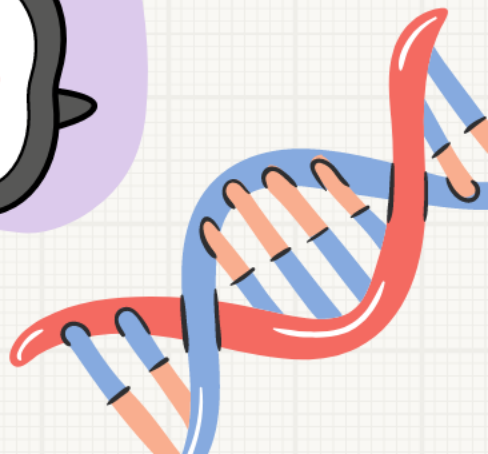
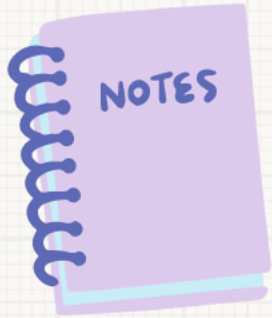


# AP Bio

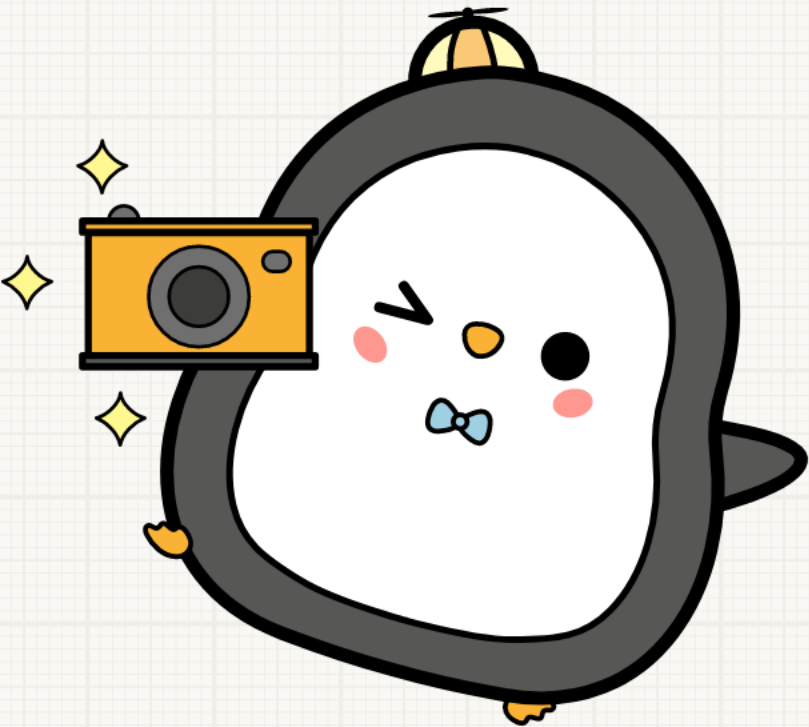
# Math Mondays

Water Potential



# Water Potential

$$\Psi = \Psi_P + \Psi_S$$



# Math Monday #4

## Water Potential

Scientists are trying to determine under what conditions a plant can survive. They collect the following data and would like to know the water potential of the plant cell. The solute potential is  $-0.6$  MPa and the pressure potential is  $-1.0$  MPa. What is the water potential.

### Water Potential

$$\Psi = \Psi_p + \Psi_s$$



$\psi_s$  = solute potential  
 $\psi_p$  = pressure potential

$$\Psi = -1.0 \text{ MPa} + -0.6 \text{ MPa}$$

$$\Psi = -1.6 \text{ MPa}$$

# Example Problem

# Water Potential

A plant cell with a  $\Psi_s$  of -7.5 bars keeps a constant volume when immersed in an open-beaker solution that has a  $\Psi_s$  of -4 bars. What is the cell's  $\Psi_p$ ?

## Water Potential

$$\Psi = \Psi_p + \Psi_s$$



$$\Psi = \Psi_p + -7.5 \text{ bars}$$

$$\Psi = 0 \text{ bars} + -4 \text{ bars}$$

$$-4 \text{ bars} = \Psi_p + -7.5 \text{ bars}$$

$$3.5 \text{ bars} = \Psi_p$$