8B DOUBLING TIME AND HALF-LIFE

25. 24 HRS: $2^{24/8} = 2^3 = \boxed{8}$

1 WEEK = $24 \times 7 = 168$ HRS: $2^{168/8} = 2^{21} = \boxed{2097152}$

27. $2^{t/17} = 4$

$2^{t/17} = 2^2 \longrightarrow \frac{t}{17} = 2$

$\boxed{t = 34}$

INTUITIVE SOLUTION:

17 YEARS TO DOUBLE

↳ 34 YEARS TO QUADRUPLE

29. 12 YRS: $10000 \times 2^{12/10} = \boxed{22974}$

24 YRS: $10000 \times 2^{24/10} = \boxed{52780}$

31.

2 YRS = 24 MOS: $2^{24/2.5} = \boxed{776}$

4 YRS = 48 MOS: $2^{48/2.5} = \boxed{602,249}$

37. $\frac{70}{4} = \boxed{17.5}$ YEAR DOUBLING TIME

3 YRS: $1.04^3 = \boxed{1.124864}$

38. DOUBLING TIME: $\frac{70}{3.5} = \boxed{20}$

50 YRS - $1.035^{50} = \boxed{5.585}$

39. $\frac{70}{.3} = \boxed{233.3}$ MONTHS

1 YR = 12 MOS. $1.003^{12} = \boxed{1.0366}$

8 YRS = 96 MOS. $1.003^{96} = \boxed{1.333}$

40. $\frac{70}{2.2} = \boxed{31.8 \text{ YRS}}$

$1.022^{10} = 1.24 \rightsquigarrow \boxed{\text{INCREASES BY } 24\%}$

41. $\left(\frac{1}{2}\right)^{100/50} = \boxed{\frac{1}{4}}$

$\left(\frac{1}{2}\right)^{200/50} = \boxed{\frac{1}{16}}$

43. $\left(\frac{1}{2}\right)^{24/18} = \boxed{0.3969}$

$\left(\frac{1}{2}\right)^{48/18} = \boxed{0.1575}$

45. $1000000 \times \left(\frac{1}{2}\right)^{30/20} = \boxed{353,553}$

$1000000 \times \left(\frac{1}{2}\right)^{70/20} = \boxed{88,388}$

47. $\left(\frac{1}{2}\right)^{150/77} = \boxed{.2592}$

$\left(\frac{1}{2}\right)^{300/77} = \boxed{0.0672}$