Mathematics Education and Support Hub (MESH)

Biology: Logarithms

Sample Questions - Solutions

1a) $0.0001 = 10^{-4}$

b) $10{,}000 = 10^{4}$

c) $1{,}000{,}000 = 10^{6}$

d) $0.1 = 10^{-1}$

2a) $\log_4 6$

Use the formula, $\log_a X = \log_{10} X / \log_{10} a$

Substitute X = 6, and a = 4

$\text{Log}_4\ 6 = \log_{10} 6 / \log_{10} 4$

$= 0.7782 / 0.3021$

$= 2.576$

b) $\log_7 7$

Use the formula, $\log_a X = \log_{10} X / \log_{10} a$

Substitute X = 7, and a = 7

$\text{Log}_7\ 7 = \log_{10} 7 / \log_{10} 7$

$= 0.8451 / 0.8451$

$= 1$

c) $\log_2 84$

Use the formula, $\log_a X = \log_{10} X / \log_{10} a$

Substitute X = 84, and a = 2

$\text{Log}_2\ 84 = \log_{10} 84 / \log_{10} 2$

$= 1.9243 / 0.3010$

$= 6.393$

d) $\log_5 0.75$

Use the formula, $\log_a X = \log_{10} X / \log_{10} a$

Substitute X = 0.75, and a = 5

$\text{Log}_5\ 0.75 = \log_{10} 0.75 / \log_{10} 5$

$= -0.125 / 0.699$

$= - 0.1788$

3a) $\log\ 2.58 \times 10^5 = 5.4116$

b) $\log\ 3.75 \times 10^{-7} = -6.426$

c) log 375 = 2.574

d) log 0.0055 = -2.26

4a) antilog 7.889 = 77,446,179.78

b) antilog 0.56 = 3.63

c) antilog 8 =100,000,000

d) antilog 5 = 100,000