{ mL}$

27. $x \text{ mL} = \dfrac{1 \text{ mL}}{15 \text{ mg}} \times \dfrac{6 \text{ mg}}{1} = 0.4 \text{ mL}$

28. $x \text{ mL} = \dfrac{1 \text{ mL}}{50 \text{ mg}} \times \dfrac{100 \text{ mg}}{1} = 2 \text{ mL}$



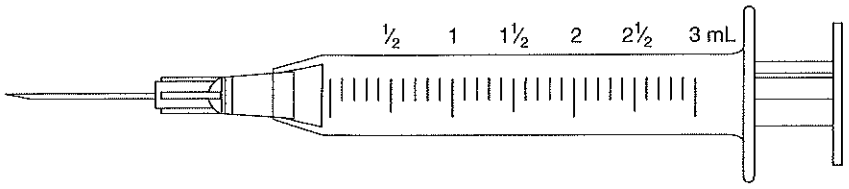
29. $x \text{ mL} = \dfrac{2 \text{ mL}}{0.5 \text{ mg}} \times \dfrac{1 \text{ mg}}{1000 \text{ mcg}} \times \dfrac{100 \text{ mcg}}{1} = 0.4 \text{ mL}$



30. $x \text{ mL} = \dfrac{2 \text{ mL}}{500 \text{ mg}} \times \dfrac{700 \text{ mg}}{1} = 2.8 \text{ mL}$

31. $x \text{ mL} = \dfrac{1 \text{ mL}}{2 \text{ mg}} \times \dfrac{1.5 \text{ mg}}{1} = 0.75 \text{ mL}$

32. $x \text{ mL} = \dfrac{2 \text{ mL}}{250 \text{ mg}} \times \dfrac{100 \text{ mg}}{1} = 0.8 \text{ mL}$

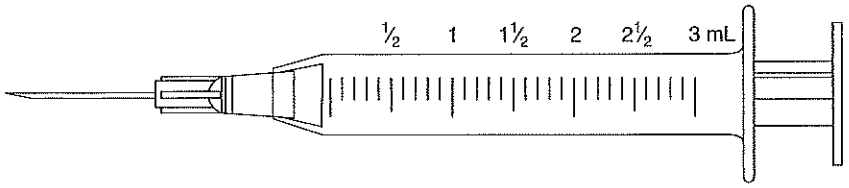


33. $x \text{ mL} = \dfrac{1 \text{ mL}}{2.5 \text{ mEq}} \times \dfrac{7.5 \text{ mEq}}{1} = 3 \text{ mL}$

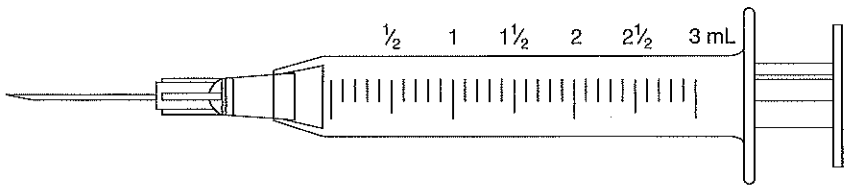
34. $x \text{ mL} = \dfrac{1 \text{ mL}}{50 \text{ mg}} \times \dfrac{25 \text{ mg}}{1} = 0.5 \text{ mL}$

35. $x \text{ mL} = \dfrac{1 \text{ mL}}{0.4 \text{ mg}} \times \dfrac{0.6 \text{ mg}}{1} = 1.5 \text{ mL}$

36. $x \text{ mL} = \dfrac{1 \text{ mL}}{100 \text{ mg}} \times \dfrac{150 \text{ mg}}{1} = 1.5 \text{ mL}$

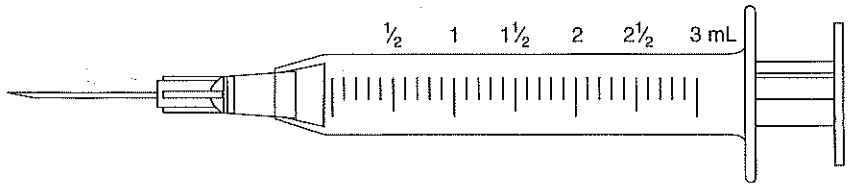


37. $x \text{ mL} = \dfrac{1 \text{ mL}}{0.25 \text{ mg}} \times \dfrac{0.5 \text{ mg}}{1} = 2 \text{ mL}$

