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§ 8A GROWTH : LINEAR VS. EXPONENTIAL

9. LINEAR : $Pop = 2500 + 325 \times Yrs$

↳ $2500 + 325 \times 4 = 2500 + 1300 = \boxed{3800}$

10. EXPONENTIAL : $Pop = 75{,}000 \times 1.03^{t}$

↳ $75{,}000 \times 1.03^{3} = \boxed{81{,}955}$

11. EXPONENTIAL : $BILL = 100 \times 1.30^{3} = \boxed{219.7}$

12. LINEAR : $PRICE = 3.10 + .03 \times 10 = \boxed{3.40}$

13. EXPONENTIAL : $COST = 50 \times 0.86^{3} = \boxed{31.80}$

14. EXPONENTIAL : $VALUE = 12000 \times .9^{2} = \boxed{9{,}720}$

15. LINEAR : $VALUE = 100000 + 2000 \times 5 = \boxed{110\,000}$

16. EXPONENTIAL : $VALUE = 250000 \times 0.93^{3} = \boxed{201089.25}$

17. $2^{15} = 32768 \text{ GRAINS} \times \frac{1 \text{ LB}}{7000 \text{ GRAINS}} = \frac{32768}{7000} \text{ LBS} = \boxed{4.7 \text{ LBS}}$

21. $0.01 \times 2^{21} = \boxed{20,971.52}$

25. AFTER 50 MINUTES: $2^{50} = \boxed{1,125,899,906,842,624 \text{ BACTERIA}}$

12 PM - FULL

11:59 AM - $\frac{1}{2}$

11:58 AM - $\frac{1}{4}$

11:57 AM - $\frac{1}{8}$

11:56 AM - $\frac{1}{16}$

⋮

11:50 AM - $\left(\frac{1}{2}\right)^{10} = \boxed{\frac{1}{1024}}$

26. AFTER 15 MINUTES: $2^{15} = \boxed{32768 \text{ BACTERIA}}$

45 MINUTES BEFORE NOON: $\left(\frac{1}{2}\right)^{45} = \boxed{\frac{1}{35,184,372,088,832}}$