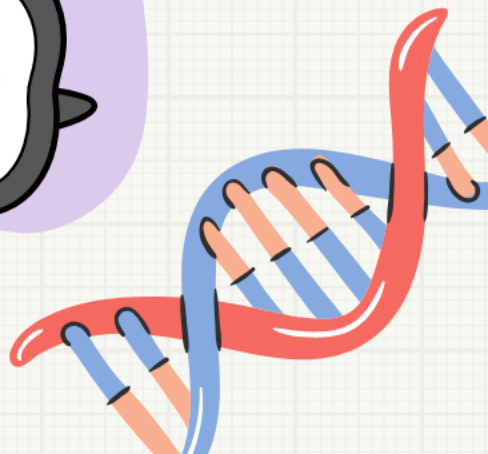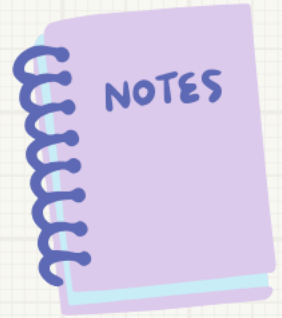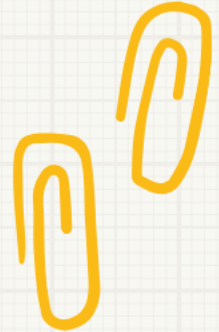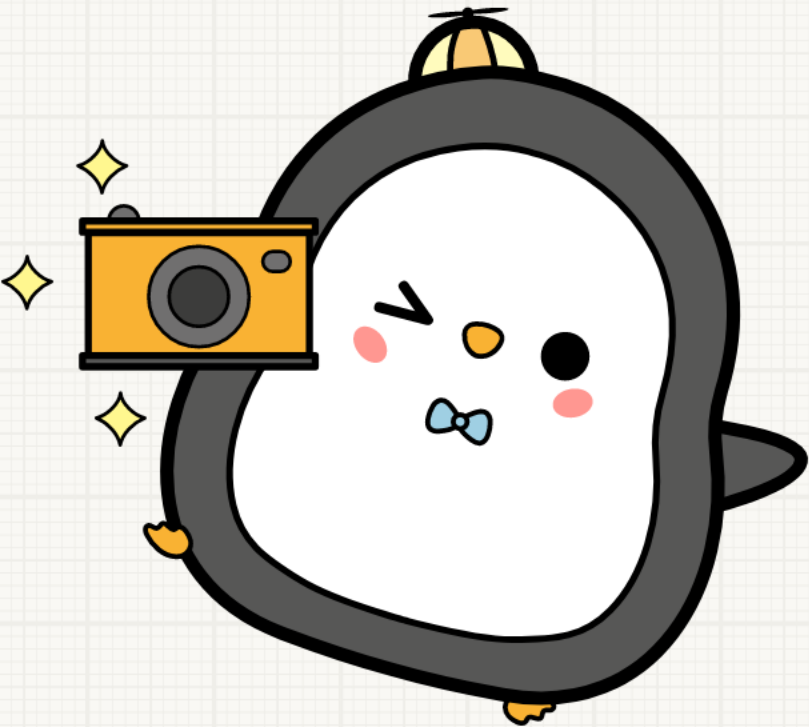# AP Bio
Math Mondays

Rate and Growth:
Exponential Growth

Exponential Growth

$$\frac{dN}{dt} = r_{max}N$$

Math Monday #3

Exponential Growth

A population of 500 penguins has found a new resource. If the maximum rate of increase is 0.25 per individual per year, determine the exponential growth rate to the nearest penguin.

Exponential Growth

$$\frac{dN}{dt} = r_{max}N$$

r_{max} = maximum per capita growth rate of population
N = population size

Math Monday #3

Exponential Growth

A population of 500 penguins has found a new resource. If the maximum rate of increase is 0.25 per individual per year, determine the exponential growth rate to the nearest penguin.

r_{max} = maximum per capita growth rate of population

N = population size

$r_{max} = 0.25$

$N = 500$

$$\frac{dN}{dt} = 0.25(500)$$

$$\frac{dN}{dt} = 125$$

Exponential Growth

$$\frac{dN}{dt} = r_{max}N$$

Example Problem   Exponential Growth

A population of deer mice on an island is in exponential growth. If the maximum rate of increase is 1.0 per individual per year and the population size is 275, determine the exponential population growth rate to the nearest mouse.

$$r_{max} = 1.0$$
$$N = 275$$

$$\frac{dN}{dt} = 1.0(275)$$

$$\frac{dN}{dt} = 275$$

Exponential Growth

$$\frac{dN}{dt} = r_{max}N$$

r_{max} = maximum per capita growth rate of population
N = population size