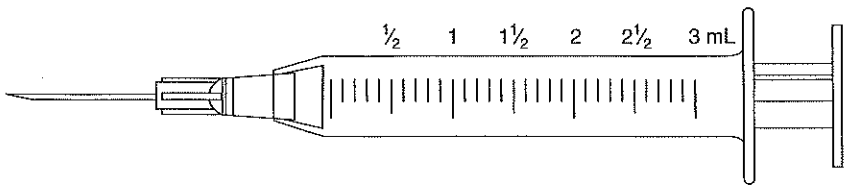


38. $x \text{ mL} = \dfrac{1 \text{ mL}}{25 \text{ mg}} \times \dfrac{75 \text{ mg}}{1} = 3 \text{ mL}$

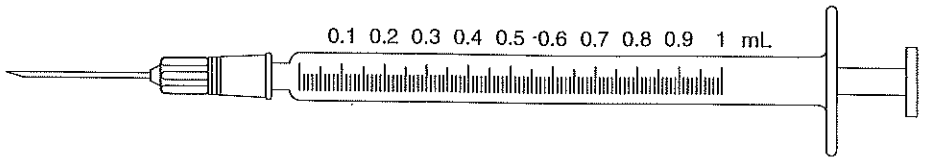
39. $x \text{ mL} = \dfrac{1 \text{ mL}}{0.4 \text{ mg}} \times \dfrac{0.6 \text{ mg}}{1} = 1.5 \text{ mL}$



40. $x \text{ mL} = \dfrac{1 \text{ mL}}{5 \text{ mg}} \times \dfrac{10 \text{ mg}}{1} = 2 \text{ mL}$



41. $x \text{ mL} = \dfrac{2 \text{ mL}}{100 \text{ mg}} \times \dfrac{25 \text{ mg}}{1} = 0.5 \text{ mL}$

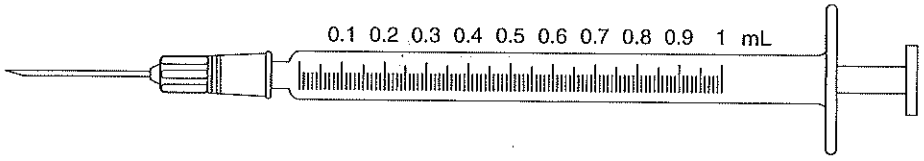


42. $x \text{ mL} = \dfrac{40 \text{ mL}}{400 \text{ mg}} \times \dfrac{200 \text{ mg}}{1} = 20 \text{ mL}$

43. $x \text{ mL} = \dfrac{1 \text{ mL}}{500 \text{ mg}} \times \dfrac{1000 \text{ mg}}{1 \text{ g}} \times \dfrac{0.25 \text{ g}}{1} = 0.5 \text{ mL}$

44. $x \text{ mL} = \dfrac{10 \text{ mL}}{13.6 \text{ mEq}} \times \dfrac{5 \text{ mEq}}{1} = 3.68 \text{ or } 3.7 \text{ mL}$

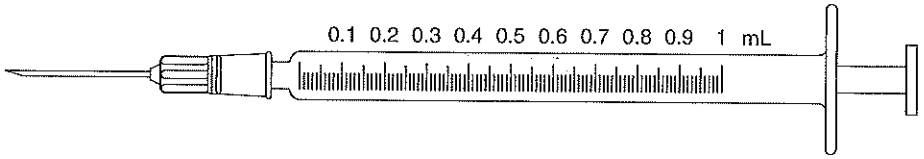
45. $x \text{ mL} = \dfrac{1 \text{ mL}}{130 \text{ mg}} \times \dfrac{70 \text{ mg}}{1} = 0.538 \text{ or } 0.54 \text{ mL}$



46. $x \text{ mL} = \dfrac{1 \text{ mL}}{10 \text{ mg}} \times \dfrac{200 \text{ mg}}{1} = 20 \text{ mL}$

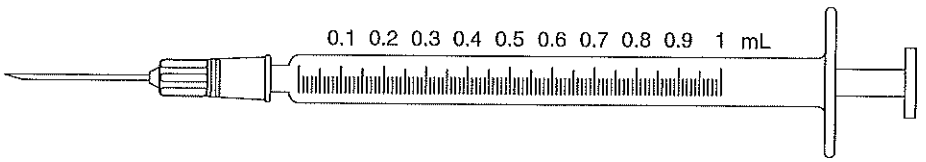
47. $x \text{ mL} = \dfrac{1 \text{ mL}}{4 \text{ mg}} \times \dfrac{2 \text{ mg}}{1} = 0.5 \text{ mL}$

