

8. The number of bacteria, in a controlled environment, doubles on average every 15 minutes. Initially, this environment contains one thousand cells. Consider the function which gives the number $N(t)$ of cells as a function of the number t of hours elapsed since the beginning.

t	$N(t)$
0	1
0.25	2
0.50	4
0.75	8
1	16
2	256

- a) Complete the table of values on the right.
- b) What is the rule of the function? $y = 2^{4t}$
- c) What is the number of cells after 3 hours? 4096 thousand
- d) After how many hours does this environment contain 1024 thousand cells? 2 h 30 min

9. Mr. Desmond invests \$30 000 in a bank that offers a 4.2% annual interest rate. Using the formula given in activity 4, determine the accumulated amount Mr. Desmond receives after 5 years if the interest is compounded

- a) annually. \$36 851.90 $n = 1$ $y = 30000 \left(1 + \frac{0.042}{1}\right)^{5 \times 1}$
- b) every 3 months. \$36 969.84 $n = 4$ $\lim_{x \rightarrow \infty} \uparrow = 30000(e)^{0.042(5)}$
- c) every 4 months. \$36 956.48 $n = 3$ $\approx 37\ 010.3418$
- d) every 6 months. \$36 929.95 $n = 2$
- e) monthly. \$36 996.77 $n = 12$

10. At the birth of his son Raphael, Alex invests \$2000 in an education savings bond. This account's annual interest of 3.7% is compounded monthly. What will be the accumulated value of this bond when Raphael turns 20 years old?

\$4187.10 ✓

$$L \rightarrow = 2000 \left(1 + \frac{0.037}{12}\right)^{12 \cdot 20}$$

$$= \$4187.10$$