48. $x \text{ mL} = \dfrac{2 \text{ mL}}{0.5 \text{ mg}} \times \dfrac{0.2 \text{ mg}}{1} = 0.8 \text{ mL}$



49. $x \text{ mL} = \dfrac{1 \text{ mL}}{15 \text{ mg}} \times \dfrac{10 \text{ mg}}{1} = 0.666 \text{ or } 0.67 \text{ mL}$

50. $x \text{ mL} = \dfrac{1 \text{ mL}}{50 \text{ mg}} \times \dfrac{25 \text{ mg}}{1} = 0.5 \text{ mL}$

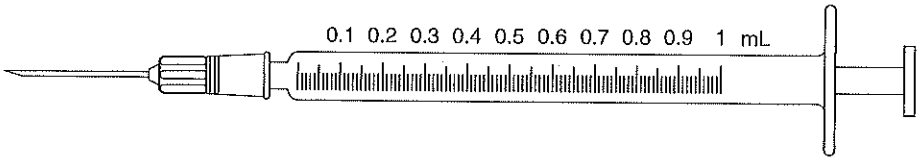


51. $x \text{ mL} = \dfrac{1.2 \text{ mL}}{500 \text{ mg}} \times \dfrac{600 \text{ mg}}{1} = 1.44 \text{ mL}$

52. $x \text{ mL} = \dfrac{1 \text{ mL}}{0.4 \text{ mg}} \times \dfrac{0.9 \text{ mg}}{1} = 2.25 \text{ mL}$

53. $x \text{ mL} = \dfrac{1 \text{ mL}}{30 \text{ mg}} \times \dfrac{30 \text{ mg}}{1} = 1 \text{ mL}$

54. $x \text{ mL} = \dfrac{1 \text{ mL}}{4 \text{ mg}} \times \dfrac{3 \text{ mg}}{1} = 0.75 \text{ mL}$

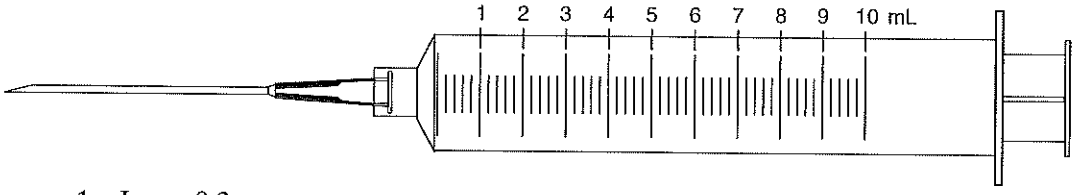


55. $x \text{ mL} = \dfrac{1 \text{ mL}}{0.89 \text{ mEq}} \times \dfrac{6 \text{ mEq}}{1} = 6.74 \text{ mL}$

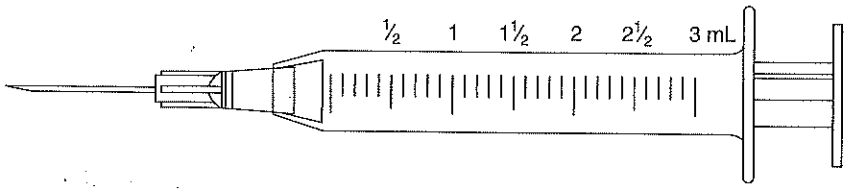
56. $x \text{ mL} = \dfrac{1 \text{ mL}}{20 \text{ mg}} \times \dfrac{10 \text{ mg}}{1} = 0.5 \text{ mL}$

57. $x \text{ mL} = \dfrac{1 \text{ mL}}{25 \text{ mg}} \times \dfrac{5 \text{ mg}}{1} = 0.2 \text{ mL}$

58. $x \text{ mL} = \dfrac{1 \text{ mL}}{125 \text{ mg}} \times \dfrac{500 \text{ mg}}{1} = 4 \text{ mL}$



59. $x \text{ mL} = \dfrac{1 \text{ mL}}{0.25 \text{ mg}} \times \dfrac{0.2 \text{ mg}}{1} = 0.8 \text{ mL}$



60. $x \text{ mL} = \dfrac{1 \text{ mL}}{2 \text{ mg}} \times \dfrac{0.5 \text{ mg}}{1} = 0.25 \text{ mL}$